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# GEOGLOBE FOUNDATIONS

**An ISO 9001:2015 Certified Firm**

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**Member of Indian Geotechnical Society**

## Geotechnical investigation report

| | | |
|---|---|---|
| Report No | : | GGF/23-24/110 |
| Client Name | : | M/s. ASN Housing |
| Client Address | : | No 140, Radha Nagar Main Road, Chromepet, Chennai – 600 044. |
| Site Address | : | Plot No.2, Ward-F, Block-3,T.S.No.41, Survey No.6/3b, Santhanakrishna Street, Hastinapuram Village, Nehru Nagar, Chromepet ,Chennai – 600 044. |
| Total Land Area | : | 9544.12 sq. ft. |
| Type of Structure | : | Residential Building |
| Type of Construction | : | New Construction |
| Number of Floors | : | Stilt+5 |

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Ref. No: GGF/23-24/110 04.09.2023

**To**

**M/s. ASN Housing ,**

No 140, Radha Nagar Main Road,

Chromepet, Chennai – 600 044.

**Name of Work:** GEOTECHNICAL INVESTIGATION WORK FOR THE NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI.

**Sub** **:** Submission of Geotechnical Investigation work Report

Dear Sir,

We are pleased to hereby transmit an original Hard Copy and Soft Copy sent to your concern address, our final Geotechnical Investigation Report for the above mentioned project. If you have any questions, please contact this office.

It has been a pleasure being of service to you on this project. Assuring you of our continued co-operation, we remain.

**For Geoglobe Foundations,**


Er.S.ANAND, M.E., M.I.G.S

(Geotechnical Engineer)

GEOGLOBE FOUNDATIONS

No. 46/38, Chelliamman Kovil Street,

Gandhi Nagar, Keelkatalai,

Chennai - 600 117. / Ph: 8144308899

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# 1. INTRODUCTION

## 1.1. PURPOSE AND SCOPE

Geo-technical site investigation work for. "NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI" The primary purpose of our investigation is to obtain data to develop foundation design recommendations for the above work. At, first instance, four boreholes were bored at site. Client's representatives choose a no of location and selected the locations of borings. To accomplish these purposes, the following tasks were performed:

1. Detailed soil borings were done up to stratum to explore the sub surface stratigraphy and obtain soil samples for testing.
2. Field and laboratory tests were conducted to evaluate the index and engineering properties of the soils
3. Engineering analysis were performed to develop foundation design information for proposed structure

## 1.2. SITE ADDRESS:

The site was located at Plot No.2, Ward-F, Block-3,T.S.No.41, Survey No.6/3b, Santhanakrishna Street, Hastinapuram Village, Nehru Nagar, Chromepet ,Chennai – 600 044.

## 1.3. THE STRUCTURE

As per the client information the proposed construction is Residential Building for the above mentioned site it comes with STILT+5 Floors.

# 2. FIELD INVESTIGATIONS

## 2.1. ROTARY BORING

Rotary drilling technique was adapted using Calyx machine in this field. In this method, boring is effected by the cutting action of a rotating bit that is kept in firm contact with the bottom of the hole. The bit is attached to the lower end of a hollow drill rod that is rotated by a suitable chuck. Drilling mud (usually Bentonite) is continuously forced down the hollow drill rods. The mud returning upwards though the annular space between the drill rods and the side of the hold bring the cutting to the surface.

## 2.2. STANDARD PENETRATION TEST

It is now most commonly used in site test. The test measures the penetration resistance of the split spoon sampler, when it is driven into the soil, at the bottom of a borehole in a standard manner. The N-value, which is the number of blow required to achieve 300mm penetration of the soil, indicates the relative density of sand or gravel, the consistency of other soil such as silts or clays and the strength of weak rocks.

The test is described in IS 2131 - 1981. The split spoon sampler is attached to stiff drill rod and lowered to the bottom of the bore hold. A standard blow consists of dropping a mass of 63.5kg free fall through 750 mm on to an anvil at the top of the rods and ensuing that this amount of dynamic energy is transferred to the sampler as much as possible.

The number of blows required to achieve each 150mm penetration is recorded for a fall penetration of 450mm. The initial 150mm penetration is Referred to as seating drive and the blows required for this penetration are not considered as this zone is in disturbed soil. The next 300mm of penetration is Referred to as the test drive and the number of blows required to achieve this fully is termed the penetration resistance or N-value.

The total number of blows (N) required, to advance the spoon into the bore, for another two successive 15cm (a total of 30 cm) is recorded as a measure of the soil relative density or consistency as given in Table.

**CO – RELATION FOR SATURATED SAND/NON – PLASTIC SILT**

| Relative Density | Penetration Value (Blows/Ft) |
|---|---|
| **Very loose** | 0 to 4 Blows |
| **Loose** | 5 to 10 Blows |
| **Medium** | 11 to 30 Blows |
| **Dense** | 31 To 50 Blows |
| **Very Dense** | > 50 Blows |

**CO – RELATION FOR SATURATED CLAY/PLASTIC SILT**

| Relative Density | Penetration Value (Blows/Ft) |
|---|---|
| **Very Soft** | 0 to 2 Blows |
| **Soft** | 3 to 4 Blows |
| **Medium Stiff** | 5 to 8 Blows |
| **Stiff** | 9 To 16 Blows |
| **Very Stiff** | 17 To 32 Blows |
| **Hard** | > 32 Blows |

Rock samples were extracted by Rotary drilling technique using double tube core barrel of 76mm diameter, filter with a diamond bit. The extracted cores for every run, not exceeding 1.0 meter were arranged in the core boxes and the T.C.R as well as R.Q.D values were measured. The appropriate estimation of the properties of the encountered rock strata can be obtained by Referring to the borehole logs and the following description.

| R.Q.D % | ROCK QUALITY |
|---|---|
| **0 – 100** | Excellent |
| **75 – 90** | Good |
| **50 – 75** | Fair |
| **25 – 50** | Poor |
| **0 - 25** | Very Poor |

| RECOVERY % | DESCRIPTION OF ROCK |
|---|---|
| **0 – 20** | Rock is treated as soil |
| **20 – 35 with SPT > 50 blows / 30 cm** | Soft or disintegrated rock |
| **35 – 50** | Intermediate rock |
| **50 – 85** | Medium rock |
| **> 85** | Sound rock |

The fieldwork was carried out under the close supervision of our engineer in accordance with Indian Standard mentioned earlier.

### 2.3. SAMPLING

Soil samples were collected through Split spoon and rock core sample were collected through single tube core barrel.

## 3. LABORATARY TESTS

The operations to be performed in the laboratory depend upon the type of the nature of data required for the problem at hand. In case of cohesionless material, like sand, the laboratory tests are usually minimum and the design parameters are worked out from field test data such as form SPT- N value, Core resistance and plate load test data.

In the case of cohesive soils, the programme of laboratory testing can vary from carrying out simple tests such as unconfined tests to comprehensive study of soil behaviour using triaxial shear tests and consolidation tests.

Following laboratory tests are conducted.

**For Cohesionless soil**

a) Specific gravity
b) Sieve analysis
c) Natural moisture content

**For Cohesive soil**

a) Specific gravity
b) Natural moisture content
c) Atterberg's limits
d) Sieve Analysis

## 4. FOUNDATION ANALYSIS

### 4.1 Soil Profile

The profile of the area as observed in the bore hole is given in the chart. The Borehole is terminated at maximum depth of 5.50 m.

### 4.2 Safe Bearing Capacity

The bearing capacity of granular soil depends upon the unit weight and angle of internal friction of the soil. These two properties of granular soils are determined by standard penetration tests.

The allowable bearing pressure based on tolerable settlement has been established empirically by Terzaghi and Peck, 1948 and may be expressed by the equation.

Safe bearing capacity = $1.40(N''-3) \times ((B+0.3)/2B)^2 \times W' \times Rd \times s$

Where,

N" = Corrected N value

B = Width of Foundation = constant 1

W' = Water table correction = constant 0.5

Rd = Depth of Foundation = constant 2

s = Tolerable settlement = 25 mm

## 5. DESIGN CRITERIA

### 5.1 Design of Foundations

As per the clients information the proposed project is New Construction of Residential Building at Chrompet, Chennai.

The design of foundation depends upon the founding strata, loading intensity at the foundation level and configuration at loading points.

For the above conditions, open foundation is recommended for the proposed structure shown in the following recommendation.

### 5.2 Depth of Foundation

Minimum depth of foundations is governed by the following factors:

- Top loose zone.
- Adequate depth of soil above founding level, to ensure mobilization of full safe bearing capacity.
- Adequate depth of soil strata below founding level of requisite strength to mobilize the safe bearing capacity and at the same time restricts the total and differential settlements within the allowable limits.
- The type and depth of foundation shall be decided by the design engineer.

## 6. FOUNDATION RECOMMENDATIONS

- The engineering properties of soil and SPT N value are to be considered for the foundation recommendation
- The site for **CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI** the borehole investigation was conducted and SBC was determined.
- **Open Foundation**

| | |
|---|---|
| Maximum Borehole Depth | **5.50 m** |
| Type of Footing | **Isolated Footing** |
| Depth of Foundation | **2.50 m From the Ground Level** |
| Allowable Safe Bearing Capacity | **40.0 tonnes/$m^2$** |
| Minimum size of Footing | **1.50 m x 1.50 m** |

- We gave general recommendation only, depending upon the structure type and load condition the Design Engineer may choose an alternate foundation based on the safe bearing capacity given in soil test results.

## 7. PRECAUTIONS

Entire report should be studied before implementing the recommendations. Loose pockets of soil, if encountered shall be removed and backfilled with a levelling course of concrete shall be laid and New Construction of foundations with **IS CODE recommends** can be taken up subsequently.

## 8. LIMITATIONS

The soil investigations have been carried out at locations in the site chosen by the client so as to represent the entire site. The recommendations provided in this report are hence valid only for these test locations. However, if there is any change in sub soil conditions and properties at places between or beyond chosen test locations, GEOGLOBE FOUNDATIONS may be contacted for further advice.

With passage of time, the recommendations may vary due to manmade and natural environmental changes.

GEOGLOBE FOUNDATIONS 600 117 CHENNAI

**Er. S.ANAND., ME(GEOTECH)**
**GEOTECHNICAL ENGINEER**

## 9. REFERENCES


1. IS: 6403-1981
2. IS: 2911-(part1/sec-2 0-1979)
3. IS: 2131-1980
4. IS: 8009 (Part-1) 1976
5. IS: 2720 for all laboratory tests
6. Wayne CTEng(1992)Foundation design,13th reprint, Prentice - Hall of India Pvt.Ltd.,
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8. Tomlinson M.J. (1995) Foundation Design and Construction, 6th edition, Longman Group.

## ANNEXURE – I

1

## Bore Log

**Ref.:** GGF/23-24/110

**Name of Project: GEOTECHNICAL INVESTIGATION WORK FOR THE NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI.**

| | | | |
|---|---|---|---|
| **Soil Investigation done by:** | GEOGLOBE FOUNDATIONS, Chennai. | **Type of Drilling:** Rotary – Mud Circulation | **Date of Commencement** 30.08.2023 |
| | | | **Date of Completion** 30.08.2023 |
| **Bore hole No** | 01 | | **Ground Water Level** Not met |
| **Location** | Mentioned on Map | | |

| Depth below G.L.(R.L) | Soil Profile | Visual Description of Soil | Thickness of layer (m) | Depth at which test is conducted | STANDARD PENETRATION TEST DATA – N – Value- Depth of penetration 15cm | 30cm | 45cm | For 30cm | Relative density / Consistency | Graphical representation of penetration resistance 20 40 60 80 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.50 | | **RED SAND** | **0.50** | | | | | | | |
| 1.50 | | **REDISH GRAVELLY CLAY** | **1.00** | 1.50 | 5 | 6 | 6 | 12 | Medium | |
| 2.50 | | **GRAVELLY SAND** | **1.00** | | | | | | | |
| 4.00 | | **GRAVEL** | **1.50** | 3.00 | 20 | 28 | 32 | 60 | V dense | |
| | | | | 4.50 | 50/3 | - | - | >50 | Do | |
| 5.50 | | **SOFT DISINTEGRATED ROCK** | **1.50** | 5.50 | R* | - | - | >50 | Do | |

**R* - Rebound**

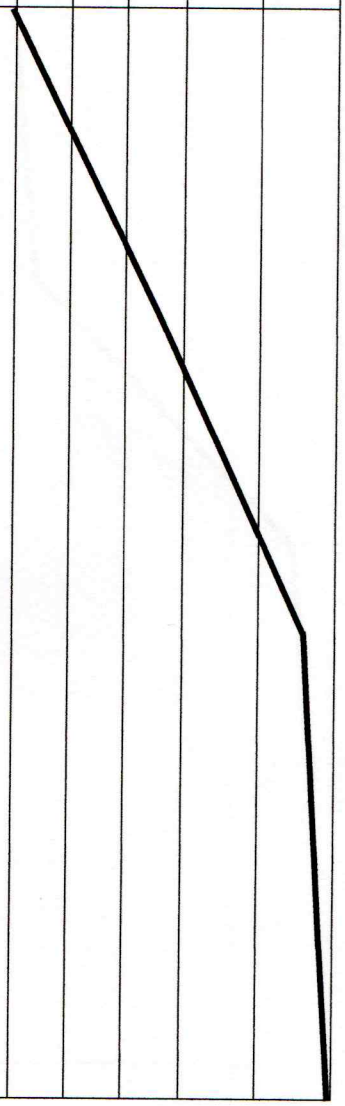
## Bore Log

**Ref.:** GGF/23-24/110

**Name of Project:** **GEOTECHNICAL INVESTIGATION WORK FOR THE NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI.**

| | | | |
|---|---|---|---|
| **Soil Investigation done by:** | GEOGLOBE FOUNDATIONS, Chennai. | **Type of Drilling:** Rotary – Mud Circulation | **Date of Commencement** 31.08.2023 |
| | | | **Date of Completion** 31.08.2023 |
| **Bore hole No** | 02 | | **Ground Water Level** Not met |
| **Location** | Mentioned on Map | | |

| Depth below G.L.(R.L) | Soil Profile | Visual Description of Soil | Thickness of layer (m) | Depth at which test is conducted | STANDARD PENETRATION TEST DATA – N – Value- Depth of penetration 15cm | 30cm | 45cm | For 30cm | Relative density / Consistency | Graphical representation of penetration resistance |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.50 | | **RED SAND** | **0.50** | | | | | | | |
| 1.00 | | **REDISH CLAYEY SAND** | **0.50** | 1.00 | 4 | 20 | 26 | 46 | Dense | |
| 2.00 | | **GRAVEL** | **1.00** | 2.00 | 50/2 | - | - | >50 | V dense | |
| 3.00 | | **GRAVELLY SAND** | **1.00** | 3.00 | 16 | 26 | 50/2 | >50 | Do | |
| 3.50 | | **SOFT DISINTEGRATED ROCK** | **0.50** | 3.50 | R* | - | - | >50 | Do | |




**R* - Rebound**

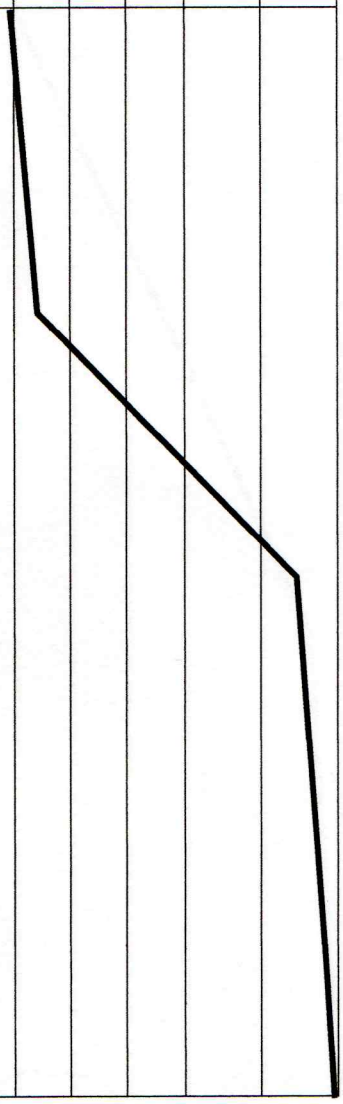
# Bore Log

**Ref.:** GGF/23-24/110

**Name of Project:** **GEOTECHNICAL INVESTIGATION WORK FOR THE NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI.**

| | | | |
|---|---|---|---|
| **Soil Investigation done by:** | GEOGLOBE FOUNDATIONS, Chennai. | **Type of Drilling:** Rotary – Mud Circulation | **Date of Commencement** 31.08.2023 |
| | | | **Date of Completion** 31.08.2023 |
| **Bore hole No** | 03 | | **Ground Water Level** Not met |
| **Location** | Mentioned on Map | | |

| Depth below G.L.(R.L) | Soil Profile | Visual Description of Soil | Thickness of layer (m) | Depth at which test is conducted | STANDARD PENETRATION TEST DATA – N – Value- Depth of penetration | | | | Relative density / Consistency | Graphical representation of penetration resistance |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 15cm | 30cm | 45cm | For 30cm | | |
| 0.50 | | **RED SAND** | **0.50** | | | | | | | |
| 1.50 | | **REDISH CLAYEY SAND** | **1.00** | 1.00 | 3 | 4 | 5 | 9 | Loose | |
| 3.00 | | **GRAVELLY SAND** | **1.50** | 2.00 | 25 | 50/2 | - | >50 | V dense | |
| | | | | 3.00 | 35 | 50/3 | - | >50 | Do | |
| 4.00 | | **SOFT DISINTEGRATED ROCK** | **1.00** | 4.00 | R* | - | - | >50 | Do | |




**R* - Rebound**

## Bore Log

**Ref.:** GGF/23-24/110

**Name of Project:** **GEOTECHNICAL INVESTIGATION WORK FOR THE NEW CONSTRUCTION OF RESIDENTIAL BUILDING AT CHROMPET, CHENNAI.**

| | | | |
|---|---|---|---|
| **Soil Investigation done by:** | GEOGLOBE FOUNDATIONS, Chennai. | **Type of Drilling:** Rotary – Mud Circulation | **Date of Commencement** 31.08.2023 |
| | | | **Date of Completion** 31.08.2023 |
| **Bore hole No** | 04 | | **Ground Water Level** Not met |
| **Location** | Mentioned on Map | | |

| Depth below G.L.(R.L) | Soil Profile | Visual Description of Soil | Thickness of layer (m) | Depth at which test is conducted | STANDARD PENETRATION TEST DATA – N – Value- Depth of penetration 15cm | 30cm | 45cm | For 30cm | Relative density / Consistency | Graphical representation of penetration resistance |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.50 | | **RED SAND** | **0.50** | | | | | | | |
| 1.00 | | **REDISH GRAVELLY SAND** | **0.50** | | | | | | | |
| 3.00 | | **GRAVEL** | **2.00** | 1.50 | 25 | 29 | 36 | 65 | V dense | |
| | | | | 3.00 | 50/3 | - | - | >50 | Do | |
| 3.50 | | **SOFT DISINTEGRATED ROCK** | **0.50** | 3.50 | R* | - | - | >50 | Do | |

20 40 60 80 100

**R* - Rebound**

GEOGLOBE FOUNDATIONS 600 117 CHENNAI

**Er. S.ANAND., M.E.(GEOTECH)**
**GEOTECHNICAL ENGINEER**

**Ref.:** GGF/23-24/110

## SOIL TEST RESULTS

| **Soil Investigation done by:** GEOGLOBE FOUNDATIONS, Chennai. | **BORE HOLE NO:** 01 | **LOCATION:** Mentioned on Map | **GROUND WATER LEVEL:** Not met | **WORK STARTED ON** | 30.08.2023 |
|---|---|---|---|---|---|
| | | | | **WORK COMPLETED ON** | 30.08.2023 |

| SOIL PROFILE AND DEPTH IN METRES | DEPTH OF SAMPLING | IS SOIL CLASSIFICATION | NATURAL MOISTURE CONTENT % | INDEX TEST | | | SIEVE ANALYSIS % | | | | | SPECIFIC GRAVITY | DEPTH (m) | OBSERVED N VALUE | CORRECTED N VALUE | **SAFE BEARING CAPACITY ($t/m^2$)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTICITY INDEX | GRAVEL | COARSE SAND | MEDIUM SAND | FINE SAND | CLAY & SILT | | | | | |
| | 0.00 | S | - | - | - | - | - | - | - | - | - | - | | | | |
| | 0.50 | GC | 7.9 | NP | NP | NP | 12 | 36 | 15 | 7 | 30 | 2.54 | | | | |
| | 1.50 | GP | 6.7 | NP | NP | NP | 34 | 48 | 16 | 2 | 0 | 2.52 | 1.50 | 12 | 12.0 | 9.0 |
| | 2.50 | GW | 7.5 | NP | NP | NP | 52 | 26 | 13 | 8 | 1 | 2.51 | 3.00 | 60 | 44.0 | 41.2 |
| | 4.00 | SDR (WS) | - | - | - | - | - | - | - | - | - | - | 4.50 | >50 | 50.0 | 47.2 |
| | 5.50 | | | | | | | | | | | | 5.50 | >50 | 50.0 | 47.2 |

*S - SAND, GC – GRAVELLY CLAYEY SAND, GP – POORLY GRADED GRAVEL WITH SAND, GW – WELL GRADED GRAVEL, SDR – SOFT DISINTEGRATED ROCK (WASHING SAMPLE), SBC is based on SPT Result.* **NP – Non Plastic, N/A – Not Applicable*

**Ref.:** GGF/23-24/110

## SOIL TEST RESULTS

| **Soil Investigation done by:** GEOGLOBE FOUNDATIONS, Chennai. | **BORE HOLE NO:** 02 | **LOCATION:** Mentioned on Map | **GROUND WATER LEVEL:** Not met | **WORK STARTED ON** | 31.08.2023 |
|---|---|---|---|---|---|
| | | | | **WORK COMPLETED ON** | 31.08.2023 |

| SOIL PROFILE AND DEPTH IN METRES | DEPTH OF SAMPLING | IS SOIL CLASSIFICATION | NATURAL MOISTURE CONTENT % | INDEX TEST | | | SIEVE ANALYSIS % | | | | | SPECIFIC GRAVITY | DEPTH (m) | OBSERVED N VALUE | CORRECTED N VALUE | **SAFE BEARING CAPACITY ($t/m^2$)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTICITY INDEX | GRAVEL | COARSE SAND | MEDIUM SAND | FINE SAND | CLAY & SILT | | | | | |
| | 0.00 | | | | | | | | | | | | | | | |
| | 0.50 | S | - | - | - | - | - | - | - | - | - | - | | | | |
| | 1.00 | SC | 8.1 | NP | NP | NP | 4 | 24 | 42 | 2 | 28 | 2.51 | 1.00 | 46 | 45.0 | 42.2 |
| | 2.00 | GW | 6.4 | NP | NP | NP | 50 | 23 | 17 | 9 | 1 | 2.68 | 2.00 | >50 | 50.0 | 47.2 |
| | 3.00 | GP | 10.2 | NP | NP | NP | 28 | 33 | 38 | 1 | 0 | 2.55 | 3.00 | >50 | 50.0 | 47.2 |
| | 3.50 | SDR (WS) | - | - | - | - | - | - | - | - | - | - | 3.50 | >50 | 50.0 | 47.2 |

*S – SAND, SC – CLAYEY SAND, GW – WELL GRADED GRAVEL, GP – POORLY GRADED GRAVEL WITH SAND, SDR – SOFT DISINTEGRATED ROCK (WASHING SAMPLE), SBC is based on SPT Result.* **NP – Non Plastic, N/A – Not Applicable*

**Ref.:** GGF/23-24/110

## SOIL TEST RESULTS

| **Soil Investigation done by:** GEOGLOBE FOUNDATIONS, Chennai. | **BORE HOLE NO:** 03 | **LOCATION:** Mentioned on Map | **GROUND WATER LEVEL:** Not met | **WORK STARTED ON** | 31.08.2023 |
|---|---|---|---|---|---|
| | | | | **WORK COMPLETED ON** | 31.08.2023 |

| SOIL PROFILE AND DEPTH IN METRES | DEPTH OF SAMPLING | IS SOIL CLASSIFICATION | NATURAL MOISTURE CONTENT % | INDEX TEST | | | SIEVE ANALYSIS % | | | | | SPECIFIC GRAVITY | DEPTH (m) | OBSERVED N VALUE | CORRECTED N VALUE | **SAFE BEARING CAPACITY ($t/m^2$)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTICITY INDEX | GRAVEL | COARSE SAND | MEDIUM SAND | FINE SAND | CLAY & SILT | | | | | |
| | 0.00 | | | | | | | | | | | | | | | |
| | 0.50 | S | - | - | - | - | - | - | - | - | - | - | | | | |
| | | SC | 8.5 | NP | NP | NP | 6 | 42 | 20 | 4 | 28 | 2.49 | 1.00 | 9 | 9.0 | 6.0 |
| | 1.50 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 2.00 | >50 | 50.0 | 47.2 |
| | | GP | 7.2 | NP | NP | NP | 34 | 39 | 24 | 3 | 0 | 2.53 | | | | |
| | | | | | | | | | | | | | 3.00 | >50 | 50.0 | 47.2 |
| | 3.00 | | | | | | | | | | | | | | | |
| | 4.00 | SDR (WS) | - | - | - | - | - | - | - | - | - | - | 4.00 | >50 | 50.0 | 47.2 |

*S - SAND, SC – CLAYEY SAND, GP – POORLY GRADED GRAVEL WITH SAND, SDR – SOFT DISINTEGRATED ROCK (WASHING SAMPLE)*
*SBC is based on SPT Result.* **NP – Non Plastic, N/A – Not Applicable*

**Ref.:** GGF/23-24/110

## SOIL TEST RESULTS

| **Soil Investigation done by:** GEOGLOBE FOUNDATIONS, Chennai. | **BORE HOLE NO:** 04 | **LOCATION:** Mentioned on Map | **GROUND WATER LEVEL:** Not met | **WORK STARTED ON** | 31.08.2023 |
|---|---|---|---|---|---|
| | | | | **WORK COMPLETED ON** | 31.08.2023 |

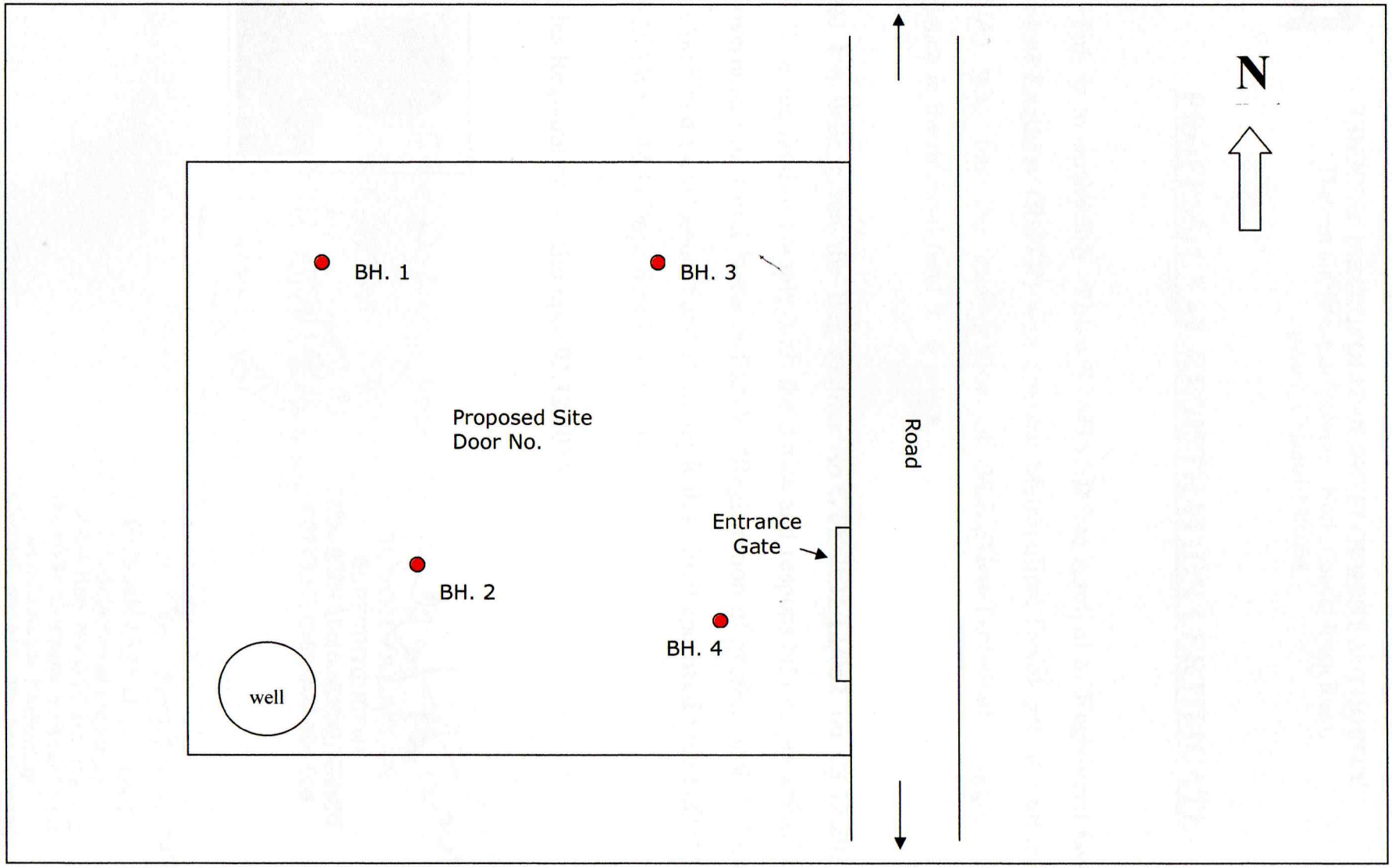
| SOIL PROFILE AND DEPTH IN METRES | DEPTH OF SAMPLING | IS SOIL CLASSIFICATION | NATURAL MOISTURE CONTENT % | INDEX TEST | | | SIEVE ANALYSIS % | | | | | SPECIFIC GRAVITY | DEPTH (m) | OBSERVED N VALUE | CORRECTED N VALUE | **SAFE BEARING CAPACITY ($t/m^2$)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT % | PLASTIC LIMIT % | PLASTICITY INDEX | GRAVEL | COARSE SAND | MEDIUM SAND | FINE SAND | CLAY & SILT | | | | | |
| | 0.00 | | | | | | | | | | | | | | | |
| | | S | - | - | - | - | - | - | - | - | - | - | | | | |
| | 0.50 | | | | | | | | | | | | | | | |
| | | GP | 5.2 | NP | NP | NP | 19 | 40 | 37 | 4 | 0 | 2.50 | | | | |
| | 1.00 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 1.50 | 65 | 50.0 | 47.2 |
| | | GW | 4.8 | NP | NP | NP | 56 | 24 | 13 | 6 | 1 | 2.49 | | | | |
| | | | | | | | | | | | | | 3.00 | >50 | 50.0 | 47.2 |
| | 3.00 | | | | | | | | | | | | | | | |
| | | SDR (WS) | - | - | - | - | - | - | - | - | - | - | 3.50 | >50 | 50.0 | 47.2 |
| | 3.50 | | | | | | | | | | | | | | | |

*S - SAND, GP – POORLY GRADED GRAVEL WITH SAND, GW – WELL GRADED GRAVEL , SDR – SOFT DISINTEGRATED ROCK (WASHING SAMPLE), SBC is based on SPT Result.* **NP – Non Plastic, N/A – Not Applicable*

GEOGLOBE FOUNDATIONS 600 117 CHENNAI

**Er. S.ANAND., M.E.(GEOTECH)**
**GEOTECHNICAL ENGINEER**

**10. BORE HOLE LOCATION MAP – Not to scale**



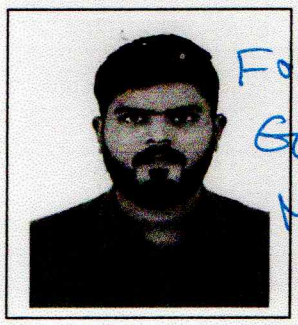
**CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY**
'ThalamuthuNatarajan Building', No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008.

# PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that **Thiru S. ANAND** has enrolled as **Registered Geo-Technical Engineer (RGTE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E.,(Geo-Technical Engg.),** and experience in the relevant field for **5 years**.

He has been given the Registration No.**GTE/2021/12/052** on **03.12.2021.** 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 **02.12.2026**.



For Report No: GGT/23-24/110 M/s. ASN Housing Chennai.

3-12-2021

T. ARIVALAGAN
SUPERINTENDENT
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
EGMORE, CHENNAI-600 008.

09/09/2023

Er.S.ANAND, M.E., M.I.G.S
(Geotechnical Engineer)
CMDA Reg. No: GTE/2021/12/052
No: 46/38, Chelliamman Kovil Street,
Gandhi Nagar, Keelkattalai,
Chennai - 600 117. / Ph: 81443 08899



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