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VELTECH CONSULTING ENGINEERS

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Meera Homes

GEOTECHNICAL INVESTIGATION REPORT

PROJECT: GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED CONSTRUCTION OF (STILT+5) RESIDENTIAL BUILDING AT PLOT NO.1,2 & 3, SABARI NAGAR LAYOUT, PLOT NO.37, MANOHAR NAGAR, VGP SHANTHI NAGAR, S.NO. 616, 618/2, 618/3, 616/9, 618/11, 618/17, 618/3A 4 A2, PALLIKARANAI, CHENNAI - 600100.

CLIENT : M/s. Meera Homes.,

REPORT NO	DATE	REVISION-0
VCE/23/GIR–585	07.08.2024	Submission for Design of Foundation

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07.08.2024

To

CLIENT : M/s. Meera Homes.,

SUB: GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED CONSTRUCTION OF (STILT+5) RESIDENTIAL BUILDING AT PLOT NO.1,2 & 3, SABARI NAGAR LAYOUT, PLOT NO.37, MANOHAR NAGAR, VGP SHANTHI NAGAR, S.NO. 616, 618/2, 618/3, 616/9, 618/11, 618/17, 618/3A 4 A2, PALLIKARANAI, CHENNAI - 600100.

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

VELTECH CONSULTING ENGINEERS * CHENNAI 600073

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TABLE OF CONTENT	PAGE NO
INTRODUCTION	2
SCOPE OF WORK	2
SITE DESCRIPTION	2
EXPLORATION TECHNIQUES	3
LABORATORY TESTING	4
SUBSURFACE SOIL DESCRIPTION	4
GROUND WATER	5
FOUNDATION RECOMMENDATIONS	5
FOUNDATION CONSIDERATIONS	5
GENERAL CONSIDERATION	6

Appendix - A

- **Borelog Sheets**

Appendix - B

- **Laboratory Test Results**

Appendix - C

- **Photos**

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INTRODUCTION

This report presents the geotechnical investigations results carried out by Veltech Consulting Engineers, for the proposed construction of (Stilt+5) Residential Building At PlotNo.1,2& 3, Sabari Nagar Layout, Plot No.37, Manohar Nagar, VgpShanthi Nagar, S.No. 616, 618/2, 618/3, 616/9, 618/11, 618/17, 618/3a 4 A2, Pallikaranai, Chennai - 600100.

This work was authorized by the **Client :M/s. Meera Homes.,**

Standard Penetration Testing for boreholewas drilled at the site up to a maximum depth of 7.0m below 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 (Stilt+5) Residential Building At PlotNo.1,2& 3, Sabari Nagar Layout, Plot No.37, Manohar Nagar, VgpShanthi Nagar, S.No. 616, 618/2, 618/3, 616/9, 618/11, 618/17, 618/3a 4 A2, Pallikaranai, Chennai - 600100.

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 (Stilt+5) Residential Building At PlotNo.1,2 & 3, Sabari Nagar Layout, Plot No.37, Manohar Nagar, Vgp Shanthi Nagar, S.No. 616, 618/2, 618/3, 616/9, 618/11, 618/17, 618/3a 4 A2, Pallikaranai, Chennai - 600100.The elevation of site is same from the nearby road level.

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EXPLORATION TECHNIQUES

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

One (1) exploration borehole was drilled to a maximum depth of 7.0m

BH-1was started on 02.08.2024 and completed on 02.08.2024.

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.

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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 (Stilt+5)Residential Building is given below:

BH-1

Depth (m)		Soil Description
From	To	
0.0	3.0	Brownish grey fine clayey sand
3.0	6.0	Greyish brown medium to fine clayey sand
6.0	7.0	Greyish brown weathered rock

GROUND WATER

Ground water table was found at the depth of 1.20m below the existing ground level at the time of field investigation. However it will fluctuate due to seasonal variations.

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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/ Raft foundation shall be adopted for the proposed structure.
- Excavate upto the depth of 2.5m and backfill by gravels/ sand for 25cm thickness with proper compaction.
- Foundation shall be placed at **2.25m** depth below the existing ground level on a gravel fill of 25cm thickness.
- An allowable bearing pressure of **200kN/m^2** at the depth of **2.25m upon filling**shallbe taken for design.
- Grade beams shall be adopted in order to minimize differential settlements.
- Dewatering may be required at the time of foundation concrete.
- 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 20cm 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

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APPENDIX A

BORE HOLE LOG

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Veltech Consulting Engineers

Geotechnical investigation

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BOREHOLE LOG

Client	: M/s. Meera Homes.,	**Water Table**	: 1.20m
		Ele . Of G.L	: 0.0m
Type of building	: (Stilt+5) Residential Building	**Type Of Boring**	: Rotary
Location	: Pallikaranai, Chennai.	**Dia of Boring**	: 150mm
B.H. No	: 1	**Started on**	: 02.08.2024
Final Depth	: 7.0m	**Ended on**	: 02.08.2024

Depth (m)	GWL	SYMBOL	DESCRIPTION	SPT COUNT 0 -15 cm	15 -30 cm	30 -45 cm	N- Value	Relative Density /Consistency
0.0 – 1.0			Brownish grey fine clayey sand					
1.0 – 1.5	▼		ditto	2	3	3	6	Loose
1.5 – 2.0			ditto	15	17	12	29	Medium dense
2.0 – 3.0			Greyish brown medium to fine clayey sand	10	17	22	39	Dense
3.0 – 4.5			ditto	50/'5' cm				Very dense
4.5 – 6.0			Greyish brown weathered rock	50/'0' cm				Very dense
6.0 – 7.0			Borehole 1 terminated at the depth of 7.0m					

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APPENDIX B

LABORATORY TEST RESULTS

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GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT : M/s. Meera Homes.,.,

PROJECT: (Stilt+5) 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%	
1.0	17.31	Non plastic				SC
2.0	17.11	Non plastic				SC
3.0	14.62	Non plastic				SC

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

DEPTH M	GRAVEL SAND %	COARSE SAND %	MEDIUM SAND %	FINE SAND %	SILT + CLAY%
1.0	2	2	21	36	39
2.0	10	18	19	16	37
3.0	8	3	30	25	34

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

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APPENDIX C

Photos

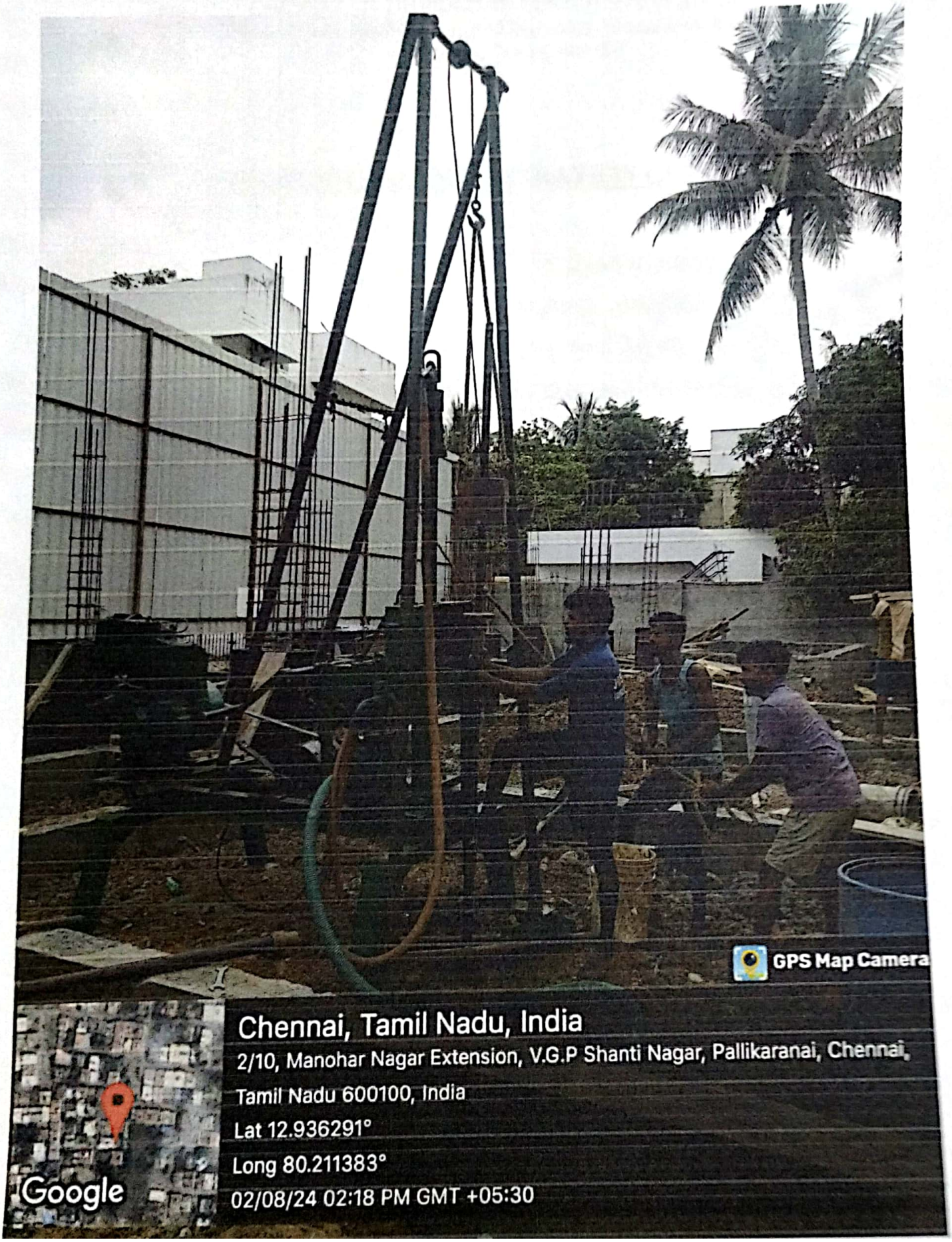
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GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT : M/s. Meera Homes.,.,

PROJECT: (Stilt+5) Residential Building



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CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
'ThalamuthuNatarajan Building', No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008.

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/2019/07/032 Renewed** on **05.07.2024.** 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 **04.07.2029.**



5/12/24

(A. MEGANATHAN)
Superintendent

R.VENKATA KRISHNAIAH
GEOTECHNICAL CONSULTANT
VELTECH CONSULTING ENGINEERS
NO.10, ELUMALAI NAICKEN STREET,
SELAIYUR, CHENNAI - 600073.
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Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

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