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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 **Dr. SIVAPRIYA S.V** has enrolled as **Registered Geo-Technical Engineer (RGTE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E.,(Soil Mechanics & Foundation Engg.).,Ph.D.,** and experience in the relevant field for **05 years**.

She has been given the Registration No.**GTE/2020/01/041** on **08.01.2020.** She 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 **07.01.2025**.



(R.SHIVAKUMAR)
ASSISTANT PLANNER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
CHENNAI - 600 008

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE/2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

Date: **03/02/2023**

To

M/S INDIA BUILDERS
AA36 - 3rd Main Road, 3rd Street
Anna Nagar
Chennai – 40

Subject: Geotechnical Investigation Report for the Construction of Residential Building Temple Colony, Stilt + 8 Floors @ Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040.

Dear Sir,

We have enclosed the detailed Report (**Ref. No. R2302830**) of Geotechnical Investigation Conducted for Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors @ Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040 District with suitable Foundation Recommendations. If any clarification is required, you may feel free to contact us. We assure you of our Best Technical Service.

Thanks & Regards

MINERVA CIVIL TESTING LAB PRIVATE LIMITED CHENNAI 600 097

R. SHARVESH, M.E.
(Technical In-charge)

For **Minerva Civil Testing Lab Private Ltd**

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

No. 5/357A, Near CTS, Okkiyam Thoraipakkam, OMR, Chennai - 600 097
Phone : 044-42059520 Mobile: 9551677795, 9150997136, 9790976966
E-mail : minervalabtesting@gmail.com website : www.mctlpl.com

DISCLAIMER

This report has been prepared by the experts of Geotechnical Engineer by the assessment of portions of the soil at the specified location. The authors of this report are in no way responsible for the behavior of materials used by contractors or the drawbacks that may occur in the proposed structure with time and depending on the environment to which the structure may be exposed.

For **Minerva Civil Testing Lab Private Ltd**

MINERVA CIVIL TESTING LAB PRIVATE LIMITED CHENNAI 600 097

R. SHARVESH, M.E.

(Technical In-charge)

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

GEOTECHNICAL INVESTIGATION REPORT

Report No.: R2302830 **Job No.:** J2302799 **Date:** 03/02/2023
Ref. No.: NIL

Geotechnical Investigation Report for the Proposed Construction of Residential Building **Temple Colony** ***Stilt+8 floors for***

Client:

M/S INDIA BUILDERS
AA36 - 3rd Main Road, 3rd Street
Anna Nagar
Chennai – 40

Project Location:

Temple Colony,
Block no. 371, Temple Colony,
15th Main road,
Anna Nagar,
Chennai-600040.

Minerva Civil Testing Lab Private Limited
No.5/357A, Near CTS,
Okkiyampettai Okkiyam
Thoraipakkam, OMR
Chennai - 600097
Contact: 9551677795, 9790976966, 044 – 42059520

Period of Testing: 21/01/2023 - 02/02/2023

MINERVA CIVIL TESTING LAB PRIVATE LIMITED CHENNAI 600 097

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MINERVA CIVIL TESTING LAB PRIVATE LIMITED CHENNAI 600 097

1. Introduction:

This report presents the Geotechnical Investigation performed for the Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040 for which M/s Minerva Civil Testing Lab Private Ltd was approached by the client to conduct Geotechnical Investigation for the design and construction of the structure.

For the construction of any structure a detailed Soil Investigation is essential for collecting the relevant data required for preparing the design. The sub surface investigation reveals the presence and the extent of soil and rock stratum in the region likely to be affected by the proposed work and determines the nature of each stratum and engineering properties of soil which may affect the design. The data collected provide reliable, specific and detailed information to facilitate a safe and economic design of the proposed structure.

2. Scope of Work:

Conducting field test to assess the safe bearing capacity (SBC) and allowable bearing pressure, at shallow depth of the soil stratum present in the proposed site, the Bore Hole Depth had been terminated as per Client Requirements.

3. Method of Exploration:

Mechanical rotary drilling with auger of dia. 150 mm has been used for making bore holes. Soil samples were collected at regular intervals and at change of layer and samples were also recovered from the SPT spoon sampler and marked with proper labeling for transporting them to our laboratory for testing.

4. Field Test:

Penetration and sounding tests are the generally adopted field tests. Standard penetration test is performed as per IS: 2131-1981 as an in-situ test especially for cohesion less soils. The resistance is empirically correlated with some of the engineering properties of soil such as density index, consistency, bearing capacity etc.

These tests are useful for general exploration of erratic soil profiles for finding depth to bed rock or hard stratum and to have an approximate indication of the strength and other properties of soils particularly for cohesion less soil where it is difficult to obtain Undisturbed Soil samples(UDS).

In the field, the standard penetration test sampler is driven by the free fall of a hammer weighing 63.5 kg dropped from a height of 75 cm. The sampler is initially driven through 15 cm as a seating drive. It is further driven through 30 cm. The number of blows required to drive the sampler for the 30cm below the seating drive is termed as the Penetration Resistance ('N' value).

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5. Laboratory Tests:

The samples collected at the field were subjected to the following laboratory tests to determine the classification of the soil and to compute their basic properties, such as

1. Natural Moisture Content *(as per IS 2720 –1985: Part II)*
2. Particle size analysis *(as per IS 2720 –1985: Part IV)*
3. Liquid Limit *(as per IS 2720 –1985: Part V)*
4. Plastic Limit *(as per IS 2720 –1985: Part VI)*
5. Differential Free Swell test *(as per IS 2720 –1985: Part XL)*

6. Soil Description:

a. Site Geology:

The proposed site situated in the Chennai district of Tamilnadu. Chennai district is underlain by various geological formations from ancient Archaean to the Recent Alluvium. The geological formations of the district can be grouped into three units, namely i) the Archaean crystalline rocks ii) consolidated Gondwana and Tertiary sediments and iii) the Recent Alluvium. The Archaean crystalline rocks of the district comprise chiefly of charnockite, gneiss and the associated basic and ultra basic intrusive.

The soil of Chennai mostly consists of clay, sedimentary rocks and sandstone. River banks and coasts, such as Thiruvanmiyur, Adyar, Kottivakkam, Saint Thomas, George Town, Tondiyarpet and the rest of coastal Chennai have sandy soil. Hence, rainwater percolates quickly through the soil. Cities like T. Nagar, West Mambalam, Anna Nagar, Villivakkam, Perambur and Virugambakkam have clay soil whereas those like Guindy, Perungudi, Velachery, Adambakkam and a part of Saidapet have weathered rock. The degree and depth of weathering rock varies from place to place and the thickness of weathered mantle varies from less than a meter to about 12 m in this district.

While considering the Seismic vulnerability of the proposed site, the Chennai region comes under the **Seismic Zone III** as per the classification given by the Ministry of Earth Sciences (MoES). The categorization describes the *Seismic Zone III* is having *'Moderate seismic intensity'* of 0.16 as per IS: 1893 (Part 1)

b. Soil Profile & Characteristics:

Two boreholes BH No. 01 & BH No. 02 have been drilled at the proposed location up to the depth of 23.5m and 25m as per the Site requirements. The detailed soil profile and its description were furnished with the Bore log in the annexure.

7. Water Table Fluctuations:

Water table was encountered 1.20m and 1.50m (May changes on Time in the BH No 01 and BH No 02 respectively during the Site Exploration. But the Water table considered at the Ground Level for the foundation design.

8. Assessment of Safe Bearing Capacity (SBC):

Based on the field test (SPT) conducted at the site as per IS 2131:1981 (Reaff-2016), the bearing capacity has been assessed as per the IS 6403:1981. The SBC of soil is evaluated using the equation given below,

$$Q_d = Q\,(N_q-1).S_q.d_q.i_q+0.5*B.\gamma.N_\gamma.S_\gamma.d_\gamma.i_\gamma.W'$$ *(for cohesion less soil) ---- (1)*

$$Q_d = C.N_c.S_c.d_c.I_c$$ *(for cohesive soil) ---- (2)*

as given in the clause 5.2.2.1 and 5.3.1 of IS 6403:1981 (Reaff-2016)

Table – 1: **Safe Bearing Capacity of Soil for Raft Foundation 5m x 5m**

BH No.	Breadth (m)	Depth (m)	Allowable Bearing Pressure in kPa	Total Settlement in mm
1	5	1.5	70	60
	5	2	70	55
	5	2.5	70	50
2	5	1.5	90	65
	5	2	90	65
	5	2.5	90	65

9. Assessment of Pile Load carrying Capacity:

The ultimate load capacity (Q_u) of piles, in kN, in Granular soils is given by the following formula:

$$Q_u = A_p\left(\frac{1}{2}\,D\,\gamma\,N_\gamma + P_D\,N_q\right) + \sum_{i=1}^{n} K_i\,P_{Di}\,\tan\delta_i\,A_{si}$$

For Cohesive Soil

$$Q_u = A_p\,N_c\,C_p + \sum_{i=1}^{n} \propto_i C_i A_{si}$$

Where,

A_p — *Cross-Sectional Area of Pile Tip, in m^2*

D — *Diameter of Pile Shaft, in m*

γ — *Effective Unit Weight of the Soil at Pile Tip, in kN/m^3*

N_γ N_c & N_q — *Bearing Capacity Factors Depending Upon and the Angle of Internal Friction, at Pile Tip*

P_D — *Effective Overburden Pressure at Pile Tip, in kN/m^2*

K_i — *Coefficient of Earth Pressure Applicable for the i^{th} layer*

P_{Di} — *Effective Overburden Pressure for the i^{th} layer, in kN/m^2*

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9.
- δ_i — *Angle of Wall Friction Between Pile And Soil for the i^{th} layer*
- A_{si} — *Surface Area of Pile Shaft in the i^{th} layer, in m^2*
- C_i — *Average Cohesion at Pile Shaft for the i^{th} layer, (kN/m^2)*
- C_p — *Average Cohesion at Pile Tip, (kN/m^2)*
- α_i — *Adhesion Factor for the i^{th} layer*

Table No: 2 Load Carrying Capacity for Pile Foundation

BH No	Depth	Pile Diameter (D) in m	Safe Axial Capacity in kN	Safe Uplift Capacity in kN	Safe Lateral Capacity for Free Headed Pile in kN	Safe Lateral Capacity for Fixed Headed Pile in kN
1	23+3*D	0.45	899	565*	30	78
		0.50	1040	628*	35	92
		0.60	1347	753*	48	123
		0.70	1687	879*	61	158

**- Self Weight of Pile is not included in Uplift Capacity*

Note: The behavior of the pile is not only depends upon the soil parameters (theoretical load carrying capacity estimates) but also on the execution skill and care, it is mandatory to conduct prototype pile load tests as per the guidelines laid down in is:2911-part-iv to confirm the theoretical estimates, before proceeding with the execution work

10. Recommendations:

Type of Foundation: Type of Foundation: **Raft Foundation or Pile Foundation** may be provided for all RCC Framed structure.

The recommendations given in this report have been evaluated on the basis of design parameters which have been judiciously adopted by giving due consideration to the results of field and laboratory investigations, as well as on the basis of design and executions experience in the field of the signing authority.

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11. Conclusion:

This geotechnical investigation has been carried out on the specified location as representing the entire site. If there is any change in sub-soil conditions and properties at places, between or beyond the test locations this office may be contacted for further actions.

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CHENNAI
600 097

R. SHARVESH, M.E.
(Geotechnical Engineer)

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

Table – 3: **ABSTRACT REPORT**	
Site Location	**Temple Colony,** Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040.
Geotechnical Investigation conducted for	**M/S INDIA BUILDERS** AA36 - 3rd Main Road, 3rd Street Anna Nagar Chennai – 40
Recommended Type of Foundation	**Raft Foundation or Pile Foundation**
Allowable Bearing Capacity	**70 kPa** at 2.0m from the EGL for Raft Foundation Recommended diameter of pile - **0.45m** (Refer Table 2 for Load Carrying Capacity of Piles) for Pile Foundation.

For
Minerva Civil Testing Lab Private Ltd

R. Sharvesh.

MINERVA CIVIL TESTING LAB PRIVATE LIMITED ★ CHENNAI 600 097

R. SHARVESH, M.E.
Geotechnical Engineer

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

Annexure

*(for reference only)

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Table – 4: ***Correlation between the 'N'-value and consistency nature of Fine-grained soils***

Sl. No.	'N' - Value	Unconfined Compression Strength (Kg/cm^2)	Consistency
1.	**2 – 5**	0.25 – 0.5	***Very Soft***
2.	**5 – 9**	0.5 – 1.0	***Medium***
3.	**9 – 17**	1.0 – 2.0	***Stiff***
4.	**17 – 33**	2.0 – 4.0	***Very Stiff***
5.	**> 33**	> 4.0	***Hard***

Table – 5: ***Correlation between the 'N'- value and Relative density of Coarse-grained soils***

Sl. No.	'N' - Value	Relative Density (%)	Description
1.	**< 4**	<15	***Very Loose***
2.	**4 -10**	15 - 60	***Loose***
3.	**10 - 30**	60 - 75	***Medium***
4.	**30 - 50**	75 - 90	***Dense***
5.	**> 50**	> 90	***Very Dense***

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Bore Log

&

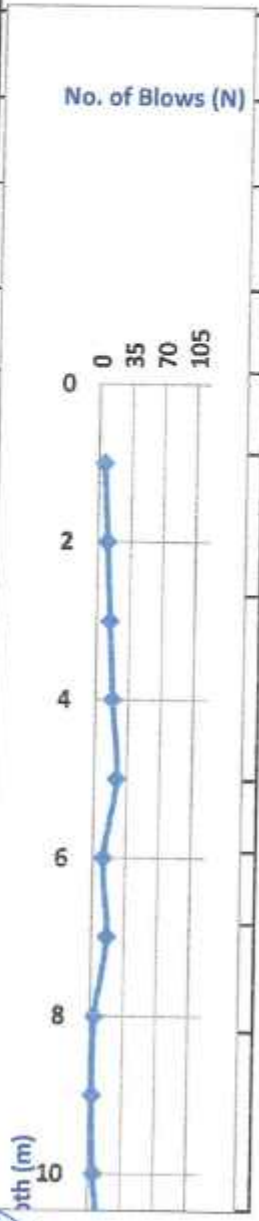
Summary of Laboratory Results

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BORE LOG 1

Project	Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040		
Drilling method:	Rotary drilling	**Dia of bore:** 150 mm	**GWT: - 1.20m**
Date of Commencement: 06/12/2022		**Date of Completion:** 08/12/2022	

Strata Depth (m)	Soil Type	Soil Profile	Standard Penetration Test Result					Description of Soil stratum	Graphical Representation of Penetration Resistance
			Depth (m)	15cm	15cm	15cm	*N value		
1.0-3.0	CH		1	2	2	4	6	Inorganic soil, Highly Compressible Clay	
			2	3	5	5	10		
3.0-6.0	SP-SM		3	5	6	8	14	Inorganic Soil, Non Plastic Poorly Graded and Silty Sand	
			4	8	8	10	18		
			5	10	10	14	24		
6.0-7.0	SP		6	5	7	4	11	Inorganic Soil, Non Plastic Poorly Graded Sand	
7.0-8.0	SP-SM		7	5	7	9	16	Inorganic Soil, Non Plastic Poorly Graded and Silty Sand	
8.0-10.0	SC		8	2	2	2	4	Inorganic Soil, Low Compressible Clayey Sand	
			9	2	1	2	3		
10.0-11.5	SM		10	2	2	3	5	Inorganic Soil, Non Plastic Silty Sand	
11.5-13.0	SC		11.5	7	8	8	16	Inorganic Soil, Intermediate Compressible Clayey Sand	

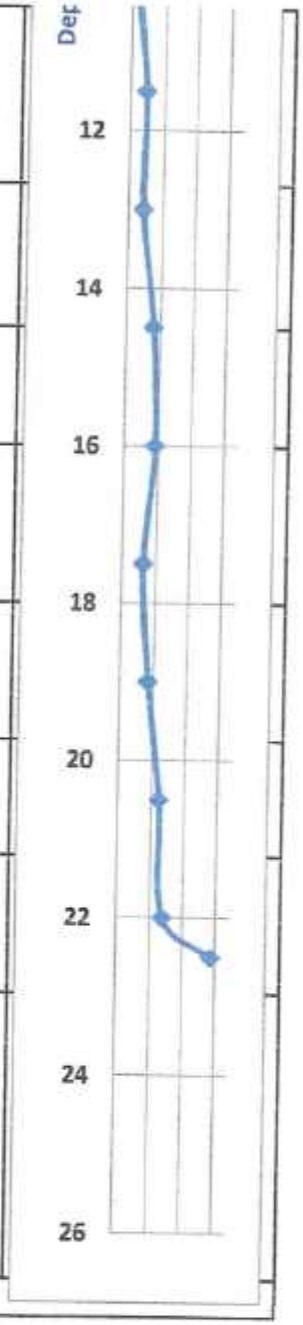


Dr. SIVAPRIYA S.V., B.E.,M.E., PH
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

R. Thanjavur.

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CHENNAI
600 097

13.0-16.0	SC		13.00	8	7	8	15	Inorganic Soil, Intermediate Compressible Clayey Sand
			14.50	8	14	14	28	Inorganic Soil, Low Compressible Clayey Sand
16.0-17.5	SM		16	9	15	17	32	Inorganic Soil, Non Plastic Silty Sand
17.5-19.0	CI		17.50	7	9	13	22	Inorganic soil, Intermediate Compressible Clay
19.0-20.5	SC		19.00	10	13	16	29	Inorganic Soil, Low Compressible Clayey Sand
20.5-22.0	SM		20.5	10	18	25	43	Inorganic Soil, Non Plastic Silty Sand
22.0-22.5	SC		22.00	12	20	28	48	Inorganic Soil, Low Compressible Clayey Sand
22.5-24.5	CWR		22.50	CR=92.0: RQD=90.0, Brownish Grey 1 Large Piece & 3 Small Pieces			>100	Inorganic Soil, Completely Weathered Rock



Borehole - 1 Terminated at 24.5 m

*N - Recorded N Value

R. Thanvel.

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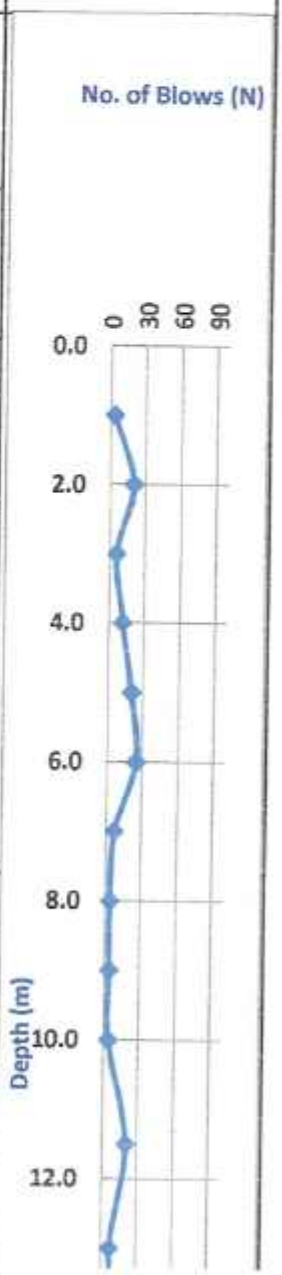
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BORE LOG 2

Project	Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040		
Drilling method:	Rotary drilling	**Dia of bore:** 150 mm	**GWT: - 1.50m**
Date of Commencement: 09/12/2022		**Date of Completion:** 14/12/2022	

Strata Depth (m)	Soil Type	Soil Profile	Standard Penetration Test Result					Description of Soil stratum
			Depth (m)	15cm	15cm	15cm	*N value	
1.0-3.0	CH		1.0	1	1	2	3	Inorganic Soil, Non Plastic Silty Sand
			2.0	4	8	12	20	
3.0-6.0	SP-SM		3.0	3	3	3	6	Inorganic Soil, Intermediate Compressible Clay
			4.0	4	6	6	12	Inorganic Soil, Non Plastic Silty Sand
			5.0	4	9	11	20	
6.0-7.0	SP		6.0	11	13	12	25	Inorganic Soil, Non Plastic Poorly Graded Sand
7.0-8.0	SP-SM		7.0	5	3	4	7	Inorganic Soil, Intermediate Compressible Clay
8.0-10.0	SC		8.0	1	2	2	4	Inorganic Soil, Low Compressible Clay
			9.0	2	2	2	4	
10.0-11.5	SM		10.0	2	2	2	4	Inorganic Soil, Non Plastic Silty Sand
11.5-13.0	SC		11.5	5	8	12	20	Inorganic Soil, Intermedate Compressible Clayey Sand

Graphical Representation of Penetration Resistance

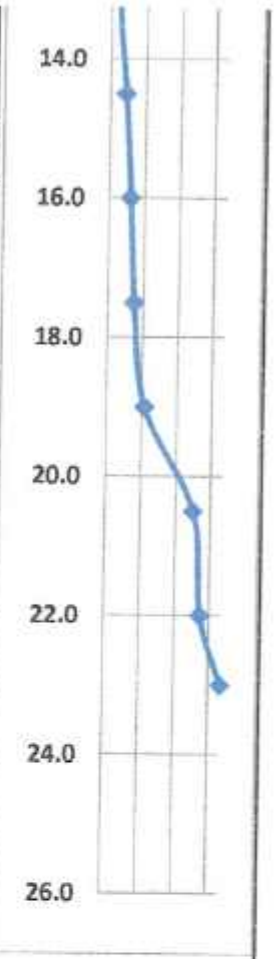


Dr. SIVAPRIYA S.V., B.E.,M.E., PH.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

R. Thanvey

MINERVA CIVIL TESTING LAB PRIVATE LIMITED
CHENNAI
600 097

13-14.5	SM		13.0	5	3	4	7	Inorganic Soil, Non Plastic Silty Sand
			14.5	5	4	9	13	
14.5-19	CH		16.0	6	8	10	18	Inorganic Soil, High Compressible Clay
			17.5	8	8	14	22	
19-23	SC		19.0	12	13	19	32	Inorganic Soil, High Compressible Clayey Sand
			20.5	24	25	50	75	
			22.0	27	32	50	82	
23.0-25.0	CWR		23.0	CR=28.0: RQD=0.0, Brownish Grey - 1 Large Piece & 3 Small Pieces			>100	Inorganic Soil, Completely Weathered Rock



Borehole - 2 Terminated at 25.00 m

*N - Recorded N Value

R. Thaniyel

MINERVA CIVIL TESTING LAB PRIVATE LIMITED
CHENNAI
600 097

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

SUMMARY OF LABORATORY TEST RESULTS

Project: Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040

Bore Hole No.	Depth (m)	Unified Soil Classification	Strata Descriptions	Grain size analysis -in %				Atterberg Limits (%)			Swell Index (%)	Natural Moisture Content (%)
				Coarse Sand	Medium Sand	Fine Sand	Silt & Clay	LL	PL	PI		
1	1.0-3.0	CH	Inorganic soil, Highly Compressible Clay	1	1	13	85	65	20	45	32	27.33
				0	1	5	90	62	24	38	30	28.09
	3.0-6.0	SP-SM	Inorganic Soil, Non Plastic Poorly Graded and Silty Sand	8	14	69	9	*NP			12	16.07
				11	16	66	7	*NP			14	12.06
				13	17	64	6	*NP			13	15.75
	6.0-7.0	SP	Inorganic Soil, Non Plastic Poorly Graded Sand	17	39	43	1	*NP			15	17.49
	7.0-8.0	SP-SM	Inorganic Soil, Non Plastic Poorly Graded and Silty Sand	14	24	55	6	*NP			16	15.56
	8.0-10.0	SC	Inorganic Soil, Low Compressible Clayey Sand	0	1	62	36	30	13	17	23	31.68
				2	1	60	36	29	14	15	24	29.22
	10.0-11.5	SM	Inorganic Soil, Non Plastic Silty Sand	3	3	64	28	*NP			20	25.69
	11.5-13.0	SC	Inorganic Soil, Intermediate Compressible Clayey Sand	3	3	58	36	36	15	21	24	17.78

R. Thaiyal.

MINERVA CIVIL TESTING LAB PRIVATE LIMITED CHENNAI 600 097

DR. S.V. APRIYA S.V., B.E., M.E., Ph.D.
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO. GTE/2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

SUMMARY OF LABORATORY TEST RESULTS

Project	Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040

Bore Hole No.	Depth (m)	Unified Soil Classification	Strata Descriptions	Grain size analysis/CR/RQD - in %				Atterberg Limits (%)			Swell Index (%)	Natural Moisture Content (%)
				Coarse Sand	Medium Sand	Fine Sand	Silt & Clay	LL	PL	PI		
1	13.0-16.0	SC	Inorganic Soil, Intermediate Compressible Clayey Sand	2	2	58	38	36	14	22	26	19.01
			Inorganic Soil, Low Compressible Clayey Sand	2	3	60	34	29	12	17	25	22.62
	16.0-17.5	SM	Inorganic Soil, Non Plastic Silty Sand	0	0	88	12	*NP			26	17.11
	17.5-19.0	CI	Inorganic soil, Intermediate Compressible Clay	2	5	42	51	46	15	31	29	22.32
	19.0-20.5	SC	Inorganic Soil, Low Compressible Clayey Sand	3	7	55	31	32	12	20	25	13.39
	20.5-22.0	SM	Inorganic Soil, Non Plastic Silty Sand	35	9	23	15	*NP			22	14.37
	22.0-22.5	SC	Inorganic Soil, Low Compressible Clayey Sand	8	10	49	32	32	13	19	26	12.98
	22.5-24.5	CWR	Inorganic Soil, Completely Weathered Rock	CR=92.0: RQD=90.0, Brownish Grey - 1 Large Piece & 3 Small Pieces				-				-

*NP - Non Plastic

R. Thanvy.

MINERVA CIVIL TESTING LAB PRIVATE LIMITED * CHENNAI 600 097

Dr. SIVAPRIYA S.V., B.E.,M.E.,Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE /2020/01/0
NEW PERUNGALATHUR
CHENNAI - 600 063

SUMMARY OF LABORATORY TEST RESULTS

Project: Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040

Bore Hole No.	Depth (m)	Unified Soil Classification	Strata Descriptions	Grain size analysis/CR/RQD -in %				Atterberg Limits (%)			Swell Index (%)	Natural Moisture Content (%)
				Coarse Sand	Medium Sand	Fine Sand	Silt & Clay	LL	PL	PI		
2	1.0-3.0	SM	Inorganic Soil, Non Plastic Silty Sand	30	22	21	20	*NP			19	15.20
				31	32	21	14	*NP			18	18.77
	3.0-4.0	CI	Inorganic Soil, Intermediate Compressible Clay	2	2	13	83	44	23	21	26	30.75
	4.0-6.0	SM	Inorganic Soil, Non Plastic Silty Sand	15	17	62	6	*NP			21	14.80
				13	17	60	9	*NP			21	14.56
	6.0-7.0	SP	Inorganic Soil, Non Plastic Poorly Graded Sand	11	8	21	5	*NP			22	12.27
	7.0-8.0	CI	Inorganic Soil, Intermediate Compressible Clay	0	0	8	91	47	22	25	27	51.94
	8.0-10.0	CL	Inorganic Soil, Low Compressible Clay	0	1	39	59	25	14	11	25	30.60
				2	2	26	70	32	14	18	26	36.41
	10.0-11.5	SM	Inorganic Soil, Non Plastic Silty Sand	1	3	54	42	*NP			20	46.34
	11.5-13	SC	Inorgamic Soil, Intermedate Compressible Clayey Sand	1	4	60	34	39	12	27	23	15.02

R. Thatiyej.

Dr. SIVAPRIYA S.V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE/2020/01/041
NEW PERUNGALATHUR
CHENNAI - 600 063

MINERVA CIVIL TESTING LAB PRIVATE LIMITED
CHENNAI 600 097

SUMMARY OF LABORATORY TEST RESULTS

Project	Proposed Construction of Residential Building Temple Colony, Stilt + 8 Floors at Block no. 371, Temple Colony, 15th Main road, Anna Nagar, Chennai-600040

Bore Hole No.	Depth (m)	Unified Soil Classification	Strata Descriptions	Grain size analysis - in %				Atterberg Limits (%)			Swell Index (%)	Natural Moisture Content (%)
				Coarse Sand	Medium Sand	Fine Sand	Silt & Clay	LL	PL	PI		
2	13-14.5	SM	Inorganic Soil, Non Plastic Silty Sand	10	8	61	21	*NP			25	18.47
				2	3	59	33	*NP			24	20.56
	14.5-19	CH	Inorganic Soil, High Compressible Clay	1	1	5	94	80	24	56	52	35.45
				1	1	5	94	80	29	51	53	35.14
	19-23	SC	Inorganic Soil, High Compressible Clayey Sand	7	9	37	45	60	22	38	32	23.25
				8	11	38	43	40	14	26	35	12.67
				16	18	43	23	37	14	23	34	11.88
	23.0-25.0	CWR	Inorganic Soil, Completely Weathered Rock	CR=28.0: RQD=0.0, Brownish Grey - 1 Large Piece & 3 Small Pieces				-			-	-

*NP - Non Plastic

R. Thanvel

MINERVA CIVIL TESTING LAB PRIVATE LIMITED ★ CHENNAI 600 097

Dr. SIVAPRIYA V., B.E.,M.E., Ph.D
REGISTERED GEO-TECHNICAL ENGINEER
REG.NO: GTE/
NEW PERUNGALATHUR
CHENNAI - 600 063



our services doesn't just end there

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Property Development & Approvals

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

NRI & Investment Services

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Compliance & Special Services

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



empowering your real estate decisions with smart tools

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

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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

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

hello@verified.realestate
+91 9996 12 9996
www.verified.realestate