Verified RealEstate™

Your trusted partner for buying, selling, and managing property, ensuring hassle-free service with 100% transparency.

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

hello@verified.realestate
+91 9996 12 9996

Official Property Record

Digitally Verified Record - Powered by Verified RealEstate™



SOIL EXPLORATION AND FOUNDATION REPORT

FOR THE PROPOSED BUILDING

AT

OLD DOOR NO. 2, NEW DOOR NO. 3

WALLACE GARDEN 1ST STREET

THOUSAND LIGHTS

CHENNAI

PROJECT NO. TJE/002291/2022

T.J.ENGINEERS

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION
T.J.HOUSE
NO.4, ANNA NAGAR, 1ST STREET,
VELACHERY, CHENNAI-42.
tjengineers@yahoo.com
tjengineers1998@gmail.com
Ph : 42 33 41 94.

T.J. ENGINEERS CHENNAI-42.

CONTENTS OF THE REPORT

1.0 INTRODUCTION

2.0 SCOPE OF WORK

3.0 LOCATION AND NUMBER OF BORE HOLES

4.0 GEO TECHNICAL INVESTIGATION

- 4-1. Field Investigation of Bore Holes
- 4.2. Grain Size Analysis
- 4-3. Laboratory Test for Bore Hole Sample

5.0 BORE HOLE DATA

6.0 LABORATORY TEST RESULTS

7.0 GROUND WATER TABLE

8.0 SUB SOIL PROFILE

9.0 FOUNDATION ANALYSIS AND DESIGN

- 9.1. Computation of Safe Bearing Capacity of Soil at 2.10m depth
- 9.2. Settlement Analysis
- 9.3. Load Carrying Capacity of conventional pile

10.0 CONCLUSIONS

11.0 TABLES AND FIGURES

T. J. ENGINEERS ★ CHENNAI-42. ★

EXPLORATION REPORT

PROJECT NO. TJE/002291/2022

1.INTRODUCTION:

M/S NGB CONSTRUCTION & M/S K.V. DEVELOPERS has proposed to construct a Basement + Ground Floor + Four Floors Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006. The work was entrusted to T.J. Engineers by the promoter. The location is shown in Fig No.1. The object of the soil exploration work done is to determine the soil properties of the proposed area and to arrive at a most suitable type of foundation system for the proposed structure.

2.0 SCOPE OF WORK

The Scope of Work includes the following

Boreholes

- Drilling of borehole at the proposed borehole locations as per the direction of the client.
- Collection of disturbed and undisturbed soil samples and carrying out the relevant laboratory test on soils.
- Conducting of standard penetration test (SPT) within the borehole at every 1.50m depth interval or as required.
- Collection of soil sample from bore hole.
- Preparation of geotechnical investigation Report.

3.0. LOCATION & NUMBER OF BORE HOLES

For this purpose two bore holes were bored up to maximum depth of 21.00m below existing ground level. The bore hole location is shown in Fig No.1 and bore log details

T. J. ENGINEERS ★ CHENNAI-42. ★

are given in Fig No. 2&3. The bore holes were terminated in the Very Dense Sandy Gravel-(Disintegrated Rock) layer.

4.0. GEOTECHNICAL INVESTIGATIONS

4.1. Filed Investigations of Boreholes

Rotary drilling boring technique was adopted for boring in this area. The Standard penetration tests were conducted at change of layers and at specified intervals, commencing the test at 1.50m below the existing ground level. The relative density of different soil layers obtained from the N-Values are given in the Fig No. 2&3. Disturbed and un disturbed samples were collected from all the layers for visual observation, classification tests and strength characteristics of the soil layers.

Standard Penetration Test (SPT)

Standard Penetration Tests were conducted using a split spoon sampler, as per relevant codal provision (IS: 2131 – 1981). The SPT is generally conducted in sandy and completely weathered rock strata till 45 cm penetration with number of blows recorded for every 15 cm penetration. The number of blows required for first 15 cm in neglected. The blows for last 30 cm penetration or refusal 'N' value of 100 whichever is earlier is taken as the 'N' value. In the clayey strata, when driving of sampling tube is not possible, SPT was conducted to know the consistency of the soil strata and to retrieve the disturbed soil sample. The soil samples obtained in the split spoon sampler are carefully packed in polythene bags for testing in the laboratory. The SPT values obtained at every 1.50m interval are given in the bore logs.

T.J. ENGINEERS CHENNAI-42.

4.2. Grain Size Analysis

Combined sieve and hydrometer analyses were conducted on the various samples collected. The results are given in Table-1. Based on the proportion of the different soil constituents, the soil is classified.

4.3. Laboratory Tests for Borehole samples

The following laboratory tests were conducted on collected Soil Samples.

I. Moisture Content as per IS: 2720 (Part 2)

II. Specific Gravity as per IS: 2720 (Part 2)

III. Sieve Analysis as per IS: 2720 (Part 4)

IV. Hydrometer Analysis as per IS: 2720 (Part 4)

V. Liquid Limit as per IS: 2720 (Part 5)

VI. Plastic Limit as per IS: 2720 (Part 5)

VII. Swelling Index as per IS: 2720 (Part 40)

5.0. BORE LOG DATA

The Summary of bore hole log data for BH-01 & BH-02 is given in Fig-2&3. Bore hole location is given in Fig.1.

6.0. LABORATORY TEST RESULTS

The laboratory test results of boreholes samples are presented in Table-1 and Table-2.

7.0. GROUND WATER TABLE

The ground water table was encountered at the **depth of 4.00m**, below the existing ground level at the time of soil exploration.

T. J. ENGINEERS ★ CHENNAI-42. ★

8.0. SUB SOIL PROFILE

From the visual identification from field test results, it is concluding that the sub soil is basically made-up of nine distinctive layers.

i. Filled Up Soil 0.00m to 0.30m

ii. Medium Stiff to Stiff Silty Clay, 0.30m to 5.50m SPT's N= 5-9

iii. Very Soft to Medium Stiff Sandy Silty Clay, 5.50m to 11.00m SPT's N= 2-7

iv. Medium Dense Silty Sand, 11.00m to 13.00m SPT's N= 14-15

v. Medium Dense Silty Clayey Sand, 13.00m to 14.60m SPT's N= 23-25

vi. Dense Silty Clayey Sand, 14.60m to 16.00m SPT's N= 32-35

vii. Very Dense Silty Clayey Sand, 16.00m to 17.80m SPT's N= 54-59

viii. Very Dense Clayey Silty Sandy Gravel, 17.80m to 19.00m SPT's N= >100

ix. Very Dense Sandy Gravel, 19.00 to 21.00m SPT's N= >100

The soil profile details are presented in the Bore logs, in Fig. 2&3.

T. J. ENGINEERS ★ CHENNAI-42.

9.0 FOUNDATION ANALYSIS

From the bore log data at the top from 0.00m to 0.30m Filled Up Soil layer is present. From 0.30m to 5.50m medium stiff to stiff Silty Clay layer is present, this layer has got swelling character. From 5.50m to 11.00m very soft to medium stiff Sandy Silty Clay layer is present, this layer also has got swelling character. From 11.00m to 13.00m medium dense Silty Clayey Sand layer is present. From 13.00m to 14.60m medium dense Silty Clayey Sand layer is present. From 14.60m to 16.00m dense Silty Clayey Sand layer is present. From 16.00m to 17.80m very dense Clayey Silty Sand layer is present. From 17.80m to 19.00m very dense Clayey Silty Sandy Gravel layer is present. Below 19.00m very dense Sandy Gravel-(Disintegrated Rock) layer is seen, this layer is fair to rest pile foundation for heavy loaded structure.

The layer up to 13.90m is the critical zone for open foundation system for light loaded structure, within the critical zone very soft to stiff Clayey layer and medium dense Sandy layer is present and the Clayey layer has got swelling character. For light loaded structure open foundation of **Continues Strip Raft Foundation or Raft Foundation** can be adopted. The open foundation can be placed at the minimum **depth of 2.10m** below the existing ground level. The existing ground level was same as the road level at the time of soil investigation. The Safe Bearing Capacity (SBC) of soil at different depths has been has been worked out and given below.

For heavy loaded structure, if the SBC is not sufficient for the expected loading intensity, it is advisable to provide deep foundation of pile foundations. The pile foundation can be Bored Cast in situ pile. The pile foundation should be terminated at the minimum **depth of 21.00m (Including Anchoring depth)** below existing ground level.

T. J. ENGINEERS CHENNAI

The pile should be anchored into the very dense Sandy Gravel-(Disintegrated Rock) layer for minimum of 1.00m depth.

9.1. COMPUTATION OF THE SAFE BEARING CAPACITY AT 2.10m DEPTH

Based on the standard penetration test value the ultimate net bearing capacity (q_u) could be calculated from the following formula.

$q_u = 1.2\ C\ Nc + \gamma\ Df\ Nq$

The minimum observed N-Value is taken as 4 from Fig. 2&3.

The corresponding bearing capacity factors are,

$Nc = 5.7$

$N_q = 1$

Where,

C = Un drained shear strength = 2.68 t/m^2

γ = Unit weight of the soil = 1.50 t/m^3

γ' = Submerged unit weight of the soil = 0.50 t/m^3

D_f = Depth of footing = 2.10 m

D_f = Depth of water table = 4.00 m

Substitute all the above values in the formula,

$q_u = 1.2 \times 2.68 \times 5.7 + 1.50 \times 2.10 \times 1$

$= 18.331 + 3.15 = 21.481\ t/m^2$

Safe bearing capacity could be considered with a factor of safety of 2.5

Hence, safe bearing capacity $q_s = 21.481/2.50 = 8.59\ t/m^2$. Say 8.50 t/m^2.

Therefore, safe bearing capacity of the soil at 2.10m depth is 8.50 t/m^2

T.J. ENGINEERS ★ CHENNAI-42. ★

9.2. SETTLEMENT ANALYSIS FOR THE LOADING INTENSITY OF 10.00 t/m^2

LAYER -1, SILTY CLAY/SANDY SILTY CLAY

The Consolidation Settlement of the Clay layer can be calculated using the following formula.

$$S_1 = (C_c / 1 + e_0)\, H \quad \text{Log}_{10}\,(\sigma'_0 + \Delta\sigma / \sigma'_0)$$

Where

C_c = Coefficient of compression index
= 0.36

e_0 = The initial void ratio
= 1.81

H =The thickness of the compressible clay layer
= 11.40m

σ'_0 = The original effective over burden pressure at the centre of the clay layer
= 7.90 t/m^2

$\Delta\sigma$ = The stress increases at the centre of the clay layer due to foundation loads (or) pressure
= 0.129 t/m^2

S_1 = (0.36 /1+1.81) 11.40 Log_{10} (7.90 + 0.129/7.90)
= 0.128 x 11.40 x 7.034
= 0.01026m
= 10.26mm

TOTAL SETTLEMENT

= 10.26mm < 50mm

The maximum allowable settlement as per IS: 1904-1986 for R.C.C structure with Isolated footing foundation is 50mm- 75mm.**The settlement is within the permissible limit. Hence it is Safe**

T. J. ENGINEERS CHENNAI-42.

9.3. LOAD CARRYING CAPACITY OF THE CONVENTIONAL PILE

Based on the standard penetration test value the ultimate load carrying capacity (q_u) could be calculated from the following formula.

$$Qu = Qb + Qs$$

$$Qs = \text{Ultimate unit skin friction on an individual layer}$$

$$= Ks\ \sigma'_{vo} \tan\delta\ \pi D L$$

Where

Ks = Co-efficient of horizontal soil stress = 0.471

σ'_{vo} = average effective overburden pressure = 9.50 t/m^2

δ = angle of wall friction = 32

D = Dia meter of pile = 0.40m

L = Length of individual layer = 2.00 m

= 0.471 x 9.50 x 0.624 x 3.14 x 0.40 x 2.00

= 7.013 t

$q_b = Nq\ \sigma'_{vo}\ Ab$

where

Nq = Bearing Capacity Factor = 120

σ'_{vo} = effective overburden pressure at the toe = 10.00 t/m^2

Ab = Cross sectional area at the base

D = Dia of Pile = 0.40m

= 120 x 10.00 x 3.14 x 0.40^2 /4

= 150.72 t

T.J. ENGINEERS CHENNAI-42.

$$Qu = Qb + Qs$$

$$= 150.72 + 7.013 = 157.733 \text{ t}$$

Q safe $= Qu/F.S = 157.733/2.5 = 63.093$ say 63.00 t

The safe load carrying capacity for five different diameter of piles for the **depth of 21.00m** are worked and are given below.

Dia of Pile	Depth of Pile	Safe Load (Tones)
400mm	21.00m	63
450mm	21.00m	79
500mm	21.00m	98
600mm	21.00m	140
750mm	21.00m	217

The above safe loads are provisional and shall be confirmed by conducting pile load test as per the guide line laid down in IS: 2911 (Part: IV).

T. J. ENGINEERS ★ CHENNAI-42 ★

10.0. CONCLUSIONS

1. For light loaded structure open foundation of **Isolated Footing** (or) **Continuous Strip Footing** (or) **Raft Foundation** can be adopted.
2. The open foundation can be placed at the **minimum depth of 2.10m** below the existing ground level. The Existing ground level was same as the road level at the time of soil investigation. The proposed structure has got basement floor, SBC at different depth has been worked out and given below.

Sl. No.	Depth(m)	SBC (t/m^2)
1	2.10	8.50
2	3.00	9.25
3	4.00	9.75
4	5.00	10.00

3. The minimum width of footing should be maintained as 1.00m to avoid any punching shear failure and to achieve suggested SBC.
4. All the foundation should rest on 100 mm thick 1:4:8 concrete mat, over 100mm thick river sand layer.
5. The shallow foundation should rest on natural un disturbed layer.
6. The pile foundation can be Bored Cast in situ pile. The pile foundation could be terminated at the **depth of 21.00m (Including Anchoring depth)** below existing ground level. The pile should be anchored, in to the Dense Disintegrated Rock layer minimum of 2.00m depth

T. J. ENGINEERS ★ CHENNAI-42. ★

7. The load carrying capacity for five different diameter of pile for the minimum **depth of 21.00m** has been worked out and given below.

Dia of Pile	Depth of Pile	Safe Load (Tones)
400mm	21.00m	63
450mm	21.00m	79
500mm	21.00m	98
600mm	21.00m	140
750mm	21.00m	217

The above safe loads are provisional and shall be confirmed by conducting pile load test as per the guide line laid down in IS: 2911 (Part: IV)

8. Proper precaution should be taken while boring the pile against sliding of bore hole, by maintaining the proper dense bentonite slurry or providing temporary casing or permanent casing and pile concreting should be done as soon as boring is over.

9. The pile boring should be done with Percussion drilling or **Hydraulic** Rotary Drilling with DMC method. Tractor mount boring is not advisable. The proposed structure is slender in shape proper anchoring should be ensured.

10. The soil in shallow depth is loose Sandy proper precaution should be taken in deep excavation for basement, by providing proper shoring and dewatering.

11. The bore hole should be flushed properly before laying concrete. It has to be ensured by comparing the depth of pile bore hole and Tremie Pipe. The depth of Tremie Pipe lowered can be 300mm less than borehole depth. If the gap between bore hole

T. J. ENGINEERS CHENNAI-42.

bottom and Tremie Pipe bottom is more than 300mm, there is a possibility of slush deposit in the bore hole.

12. For foundation design, **Stress due to any eccentricity, stress due to horizontal force** should be considered, and **stability** should be checked. The proposed structure is slender in shape **proper anchoring should be ensured**.

13. All suggested foundation recommendations and precautions should be adopted while undertaking the design aspects and construction activities.

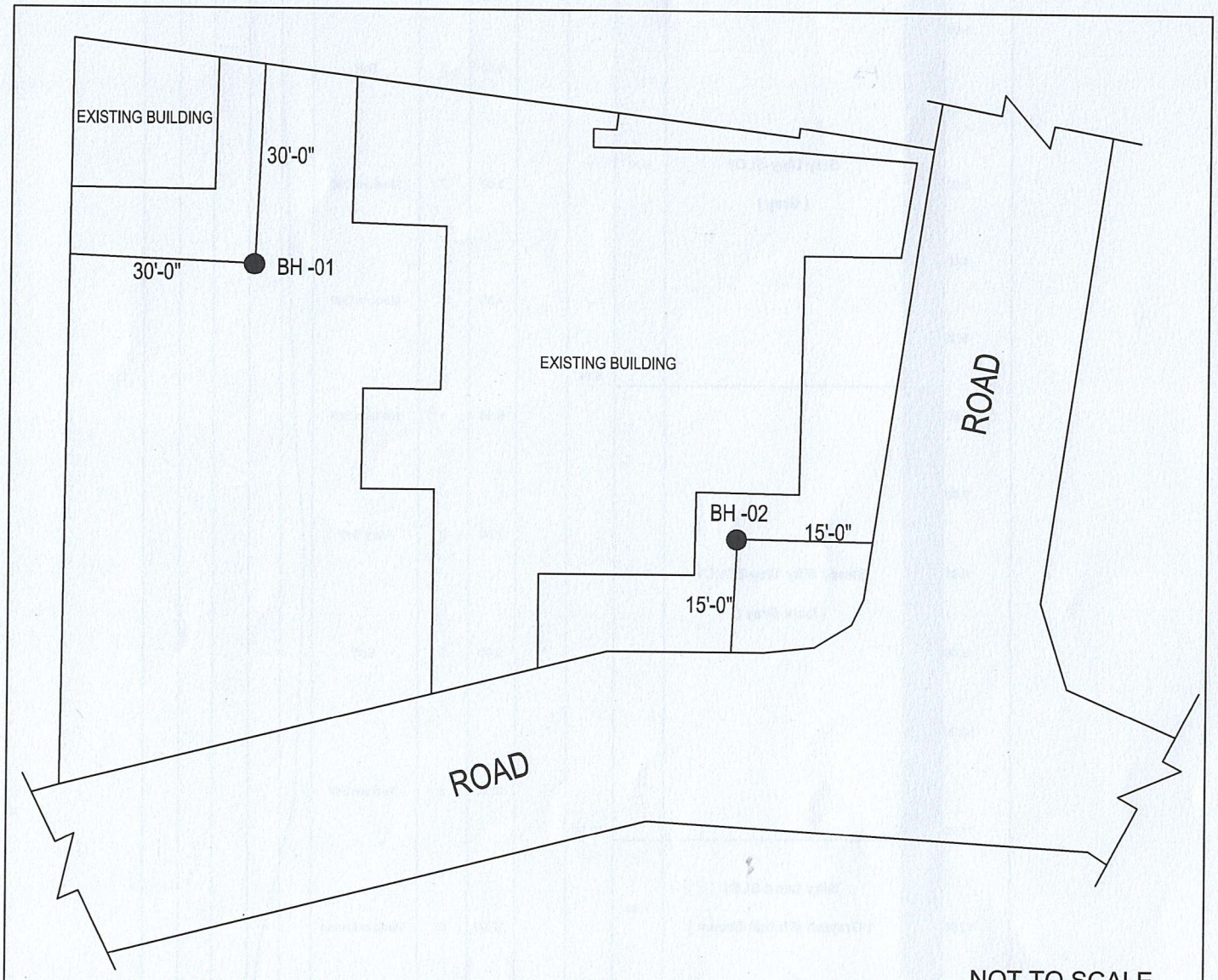
T. J. ENGINEERS ★ CHENNAI-42. ★

For T.J. Engineers

14 – 05 - 2022

Dr. S.CHOCKALINGAM, M.E. (Geo-Tech)., Ph.D.,
Geo - Technical Engineer
T.J. ENGINEERS
Plot No:4, Anna Nagar, 1st Street,
Velachery, Chennai-600 042.
Phone: 044-42334194 Mob: 9841255480
CMDA Registration No: GTE/19/03/006
DTCP Reg. No: CGLRGN/RGTE/2019/07/010

T. J. ENGINEERS ★ CHENNAI-42. ★



NOT TO SCALE

CLIENT:-	PROJECT:-		
M/S NGB CONSTRUCTION & M/S K.V. DEVELOPERS CHENNAI.	PROPOSED BUILDING AT OLD DOOR NO. 2, NEW DOOR NO. 3, WALLACE GARDEN 1ST STREET, THOUSAND LIGHTS, CHENNAI-600 006.	SITE PLAN FIG.1	T.J. ENGINEERS soil investigation and foundation design division

T.J. HOUSE
PLOT NO. 4, ANNA NAGAR,
1ST STREET, VELACHERY, CHENNAI-42,
tjengineers@yahoo.com
tjengineers1998@gmail.com
OFF: 044-42334194

T.J. ENGINEERS ★ CHENNAI-42. ★

BORE LOG

PROJECT : Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.
BORE HOLE NO : B.H:01
TYPE OF BORING : Rotary Drilling

DATE OF COMMENCEMENT: 05 - 05 - 2022
DATE OF COMPLETION : 05 - 05 - 2022
G.W.L : 4.00m

Depth below G.L	Soil profile	Description of soil	Thickness of layer	Depth at witch samples are collected D.S	Depth at witch samples are collected U.D.S	Standard penetration testdata: Depth at witch test is conducted	N-Value	Relative density/ Consistency
0.00		**Filled Up Soil**	0.30	0.30				
1.00						1.50	9	Stiff
2.00		**Silty Clay-SLC1**	5.20					
3.00		**(Gray)**				3.00	7	Medium Stiff
4.00						4.50	6	Medium Stiff
5.00				5.50				
6.00						6.00	5	Medium Stiff
7.00						7.50	2	Very Soft
8.00		**Sandy Silty Clay-SSLC1**	5.50					
9.00		**(Dark Gray)**				9.00	3	Soft
10.00						10.50	5	Medium Stiff
11.00				11.00				
12.00		**Silty Sand-SLS1** **(Grayish Whitish Brown)**	1.80			12.00	15	Medium Dense
13.00				12.80				
14.00		**Silty Clayey Sand-SLCS1** **(Grayish Brown)**	1.70			13.50	23	Medium Dense
15.00		**Silty Clayey Sand-SLCS2** **(Yellowish Brown Whitish Gray)**	1.50	14.50		15.00	32	Dense
16.00				16.00				
						16.50	54	Very Dense

Graphical representation of penetration resistance: 10 20 30 40 50

Remark: All Dimensions in meters
End of Boring

FIG: 2

cont....

T. J. ENGINEERS CHENNAI-42.

BORE LOG

PROJECT : **Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.**

BORE HOLE NO : **B.H:01**

TYPE OF BORING : **Rotary Drilling**

DATE OF COMMENCEMENT: **05 - 05 - 2022**

DATE OF COMPLETION : **05 - 05 - 2022**

G.W.L : **4.00m**

Depth below G.L	Soil profile	Description of soil	Thickness of layer	Depth at witch samples are collected		Standard penetration testdata			Graphical representation of penetration resistance
				D.S	U.D.S	Depth at witch test is conducted	N-Value	Relative density/ Consistency	10 20 30 40 50
17.00		**Silty Clayey Sand-SLCS3** **(Yellowish Brown)**	1.50	17.50					
18.00		**Clayey Silty Sandy Gravel-CSLSG1** **(Yellowish Brown)**	1.50			18.00	>100	Very Dense	
19.00				19.00					
20.00		**Sandy Gravel-SG1** **(Disintegrated Rock)** **(Whitish Gray Brown)**				20.00	>100	Very Dense	
21.00 →						21.00	>100	Very Dense	
22.00									
23.00									
24.00									
25.00									
26.00									
27.00									
28.00									
29.00									
30.00									

Remark: All Dimensions in meters

→ **End of Boring**

FIG: 2

T. J. ENGINEERS CHENNAI-42.

BORE LOG

PROJECT : Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.

BORE HOLE NO : B.H:02

TYPE OF BORING : Rotary Drilling

DATE OF COMMENCEMENT: 06 - 05 - 2022

DATE OF COMPLETION : 06 - 05 - 2022

G.W.L : 4.00m

Depth below G.L	Soil profile	Description of soil	Thickness of layer	Depth at witch samples are collected D.S	Depth at witch samples are collected U.D.S	Standard penetration testdata: Depth at witch test is conducted	N-Value	Relative density/ Consistency
0.00		**Filled Up Soil**	0.30	0.30				
1.00						1.50	9	Stiff
2.00		**Silty Clay-SLC1** **(Grayish Brown)**	3.70					
3.00						3.00	8	Medium Stiff
4.00				4.00				
						4.50	5	Medium Stiff
5.00								
6.00						6.00	3	Soft
		Sandy Silty Clay-SSLC1	6.00					
7.00		**(Dark Gray)**						
						7.50	2	Very Soft
8.00								
9.00						9.00	5	Medium Stiff
10.00				10.00				
						10.50	7	Loose
11.00		**Silty Sand-SLS1**	3.00					
		(Grayish Brown)						
12.00						12.00	14	Medium Dense
13.00				13.00				
		Silty Clayey Sand-SLCS1	1.60			13.50	25	Medium Dense
14.00		**(Grayish Whitish Brown)**						
				14.60				
		Silty Clayey Sand-SLCS2				15.00	35	Dense
15.00		**(Yellowish Brown**	1.40					
		Whitish Gray)						
16.00				16.00				
						16.50	59	Very Dense

Graphical representation of penetration resistance: 10 20 30 40 50

Remark: All Dimensions in meters

End of Boring

FIG: 3

T. J. ENGINEERS, CHENNAI-42.

cont....

BORE LOG

PROJECT : **Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.**

BORE HOLE NO : **B.H:02**

TYPE OF BORING : **Rotary Drilling**

DATE OF COMMENCEMENT: **06 - 05 - 2022**

DATE OF COMPLETION : **06 - 05 - 2022**

G.W.L : **4.00m**

Depth below G.L	Soil profile	Description of soil	Thickness of layer	Depth at witch samples are collected		Standard penetration testdata			Graphical representation of penetration resistance
				D.S	U.D.S	Depth at witch test is conducted	N-Value	Relative density/ Consistency	10 20 30 40 50
17.00		**Silty Clayey Sand-SLCS3 (Yellowish Brown)**	1.80	17.80					
18.00		**Clayey Silty Sandy Gravel-CSLSG1 (Yellowish Brown)**	1.20			18.00	>100	Very Dense	
19.00				19.00					
20.00		**Sandy Gravel-SG1 (Disintegrated Rock) (Whitish Gray Brown)**				20.00	>100	Very Dense	
21.00						21.00	>100	Very Dense	
22.00									
23.00									
24.00									
25.00									
26.00									
27.00									
28.00									
29.00									
30.00									

Remark: All Dimensions in meters

→ End of Boring

FIG: 3

T. J. ENGINEERS ★ CHENNAI-42. ★

Project: Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.

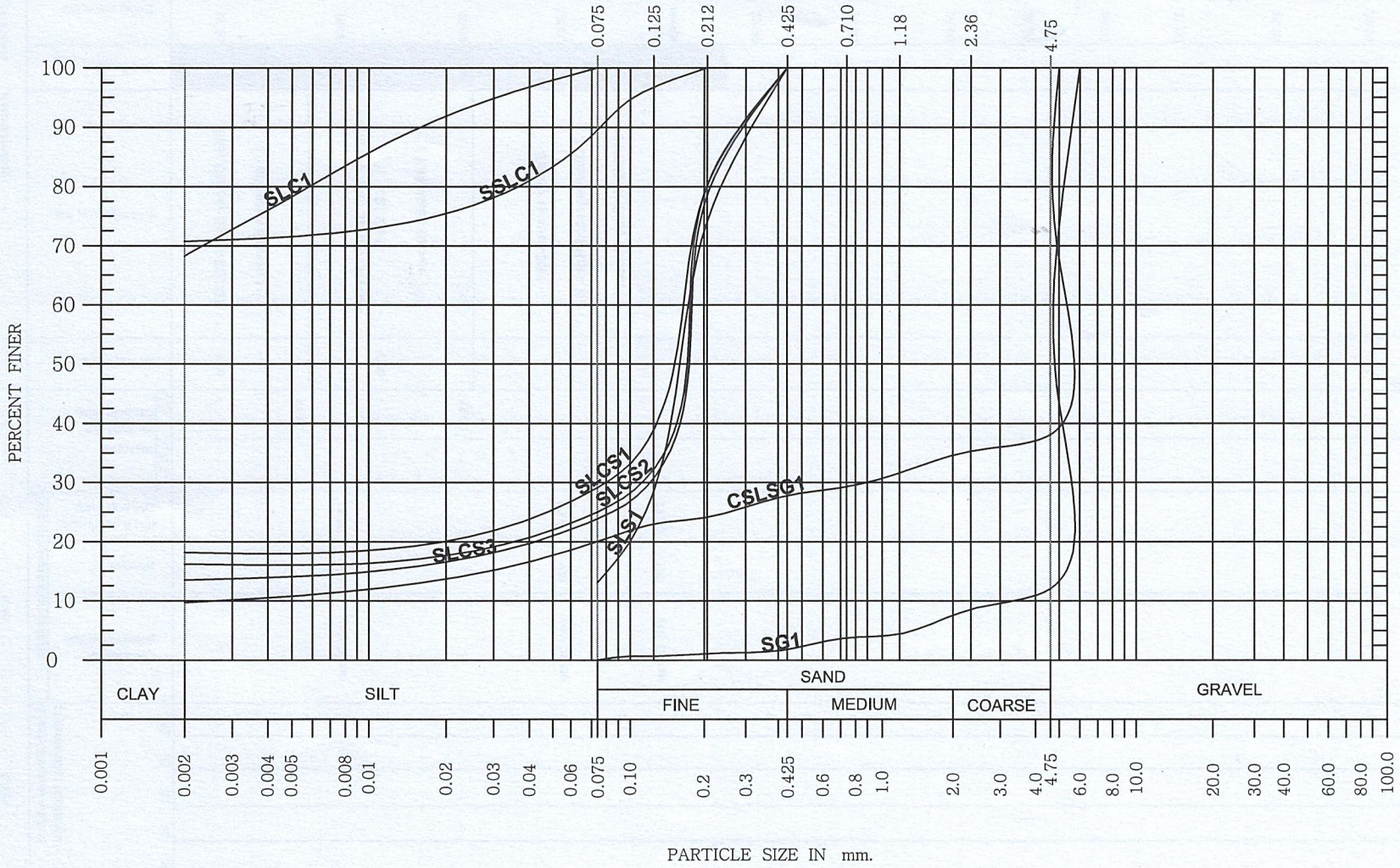


FIG. 4 GRAIN SIZE DISTRIBUTION CURVE-BH-01

T.J. ENGINEERS ★ CHENNAI-42.

Project: Proposed Building at Old Door No. 2, New Door No. 3, Wallace Garden 1st Street, Thousand Lights, Chennai-600 006.

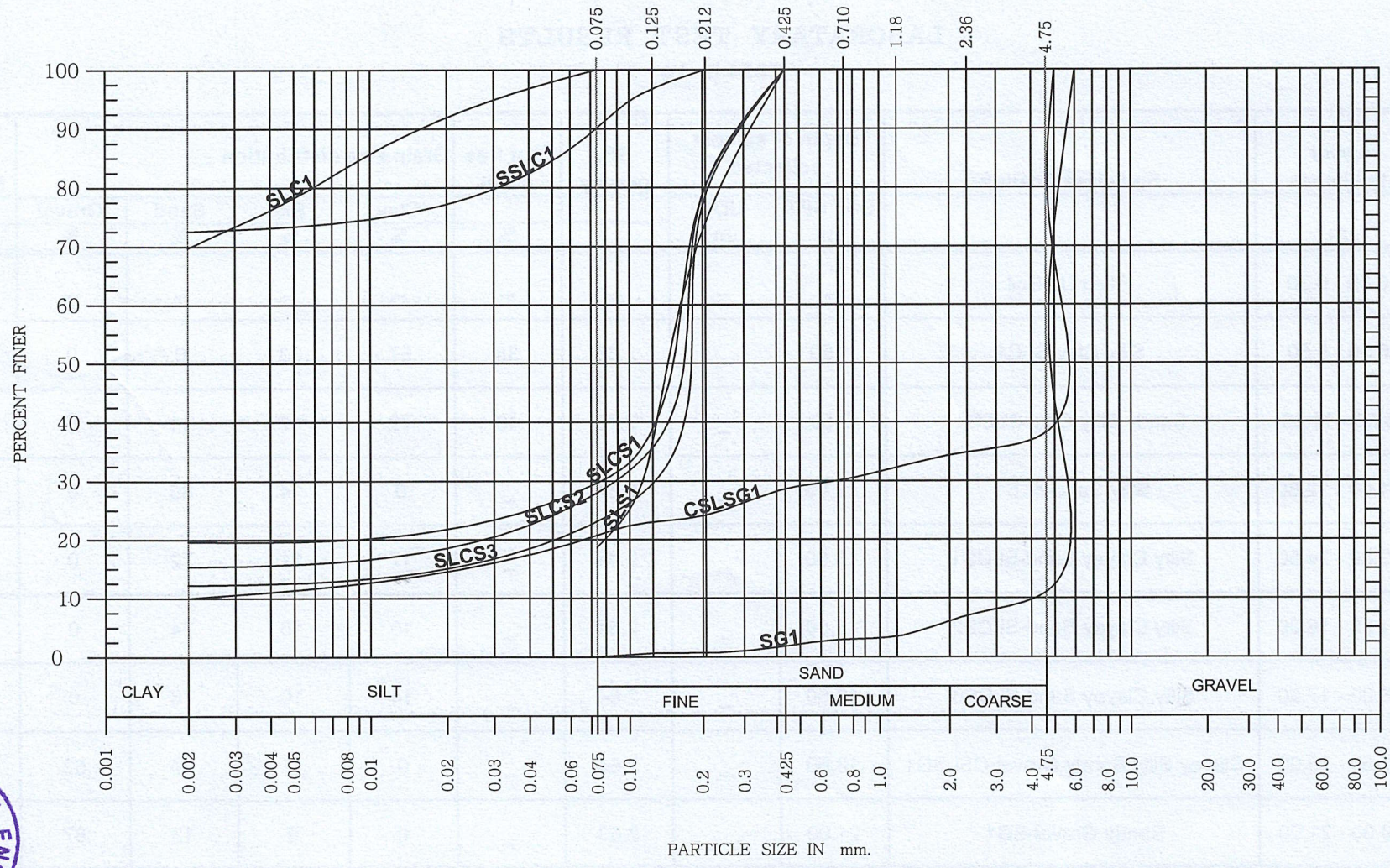


FIG. 5 GRAIN SIZE DISTRIBUTION CURVE-BH-02

T. J. ENGINEERS ★ CHENNAI-42 ★

LABORATARY TEST RESULTS

TABLE-1a

B.H No	Layer thickness	Soil classification	Depth of sample collected		SP. gravity	%of free swell	Grain size distribution				Remarks
			DS / SPT	UDS			Clay	Silt	Sand	Gravel	
	m		m	m		%	%	%	%	%	
1	0.00 - 0.30	Filled Up Soil	–	–	–	–	–	–	–	–	–
	0.30 - 5.50	Silty Clay-SLC1	1.50	–	2.65	38	67	33	0	0	–
	5.50 - 11.00	Sandy Silty Clay-SSLC1	7.50	–	2.70	46	72	17	11	0	–
	11.00 - 12.80	Silty Sand-SLS1	12.00	–	2.64	–	0	14	86	0	–
	12.80 - 14.50	Silty Clayey Sand-SLCS1	13.50	–	2.64	–	17	11	72	0	–
	14.50 - 16.00	Silty Clayey Sand-SLCS2	15.00	–	2.64	–	16	10	74	0	–
	16.00 - 17.50	Silty Clayey Sand-SLCS3	16.50	–	2.64	–	14	10	76	0	–
	17.50 - 19.00	Clayey Silty Sandy Gravel-CSLSG1	18.00	–	2.64	–	9	11	17	63	–
	19.00 - 21.00	Sandy Gravel-SG1	21.00	–	2.63	–	0	0	13	87	–

LABORATARY TEST RESULTS

TABLE-1b

B.H No	Layer thickness	Soil classification	Depth of sample collected		SP. gravity	%of free swell	Grain size distribution				Remarks
			DS / SPT	UDS			Clay	Silt	Sand	Gravel	
	m		m	m		%	%	%	%	%	
2	0.00 - 0.30	Filled Up Soil	–	–	–	–	–	–	–	–	–
	0.30 - 4.00	Silty Clay-SLC1	1.50	–	2.65	37	69	31	0	0	–
	4.00 - 10.00	Sandy Silty Clay-SSLC1	6.00	–	2.70	46	73	17	10	0	–
	10.00 - 13.00	Silty Sand-SLS1	10.50	–	2.63	–	0	18	82	0	–
	13.00 - 14.60	Silty Clayey Sand-SLCS1	13.50	–	2.64	–	19	10	71	0	–
	14.60 - 16.00	Silty Clayey Sand-SLCS2	15.00	–	2.64	–	15	12	73	0	–
	16.00 - 17.80	Silty Clayey Sand-SLCS3	16.50	–	2.64	–	13	10	77	0	–
	17.80 - 19.00	Clayey Silty Sandy Gravel-CSLSG1	18.00	–	2.64	–	10	11	16	63	–
	19.00 - 21.00	Sandy Gravel-SG1	21.00	–	2.63	–	0	0	12	88	–

LABORATARY TEST RESULTS

TABLE -2a

B.H No	Layer thickness	Soil classification	Depth of sample collected		LL	PL	Bulk density	Consolidation Parameters		Shear Strength Parmeters		Remarks
			DS / SPT	UDS				e_o	Cc	Cu	Ø	
	m		m	m	%	%	t/m^3			t/m^2	degree	
1	0.00 - 0.30	Filled Up Soil	–	–	–	–	–	–	–	–	–	–
	0.30 - 5.50	Silty Clay-SLC1	1.50	–	66	23	1.50	1.75	0.34	4.69	–	–
	5.50 - 11.00	Sandy Silty Clay-SSLC1	7.50	–	71	26	1.50	1.81	0.36	2.68	–	–
	11.00 - 12.80	Silty Sand-SLS1	12.00	–	–	–	1.54	–	–	–	33	–
	12.80 - 14.50	Silty Clayey Sand-SLCS1	13.50	–	–	–	1.56	–	–	–	34	–
	14.50 - 16.00	Silty Clayey Sand-SLCS2	15.00	–	–	–	1.58	–	–	–	36	–
	16.00 - 17.50	Silty Clayey Sand-SLCS3	16.50	–	–	–	1.58	–	–	–	37	–
	17.50 - 19.00	Clayey Silty Sandy Gravel-CSLSG1	18.00	–	–	–	1.60	–	–	–	39	–
	19.00 - 21.00	Sandy Gravel-SG1	21.00	–	–	–	1.62	–	–	–	41	–

LABORATARY TEST RESULTS

TABLE -2b

B.H No	Layer thickness	Soil classification	Depth of sample collected		LL	PL	Bulk density	Consolidation Parameters		Shear Strength Parmeters		Remarks
			DS / SPT	UDS				e_o	Cc	Cu	∅	
	m		m	m	%	%	t/m^3			t/m^2	degree	
2	0.00 - 0.30	Filled Up Soil	–	–	–	–	–	–	–	–	–	–
	0.30 - 4.00	Silty Clay-SLC1	1.50	–	68	23	1.50	1.61	0.31	5.36	–	–
	4.00 - 10.00	Sandy Silty Clay-SSLC1	6.00	–	71	26	1.50	1.81	0.36	2.68	–	–
	10.00 - 13.00	Silty Sand-SLS1	10.50	–	–	–	1.53	–	–	–	33	–
	13.00 - 14.60	Silty Clayey Sand-SLCS1	13.50	–	–	–	1.54	–	–	–	34	–
	14.60 - 16.00	Silty Clayey Sand-SLCS2	15.00	–	–	–	1.56	–	–	–	36	–
	16.00 - 17.80	Silty Clayey Sand-SLCS3	16.50	–	–	–	1.58	–	–	–	37	–
	17.80 - 19.00	Clayey Silty Sandy Gravel-CSLSG1	18.00	–	–	–	1.60	–	–	–	39	–
	19.00 - 21.00	Sandy Gravel-SG1	21.00	–	–	–	1.62	–	–	–	41	–

CHENNAI-42. ★T. J. ENGINEERS★



our services doesn't just end there

Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.

Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.

Property Development & Approvals

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

NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management

Compliance & Special Services

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



empowering your real estate decisions with smart tools

Property Valuation & Cost Estimation

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

Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

Verified RealEstate™

We're honored to be part of your real estate journey

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

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