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VELTECH CONSULTING ENGINEERS

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Email:veltechconsultingengineers@gmail.com

An ISO 9001:2015 Certified

GEOTECHNICAL INVESTIGATION REPORT

PROJECT: **GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED CONSTRUCTION OF (G+5) RESIDENTIAL BUILDING AT OLD S.NO. 17/1, 17/2, 17/3, WARD NO.G, BLOCK NO.56, TOWN S.NO. 54/3, PLOT NO. B & C, MALAVIKA AVENUE, SELAIYUR, EAST TAMBARAM, CHENNAI - 600 073.**

CLIENT : MR.G.EKAMBARAM.,

VELTECH CONSULTING ENGINEERS CHENNAI 600 073

REPORT NO	DATE	REVISION-0
VCE/22/GIR–1007	23.05.2022	Submission for Design of Foundation

23.05.2022

To

Client : Mr.G.Ekambaram.,

SUB: GEOTECHNICAL INVESTIGATION REPORT FOR THE PROPOSED CONSTRUCTION OF (G+5) RESIDENTIAL BUILDING AT OLD S.NO. 17/1, 17/2, 17/3, WARD NO.G, BLOCK NO.56, TOWN S.NO. 54/3, PLOT NO. B & C, MALAVIKA AVENUE, SELAIYUR, EAST TAMBARAM, CHENNAI - 600 073.

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

VELTECH CONSULTING ENGINEERS CHENNAI 600 073

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

Geotechnical Consultant

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INTRODUCTION

This report presents the geotechnical investigations results carried out by **Veltech Consulting Engineers**, for the proposed Construction of (G+5) Residential Building At Old S.No. 17/1, 17/2, 17/3, Ward No.G, Block No.56, Town S.No. 54/3, Plot No. B & C, Malavika Avenue, Selaiyur, East Tambaram, Chennai - 600 073.

This work was authorized by the **Client : Mr.G.Ekambaram.,**

Standard Penetration Testing borehole was drilled at the site up to a maximum depth of 3.1m below existing ground level.

The investigation consists of drilling two boreholes , soil sampling, field and laboratory testing and preparation of a Geotechnical Report for the Proposed Construction of (G+5) Residential Building At Old S.No. 17/1, 17/2, 17/3, Ward No.G, Block No.56, Town S.No. 54/3, Plot No. B & C, Malavika Avenue, Selaiyur, East Tambaram, Chennai - 600 073.

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+5) Residential Building At Old S.No. 17/1, 17/2, 17/3, Ward No.G, Block No.56, Town S.No. 54/3, Plot No. B & C, Malavika Avenue, Selaiyur, East Tambaram, Chennai - 600 073.The elevation of site is below 1.5m 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:

Two (2) exploration borehole was drilled to a maximum depth of 3.1m.

BH -1 & 2 was started on 20.05.2022 and completed on 20.05.2022.

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 (G+5) Residential building is given below:

BH-1

0.0	-	2.0m	Brownish yellow medium to fine silty sand with gravel
2.0	-	2.8m	Brownish weathered rock

BH-2

0.0	-	2.0m	Light brownish grey medium to fine silty sand with gravel
2.0	-	2.5m	Brownish weathered rock
2.5	-	3.1m	Brownish soft rock

GROUND WATER

Ground water table was not found below the ground level at the time of field investigation. However it will fluctuate due to seasonal variations.

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.

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SHALLOW FOUNDATION

- Isolated /Strip foundation shall be adopted for the proposed structure.
- Foundation shall be placed at **2.25m** depth below the existing ground level.
- A safe bearing pressure of **320 kN/m^2** at the depth of **2.25m** 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 20cm thickness is recommended below the foundation/pile cap. 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.

Excavated material 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.

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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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CLIENT : Mr.G.Ekambaram.,

Project: (G+5) Residential Building

APPENDIX A

BOREHOLE LOG

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BOREHOLE LOG

Client	: Mr.G.Ekambaram.,	**Water Table**	: Nil
Type of building	: (G+5)Residential Building	**Ele . Of G.L**	Below 1.5m
Location	: Selaiyur	**Type Of Boring**	: Rotary
B.H. No	: 1	**Dia of Boring**	: 150mm
Final Depth	: 2.8m	**Started on**	: 20.05.2022
		Ended on	: 20.05.2022

Depth (m)	GWL	SYMBOL	DESCRIPTION	SPT COUNT 0 -15 cm	15 -30 cm	30 -45 cm	N- Value	Relative Density /Consistency
0.0 – 1.5			Brownish yellow medium to fine silty sand with gravel Ditto	10	20	30	50/26 cm	Very dense
2.0 – 2.5			Brownish weathered rock	50/'0' cm				Very dense
3.0 – 10.5			Borehole 1 terminated at the depth of 2.8m					

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BOREHOLE LOG

Client	: Mr.G.Ekambaram.,	**Water Table**	: Nil
Type of building	: (G+5)Residential Building	**Ele . Of G.L**	**Below 1.5m**
Location	: Selaiyur	**Type Of Boring**	: Rotary
B.H. No	: 2	**Dia of Boring**	: 150mm
Final Depth	: 3.1m	**Started on**	: 20.05.2022
		Ended on	: 20.05.2022

Depth (m)	GWL	SYMBOL	DESCRIPTION	SPT COUNT 0 -15 cm	15 -30 cm	30 -45 cm	N- Value	Relative Density /Consistency
0.0 – 1.5			Light brownish grey medium to fine silty sand with gravel Ditto	16	28	22	50/25 cm	Very dense
2.0			Brownish weathered rock	50/'0' cm				Very dense
2.5			Brownish soft rock	100/'0' cm penetration				TCR-28%
3.0 – 10.5			Borehole 2 terminated at the depth of 3.1m					

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Project: (G+5) Residential Building

APPENDIX B

LABORATORY TEST RESULTS

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GEOTECHNICAL INVESTIGATION REPORT

VELTECH CONSULTING ENGINEERS

CLIENT : Mr.G.Ekambaram.,

Project: (G+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	10.42	Non Plastic				SM
2.0	Weathered rock					

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

DEPTH M	GRAVEL SAND %	COARSE SAND %	MEDIUM SAND %	FINE SAND %	SILT + CLAY%
1.0	13	7	24	29	27

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	12.51	Non Plastic				SM
2.0	Weathered rock					

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

DEPTH M	GRAVEL SAND %	COARSE SAND %	MEDIUM SAND %	FINE SAND %	SILT + CLAY%
1.0	9	5	21	34	31

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CLIENT : Mr.G.Ekambaram.,

Project: (G+5) 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

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CLIENT : Mr.G.Ekambaram.,

Project: (G+5) Residential Building

APPENDIX C

PHOTOS

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GEOTECHNICAL INVESTIGATION REPORT

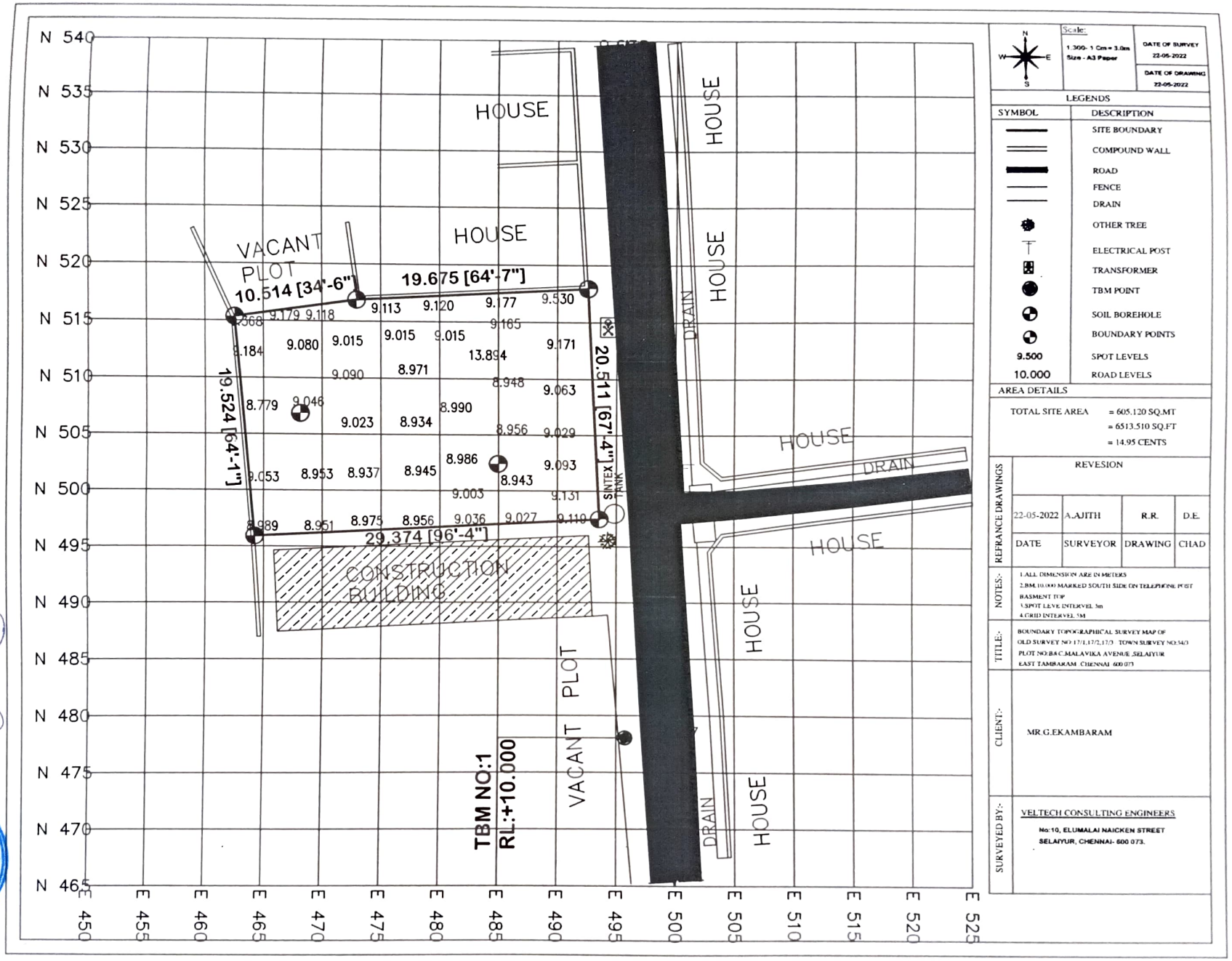
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CLIENT : Mr.G.Ekambaram.,

Project: (G+5) Residential Building



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N

W E

S

Scale:
1.300- 1 Cm = 3.0m
Size - A3 Paper

DATE OF SURVEY
22-05-2022

DATE OF DRAWING
22-05-2022

LEGENDS

SYMBOL	DESCRIPTION
	SITE BOUNDARY
	COMPOUND WALL
	ROAD
	FENCE
	DRAIN
	OTHER TREE
	ELECTRICAL POST
	TRANSFORMER
	TBM POINT
	SOIL BOREHOLE
	BOUNDARY POINTS
9.500	SPOT LEVELS
10.000	ROAD LEVELS

AREA DETAILS

TOTAL SITE AREA = 605.120 SQ.MT
= 6513.510 SQ.FT
= 14.95 CENTS

REFRANCE DRAWINGS

REVESION

DATE	SURVEYOR	DRAWING	CHAD
22-05-2022	A.AJITH	R.R.	D.E.

NOTES:-
1.ALL DIMENSION ARE IN METERS
2.BM.10.000 MARKED SOUTH SIDE ON TELEPHONE POST BASMENT TOP
3.SPOT LEVE INTERVEL 3m
4.GRID INTERVEL 5M

TITLE:-
BOUNDARY TOPOGRAPHICAL SURVEY MAP OF OLD SURVEY NO:17/1,17/2,17/3 TOWN SURVEY NO:34/3 PLOT NO:B4 C,MALAVIKA AVENUE,SELAIYUR EAST TAMBARAM CHENNAI 600 073

CLIENT:-
MR.G.EKAMBARAM

SURVEYED BY:-
VELTECH CONSULTING ENGINEERS
No:10, ELUMALAI NAICKEN STREET
SELAIYUR, CHENNAI- 600 073.

VELTECH CONSULTING ENGINEERS
CHENNAI
600073

Scale:
1:200= 1 Cm = 2.0m
Size - A3 Paper
DATE OF SURVEY
22-05-2022
DATE OF DRAWING
22-05-2022
LEGENDS
SYMBOL
DESCRIPTION
SITE BOUNDARY
COMPOUND WALL
ROAD
FENCE
DRAIN
OTHER TREE
ELECTRICAL POST
TRANSFORMER
TBM POINT
SOIL BOREHOLE
BOUNDARY POINTS
SPOT LEVELS
9.500
ROAD LEVELS
10.000
AREA DETAILS
TOTAL SITE AREA = 605.120 SQ.MT
= 6513.510 SQ.FT
= 14.95 CENTS
REFERANCE DRAWINGS
REVESION
22-05-2022
A.AJITH
R.R.
D.E.
DATE
SURVEYOR
DRAWING
CHAD
NOTES:
1.ALL DIMESION ARE IN METERS
2.RM 10.000 MARKED SOUTH SIDE ON TELEPHONE POST
BASEMENT TOP
3.SPOT LEVE INTLAVEL 2m
4.CORD INTERVEL 5M
TITLE:
BOUNDARY TOPOGRAPHICAL SURVEY MAP OF
OLD SURVEY NO:1171/2,1173 - TOWN SURVEY NO:343
PLOT NO:9&C MALAVIKA AVENUE,SELAYUR
EAST TAMBARAM ,CHENNAI 600 073
CLIENT:
MR.G.EKAMBARAM
SURVEYED BY:
VELTECH CONSULTING ENGINEERS
No:10, ELUMALAI NAICKEN STREET
SELAYUR, CHENNAI- 600 073.
HOUSE
HOUSE
HOUSE
HOUSE
HOUSE
HOUSE
DRAIN
DRAIN
DRAIN
SINTEX TANK
20.511 [67'-4"]
19.675 [64'-7"]
28.314 [92'-11"]
35.799 [117'-5"]
29.374 [96'-4"]
10.514 [34'-6"]
19.524 [64'-1"]
CONSTRUCTION BUILDING
VACANT PLOT
TBM NO:1
RL:+10.000
VELTECH CONSULTING ENGINEERS
CHENNAI
600073

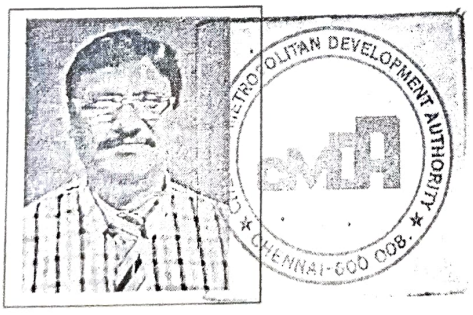
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
'ThalamuthuNatarajan Building', No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008.

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**.



5/7/24

(A. MEGANATHAN)
Superintendent

R.VENKATA KRISHNAIAH
GEOTECHNICAL CONSULTANT
VELTECH CONSULTING ENGINEERS
NO.10, ELUMALAI NAICKEN STREET,
SELAIYUR, CHENNAI - 600073.
REG. NO. GTE/19/07/032



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Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

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