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DEPARTMENT OF CIVIL ENGINEERING
Soil Investigation Report

Department of Civil Engineering
CBE 641 021
Karpagam Academy of Higher Education

Date: 23.06.2023

From

Head of the Department
Department of Civil Engineering
Karpagam Academy of Higher Education,
Coimbatore-21

To
Aadhavan Constructions
Near Annai Apartment,
Gayathri Nagar West,
Erode Road, Karur – 2.

Respected Sir,

Sub: Dept. of Civil Engg. - Karpagam Academy of Higher Education –Proposed Construction Residential Building – Soil Test – Investigation report – Reg.

Ref. Ltr. Dt: 19-06-2023.

The Geotechnical investigation report for proposed Construction of Residential Building in SF.No.415/11, Kothai nagar, Plat No. 66,67,70,71, in Karur District enclosed herewith in duplicate. The receipt of the report may please be acknowledged.

Yours truly

23.6.23

(HoD/CIVIL)
Dr. N. BALASUNDARAM, ME., Ph.D
PROFESSOR HOD
DEPARTMENT OF CIVIL ENGINEERING
KARPAGAM ACADEMY OF HIGHER EDUCATION
Pollachi Main Road, Eachanari Post,
Coimbatore 641 021

Encl:

Soil Investigation report.

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SOIL INVESTIGATION REPORT

Department of Civil Engineering
CBE 641 021
Karpagam Academy of Higher Education

Client : **Aadhavan Constructions, Karur.**

Place : **Kothai Nagar, SF. No 415/11, Plot No. 66,67,70,71**

Date : 23.06.2023

DEPARTMENT OF CIVIL ENGINEERING
KARPAGAM ACADEMY OF HIGHER EDUCATION
Coimbatore - 641021

SOIL INVESTIGATION REPORT

1. GENERAL

This report presents the results of the Geotechnical investigation report for proposed Construction of Residential building in SF.No.415/11, Kothai Nagar, Plot No.66,67,70,71 in Karur District. A team of experts from the Department of Civil Engineering, Karpagam Academy of Higher Education, visited the site on 20.06.2023 and conducted the detailed site investigation and exploration.

2. FIELD INVESTIGATION

After examining the test pit, it was decided to conduct standard Penetration Test (SPT) to assess the bearing capacity in the location. The ultimate bearing capacity of footing on granular soils can be determined with the help of standard penetration resistance value, 'N'. These tests were carried out manually by dropping the hammer of 63.5kg from 750mm height and observed the number of blows for the penetration of 15cm, 30cm and 45cm, the samples collected through the SPT sampler were packed in polythene bags to retain the natural moisture content. The allowable bearing pressure (q_{all} or q_{safe}) of the foundation system is generally determined based on the shear failure and settlement criteria. The SPT N Value is observed.

2.1 Stratification

The trail pits were advanced to a depth of 2m at three locations at the site.. Soil samples were collected from these pits for laboratory testing. The location of the trail pits and the site layout are illustrated in **Annexure-A.**

Location 1,2 &3

It can be seen that almost typical soil stratum in three pit for a depth of about 1.2-1.4 m of clay soil, followed by 0.5-0.6m with soft disintegrated rock and 1.4-1.5m of random rubble masonry of existing structure were observed in pit 1 only.

3. BEARING CAPACITY ANALYSIS

The allowable bearing capacity is worked out based on the corrected N value, taking into consideration shear failure criterion and settlement criterion.

3.1 Bearing pressure corresponding to shear failure

The net allowable bearing capacity Q_{ns}(kN/m^2), can be obtained by applying a factor of safety of 3.0.

Pit 1

For Square footing,

$$Qns = 0.11.N^2B.R_{w1} + 0.33\,(100 + N^2).D_f.R_{w2}$$

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Were,

N= SPT Value

D_f = Depth of footing

B=Minimum size of the foundation (taken as 2.0m)

R_{w1}&R_{w2}= Water table correction factor

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3.2 Bearing pressure corresponding to Settlement Criteria

The net allowable bearing capacity Q_{ns} (kN/m^2), corresponding to a settlement of 25mm is given by,

Pit 1

$$Q = 1.4\,(N-3).\left(\frac{B+0.3}{2\times B}\right)^2 S.R_d.Rw1$$

Were,

N= SPT Value

B= Width of footing (m)

S= Settlement (mm)

R_d = Depth Correction factor, $\left(1+\frac{D_f}{B}\right) \le 2$

Representative soil samples collected from the test pit at the test level were analyzed in the geotechnical engineering laboratory for its particle size distribution, plasticity characteristics and soil classification.

Table 1:Test Results

Description	Pit 1	Pit 2	Pit 3
Specific Gravity	2.72	2.56	2.67
Gravel	14%	16%	12%
Sand	78%	77%	83%
Silt & Clay	8%	7%	5%
Plastic/Non-Plastic	Non-Plastic		
Soil Classification	SP		
Angle of internal friction	27		
SBC	250kN/m^2		

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4. CONCLUSIONS AND RECOMMENDATIONS

Based on analysis of subsoil conditions, field tests, and computation of bearing capacity as above, following conclusion are drawn and recommendation made:

- Analysis of the subsoil data and calculation of safe bearing capacity has been done based on the obtained soil profile by SPT test.
- The scope of the soil investigation is to locate the depth where refusal stratum is encountered (N- Value>50)
- Refusal stratum found at a depth of 2m from the existing ground level in Pit.
- The soil is coarse and cohesive in nature.
- The depth of foundation shall be taken as 2m from the ground level so as to rest the foundation.
- The allowable bearing capacity shall be taken as 250kN/m2 (or) 25ton/m^2 in the foundation design.
- Any deviations if observed during execution other than that available in this report may be brought to the notice for further suggestions.

Technician

Lab Technician
Department of Civil Engineering
Faculty of Engineering
Karpagam Academy of Higher Education
Coimbatore - 641 021, Tamil Nadu, India.

Staff In-Charge

Assistant Professor
Department of Civil Engineering
Faculty of Engineering
Karpagam Academy of Higher Education
Coimbatore - 641 021, Tamil Nadu, India.

Geotechnical Engineer

Dr.M. NATARAJAN, M.Sc, Ph.D,
Geo Technical Engineer
Reg.No.LPA/GTE/19/06/005
No.51 Sivaji Colony (East Extn)
Velandipalayam(PO),
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5. REFERENCES

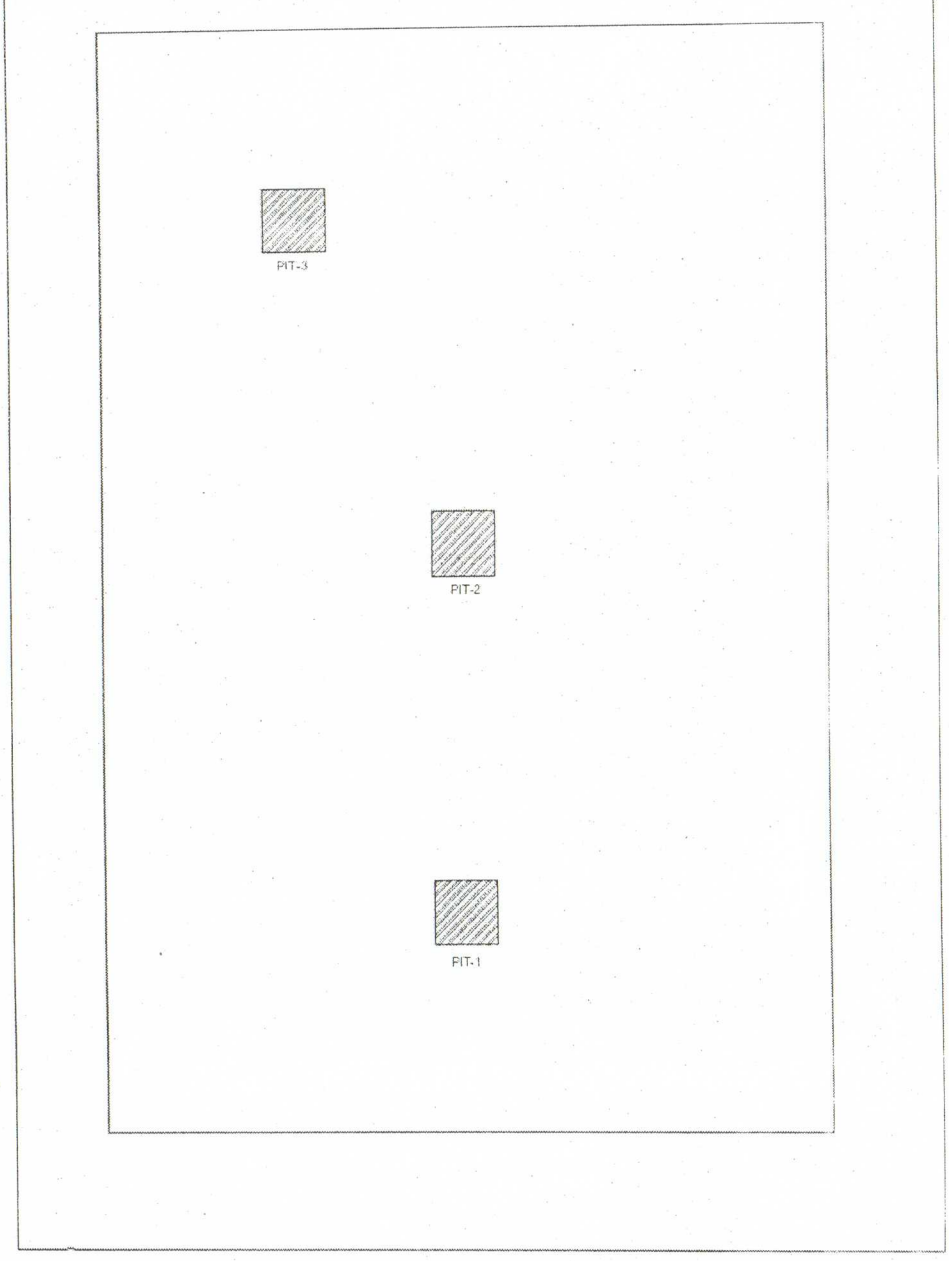
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ANNEXURE-A



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Phone No: 04422901966









Department of Civil Engineering
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Karpagam Academy of Higher Education

Consultancy work - KAHE of Dept. of Civil Engg. Conducted soil Investigation on 20.06.2023 @ karur kothai nagar

COIMBATORE LOCAL PLANNING AUTHORITY

Corporation Complex, Sivanandha Colony, Coimbatore-641012
Phone : 0422-2492700, E-mail: clpams@gmail.com

PROFESSIONAL REGISTRATION CERTIFICATE

This is to Certify that the Thiru. **N.BALASUNDARAM** has enrolled as Construction **Engineer (CE)** with Coimbatore Local Planning Authority (CLPA) who has the qualification of **Ph.D (Civil Engineering)** and experience in the relevant field for **30 Years**.

He has been given the Registration No. **Coimbatore LPA/CE/19/06/052** on **24.06.2019**. 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 **23.06.2024**.



24 JUN 2019

Member Secretary, (I/C).,
Coimbatore Local Planning Authority
Coimbatore - 641012.

COIMBATORE LOCAL PLANNING AUTHORITY

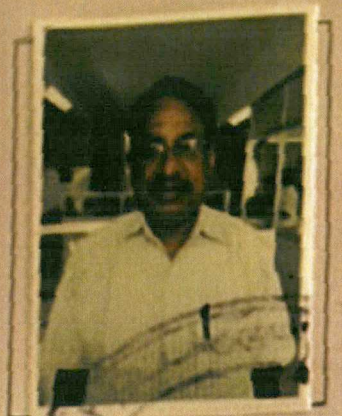
Corporation Complex, Sivanandha Colony, Coimbatore-641012
Phone : 0422-2492700, E-mail: clpams@gmail.com

PROFESSIONAL REGISTRATION CERTIFICATE

This is to Certify that the Thiru. **M.NATARAJAN** has enrolled as **Geo-Technical Engineer (GTE)** with Coimbatore Local Planning Authority (CLPA) who has the qualification of **M.Sc(Geology)., Ph.D.,** and experience in the relevant field for **20 Years**.

He has been given the Registration No. **Coimbatore LPA/GTE/19/06/005** on **24.06.2019**. 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 **23.06.2024**.



24 JUN 2019

Member Secretary, (I/C).,
Coimbatore Local Planning Authority
Coimbatore - 641012.



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



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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

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

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