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REPORT ON GEOTECHNICAL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF: "VIRAAM" PLAN SHOWING THE PROPOSED CONSTRUCTION OF GROUP HOUSING DEVELOPMENT COMPRISING 3 BLOCKS; BLOCK A STILT FLOOR + 4 FLOORS + 5TH FLOOR (PART) (HEIGHT- 18.30M) RESIDENTIAL BUILDING WITH 40 DWELLING UNITS; BLOCK B- STILT FLOOR + 4 FLOORS + 5TH FLOOR (PART) (HEIGHT- 18.30M) RESIDENTIAL BUILDING WITH 40 DWELLING UNITS; BLOCK C- STILT FLOOR + 3 FLOORS (HEIGHT- 12.60M) AMENITIES BLOCK (GYM, PLAY AREA AND HOME THEATRE) - TOTALLY 80 DWELLING UNITS FOR AFFORDABLE HOUSING AT MANGADU, CHENNAI COMPRISED IN S.NO: 475/1A1B, OF MANGADU VILLAGE WITHIN THE LIMITS OF MANGADU MUNICIPALITY.

Client:

M/s. Aaalam Promoters Private Limited,
Fortune Villa, No.1, Gill Nagar Extension,
Choolaimedu, Chennai-600094.

REPORT ISSUE STATUS			
<2>	11.01.2025	Revision 2	Updated with detailed project name and address
<1>	13.12.2024	Revision 1	Updated with revised Pile Capacities
<0>	10.09.2024	Final Report	-
Issue	**Date**	**Description**	**Updation**

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

MARS SYNERGY GEOTECH Pvt Ltd
An ISO 9001: 2015 Certified Company

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Project No: MSGTPL/SI-6256-R2/24-25

Sep-2024.

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

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that theTmtVASANTHIPADMANABAN has enrolled as **Registered Geo-Technical Engineer (RGTE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.Tech.,(Soil Mechanics & Foundation Engg.)** and experience in the relevant field for **6years**.

She has been given the Registration No.**GTE/2019/04/016** Renewed on **03.04.2024.** 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 **02.04.2029.**



3/4/2024.

(A. MEGANATHAN)
Superintendent

VASANTHI PADMANABAN, M.Tech.,
Registered Geotechnical Engineer
Reg No: GTE/19/04/016

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

To

M/s. Aaalam Promoters Private Limited,
Fortune Villa, No.1, Gill Nagar Extension,
Choolaimedu, Chennai-600094.

11th January 2025

Reg: Proposed Construction of: **"VIRAAM"** Plan showing the Proposed Construction of Group Housing Development Comprising 3 blocks; Block A Stilt Floor + 4 floors + 5th Floor (Part) (Height - 18.30m) Residential Building with 40 Dwelling Units; Block B- Stilt Floor + 4 Floors + 5th Floor (Part) (Height- 18.30m) Residential Building with 40 Dwelling Units; Block C- Stilt Floor + 3 Floors (Height - 12.60m) Amenities Block (Gym, Play Area and Home Theatre) - Totally 80 Dwelling Units for Affordable Housing at Mangadu, Chennai Comprised in S.No: 475/1A1B, of Mangadu Village within the limits of Mangadu Municipality, Tamil Nadu, INDIA.

The **Mars Synergy Geotech Pvt Ltd**, Chennai has completed the geotechnical engineering services for the above referred project.

This geotechnical engineering report presents the results of the subsurface exploration and the recommendations for your proposed structures foundation are presented here in final form together with a summary of field and laboratory data.

We appreciate the opportunity to be of service to you on this project. If you have any comments concerning this report, or if we may be of further services, please contact us/mail.

Note:

1. The test results enclosed are only related to the sample tested by us.
2. The Report shall not be reproduced in full or part without written permission from Mars Synergy Geotech Laboratory.
3. All the lab related tested values are as per the standard conditions followed by the lab.
4. Samples are retained for 30 days from sample received date at lab.

Sincerely,
Mars Synergy Geotech Pvt Ltd.

VASANTHI PADMANABAN, M.Tech.,
Registered Geotechnical Engineer
Reg. No: GTE/19/04/016

Report No: **MSGTPL/SI-6256 R2/24-25**
Copies Submitted: **(2)** Total no of Pages: **(55)**

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REPORT ON GEOTECHNICAL INVESTIGATION AND RECOMMENDATION FOR THE PROPOSED CONSTRUCTION OF "VIRAAM" RESIDENTIAL BUILDING.

1.0 INTRODUCTION

M/s. Aaalam Promoters Private Limited, Chennai is planning to construct **"VIRAAM"** Plan showing the Proposed Construction of Group Housing Development Comprising 3 blocks; Block A Stilt Floor + 4 floors + 5th Floor (Part) (Height - 18.30m) Residential Building with 40 Dwelling Units; Block B- Stilt Floor + 4 Floors + 5th Floor (Part) (Height-18.30m) Residential Building with 40 Dwelling Units; Block C- Stilt Floor + 3 Floors (Height - 12.60m) Amenities Block (Gym, Play Area and Home Theatre) - Totally 80 Dwelling Units for Affordable Housing at Mangadu, Chennai Comprised in S.No: 475/1A1B, of Mangadu Village within the limits of Mangadu Municipality, Tamil Nadu, INDIA. **M/s. Mars Synergy Geotech Pvt Ltd**, Chennai has carried out this investigation and completed the field work on 25th Aug 2024 as per the client instructions.

The scope of work includes the following

- Making three (3) numbers of Standard Soil Investigation bore-holes
- Collecting soil samples at regular depth intervals
- Conducting SPTs at every 1.0m/1.50m depth intervals
- Conducting laboratory tests on samples collected
- Submitting report with laboratory test results and recommendation for foundations.

1.1 DESCRIPTION OF STRUCTURE

The proposed structure is a residential apartment building (stilt+5upper floors) and Club house (stilt+3 upper floors). The exact details of columns are not available at the time of preparation of this report. Assuming an approximate column spacing of 4.5x5.5m c/c considering this the central column load works about 150 tones for proposed six storied building and 125 Tonnes for four storied club house. These loads are assumed for the purpose of foundation only and for the structural design, exact loads are to be estimated based on a suitable structural analysis.

1.2 SOIL INVESTIGATION

The field investigation works were carried out using 1 set of Rotary mechanical drilling Rig. The following activities, carried out in chronological sequence, comprised the fieldwork for the project

- Mobilization of rotary drill rig, water pump, testing tools and accessories.

- Collection of disturbed samples of non-cohesive soils.
- Sampling and logging of the boreholes. Packing, labeling and dispatching the samples to laboratory.
- Field investigation, tests and laboratory tests conducted as per IS-1892 and IS -2720

1.3 FIELD SAMPLING

Three (03) numbers of standard soil investigation boreholes of 100mm diameter was made at the locations shown in the drawing, **MSGTPL/SI-6256 R2** enclosed. Investigations were conducted up to a maximum of 20.50m depth from existing ground level. SPTs were conducted at every 1.0m/1.5m depth intervals and samples were collected for identification and testing.

1.4 LABORATORY TESTS

The laboratory-testing scheme is so designed to obtain the design parameters for the foundations. The following parameters are evaluated:

- Type of soil and it's gradation properties
- Atterberg Limits
- Specific Gravity
- Natural Moisture Content (NMC)
- Strength Parameters such as Cohesion,
- Angle of Shearing Resistance
- Sieve analysis on the coarse-grained soil fraction

All the test results are presented in the tabular forms. Comprehensive field information along with SPT values is presented on separate sheet.

1.5 SOIL PROFILE

Based on visual identification of soil samples and test results (of both field and laboratory tests), the soil profile arrived. Subsoil is made-up of eight / nine distinctive layers there are

BH-1

(i) Filled up soil up to -1.50m with **SPT's N=6**

(ii) Soft CLAY -1.50m to -2.50m with **SPT's N=4**

(iii) Loose SAND -2.50m to -3.50m with **SPT's N=8**

(iv) Stiff CLAY -3.50m to -5.50m with **SPT's N=9-11**
(v) Medium dense SAND -5.50m to -7.0m with **SPT's N=19**
(vi) Medium stiff to stiff CLAY -7.0m to -12.0m with **SPT's N=5-9**
(vii) Very stiff CLAY -12.0m to -16.50m with **SPT's N=19-29**
(viii) Hard CLAY -16.50m to -20.50m with **SPT's N=>50**

BH-2

(i) Filled up soil up to -1.50m with **SPT's N=2**
(ii) Medium dense SAND -1.50m to -2.50m with **SPT's N=21-22**
(iii) Medium stiff CLAY -2.50m to -7.0m with **SPT's N=5-7**
(iv) Very loose SAND -7.0m to -8.50m with **SPT's N=2**
(v) Medium Stiff CLAY -8.50m to -10.50m with **SPT's N=7**
(vi) Medium dense SAND -10.50m to -12.0m with **SPT's N=16**
(vii) Dense clayey SAND -12.0m to -13.0m with **SPT's N=38**
(viii) Very dense clayey SAND -13.0m to -16.50m with **SPT's N=>50**
(ix) Hard CLAY -16.50m to -20.50m with **SPT's N=>50**

BH-3

(i) Filled up soil up to -1.50m
(ii) Medium dense SAND -1.50m to -4.50m with **SPT's N=13-18**
(iii) Stiff CLAY -4.50m to -12.0m with **SPT's N=10-15**
(iv) Loose SAND -12.0m to -13.50m with **SPT's N=10**
(v) Hard CLAY -13.50m to -15.0m with **SPT's N=69**
(vi) Very dense SAND -15.0m to -16.50m with **SPT's N=53**
(vii) Hard CLAY -16.50m to -20.50m with **SPT's N=>50**

The soil profile details are presented in the bore-chart.

1.6 GROUND WATER TABLE

Determination of Ground water Table from Existing Ground level was done using Steel tape with weight. The depth of Ground water table was determined as per procedure laid in IS 6935-1973. At the time of Soil Investigation (17/08/2024 to 25/08/2024) at site, ground water table was **(-)1.50m** depth encountered with in the investigated depth from Existing Ground Level.

1.7 DISCUSSION ON FOUNDATION

At this site three boreholes were investigated up 20.5m depth, the proposed structure are six storied residential building and four storied club house, the column loads are assumed about 150 to 125 tons in the absence of structural drawings. Based on the soil strata it is ideal to adopt pile foundation for Six storied building and shallow foundation for club house.

Based on soil strata it is ideal to adopt deep foundation for apartment building (stilt+5) floors.

For Apartment Building (ref BH-1)

Soil Design Parameters									
From (m)	To (m)	Thickness (m)	Soil Type	Avg SPT 'N'	γ' (kN/m³)	C (kN/sq.m)	α	Φ (deg)	K
0.0	1.5	1.5	Filled up soil	6	7.5	-	-	18	1.0
1.5	2.5	1.0	Soft CLAY	4	7.0	20	1.0	-	-
2.5	3.5	1.0	Loose SAND	8	8.0	-	-	18	1.0
3.5	5.5	2.0	Stiff CLAY	10	8.0	60	0.9	-	-
5.5	7.0	1.5	Medium dense SAND	19	8.5	-	-	32	1.1
7.0	12.0	5.0	Medium stiff to stiff CLAY	6	8.0	35	1.0	-	-
12.0	16.5	4.5	Very stiff CLAY	24	9.0	120	0.3	-	-
16.5	20.5	4.0	Hard CLAY	>50	10.0	300	0.28	-	-

1.8 RECOMMENDATIONS

For Apartment Building (Stilt+5 floors)

- ✓ The estimated safe load carrying capacity of bored cast in situ piles as per IS 2911 (Part 1/Sec2): 2010
- ✓ The pile length shall be about **20.0m** from the finished ground level (0.6m filling). The recommended pile length is including socketing length of pile.
- ✓ The pile capacities for varying diameters are provided below for proposed structure.

Length of Pile (m)	Pile Dia (mm)	Safe Vertical Capacity (Tones)	Safe uplift capacity (Tones)	Safe Lateral capacity w.r.t 5mm Deflection	
				Free Head (Tones)	Fixed Head (Tones)
20	450	64	43	0.9	2.3
	500	75	48	1.0	2.5
	600	95	59	1.2	3.1

General Recommendation

- The proposed project site is situated in Mangadu, Chennai which falls under Seismic Zone III as per IS 1893 (Part 1) - 2002. Structure should be design against Earth quake resistance
- Pile Cut Off level is considered 1.0m below Existing Ground Level (EGL).
- Use minimum M25 Grade of concrete
- Centre to centre spacing of piles shall not be less than 3 times of the diameter of the pile shaft.
- **The above safe loads suggested are only tentative and these have to be confirmed by conducting through pile load tests conducted as per I.S-2911part –IV:2013**

For Club House (Stilt+3)

- ✓ The proposed structure is a Stilt+ Three upper floors club building.
- ✓ Excavate up to 2.0m, after excavation thorough compaction shall be done **bottom of excavated trench with heavy roller.**
- ✓ After thorough compaction, adopt strip raft of 1.5m minimum width at a depth of 2.0m below the E.G.L can be adopted.
- ✓ **The Safe bearing capacity is 17.0T/sq.m. at 2.0m below E.G.L.**
- ✓ The Strip Raft Shall be designed as inverted 'T'
- ✓ These should be inter connecting strip rafts in perpendicular direction.
- ✓ Strip raft should rest on 150mm thick 1:4:8 mat.
- ✓ The settlements are within permissible limits.
- ✓ All foundation works should be done in dry conditions only.
- ✓ Excavated soil can be re used with proper compaction.

VASANTHI PADMANABAN, M.Tech.,
Registered Geotechnical Engineer
Reg. No: GTE/19/04/016

2.0 DETERMINATION OF BEARING CAPACITY OF SHALLOW FOUNDATIONS

[Based On IS: 6403-1981]

Strip Width: 1.5m
Length of Strip: 22.5m (Assumed)
Depth of Foundation: 2.0m
Existing Ground level: 0.00M
Ground Water Table level: -0.00M (Due to Heavy Rain Temporary)
Bulk Density (W) of Soil above Footing Base: 1.80
Submerged Density (W') of Soil above Footing Base: 0.80T/Cu.M.
Bulk Density (W) of Soil below Footing Base: 1.80T/Cu.M.
Factor of Safety: 2.5

Shape factor	Depth Factor	Inclination Factor
Sq = 1.010	Dq = 1.22	Iq = 1.000
Sg = 0.990	Dg = 1.22	Ig = 1.000

Water Table Correction Factor w' = 0.50

Effective surcharge at base level q = 1.60 T/Sq.M.

Ultimate Net B.C. = Qult_n = q*(Nq-1)*Sq*Dq*Iq + 0.5*B*W*Ng*Sg*Dg*Ig*W'

Angle of Internal Friction (phai): 28^0

Bearing Capacity Factors
Nq = 15.30, Ng =17.79

Thus Qult_n =42.74T/Sq.M.
Allowable Bearing Capacity (Qall) = 17.10T/Sq.M. **Say 17T/m^2**

Settlement Calculations as per IS-8009-(Part1) 1998

S= Sc+Si

Sc=5mm $$Si = pB\frac{(1-\mu^2)}{Es}I$$

S_i= Medium dense SAND (2.0m to 8.50m)

$$Si = 17 * 1.5\frac{(1-0.3^2)}{1500} - 1.31 = 0.020m = 20mm$$

S= Sc+Si= 5+20=25mm

Depth Correction =0.90*25=22.5mm **Say 23mm**

Total settlements 23mm, it is less than 25mm hence it is safe as per IS 1904-1986.

ESTIMATION OF VERTICAL CAPACITY OF PILE

Project:	6256-R2, "VIRAAM" Residential Building
Location:	Mangadu
Reference BH's	BH-1 To BH-2 (ref BH-1)

Dia of Pile	600	mm
Elevation	0	m
Pile Cut off Level	1.0	m
Pile termination level below G.L	20	m
Total Length of Pile	19.0	m
Factor of safety	**2.5**	

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

$$Q_u = A_p N_c c_p + \sum_{i=1}^{n} \alpha_i c_i A_{si}$$

Soil Design Parameters

Sl.No	From (m)	To (m)	Thickness (m)	Soil Type	Avg 'N'	γ' (kN/m^3)	C (kPa)	α	ϕ	K	Pdi (kN/m^2)
1	0	0.6	0.6	Filled up soil	6	7.5	-	-	18	1	2.25
2	0.6	2.5	1.9	Soft CLAY	4	7	20	1	-	-	11.15
3	2.5	3.5	1	Loose SAND	8	8	-	-	18	1	21.8
4	3.5	5.5	2	Stiff CLAY	10	8	60	0.9	-	-	33.8
5	5.5	7	1.5	Medium dense SAND	19	8.5	-	-	32	1.1	48.175
6	7	12	5	Medium stiff to stiff CLAY	6	8	35	1	-	-	74.55
7	12	16.5	4.5	Very stiff CLAY	24	9	120	0.3	-	-	114.8
8	16.5	20.5	4	Hard CLAY	>50	10	300	0.28	-	-	155.05

Pile Calculations As per IS-2911 part-1/Sec-2-2010

Sl.No	From (m)	To (m)	Thickness (m)	Avg 'N'	γ' (kN/m^3)	C (kPa)	α	ϕ	K	Asi	Sf (kN)	Sfi (kN)
2	1	2.5	1.5	4	7	20	1	-	-	2.83	56.55	56.55
3	2.5	3.5	1	8	8	-	-	18	1	1.88	13.35	69.90
4	3.5	5.5	2	10	8	60	0.9	-	-	3.77	203.58	273.48
5	5.5	7	1.5	19	8.5	-	-	32	1.1	2.83	93.63	367.10
6	7	12	5	6	8	35	1	-	-	9.42	329.87	696.97
7	12	16.5	4.5	24	9	120	0.3	-	-	8.48	305.36	1002.33
8	16.5	20	3.5	>50	10	300	0.28	-	-	6.60	554.18	**1556.51**

End Bearing

Bearing Strata	Dia (m)	Ap (m^2)	γ' (kN/m^3)	q(kN/m2)	Nq	Ng	C (kN/m2)	Nc	Qp (kN)	Qult (kN)	Qallow (kN)
Hard CLAY	0.6	0.28274334	8	72	-	-	340	9	865.2	**2421.7**	**968.68**

Safe vertical Capacity of Single Pile	**97**	**Tones**

Lateral Pile Capacity Calculation

Project Title : 6256-R2, "VIRAAM" Residential Building
Site : Mangadu
BH: BH-1 to BH-2 (ref BH-1)

As Per IS-2911(Part-1/Sec-2):2010

$Deflection, y = \frac{H(e+Z_f)^3}{3EI} X10^3$ ... for free head pile	$Deflection, y = \frac{H(e+Z_f)^3}{12EI} X10^3$ ... for fixed head pile

Input

Soil		Medium stiff CLAY	
Diameter of Pile	=	600	mm
Length of Pile Below FGL, (L)	=	20	m
Length of Pile Above FGL, (L1=e)	=	0	m
Grade of Concrete	=	25	
Allowable Deflection, (y)	=	**5**	mm
Young's modulus of pile material, (E)	=	25000.00	MN/m^2
Moment Inertia of the Pile Cross section (I)	=	0.0064	m^4

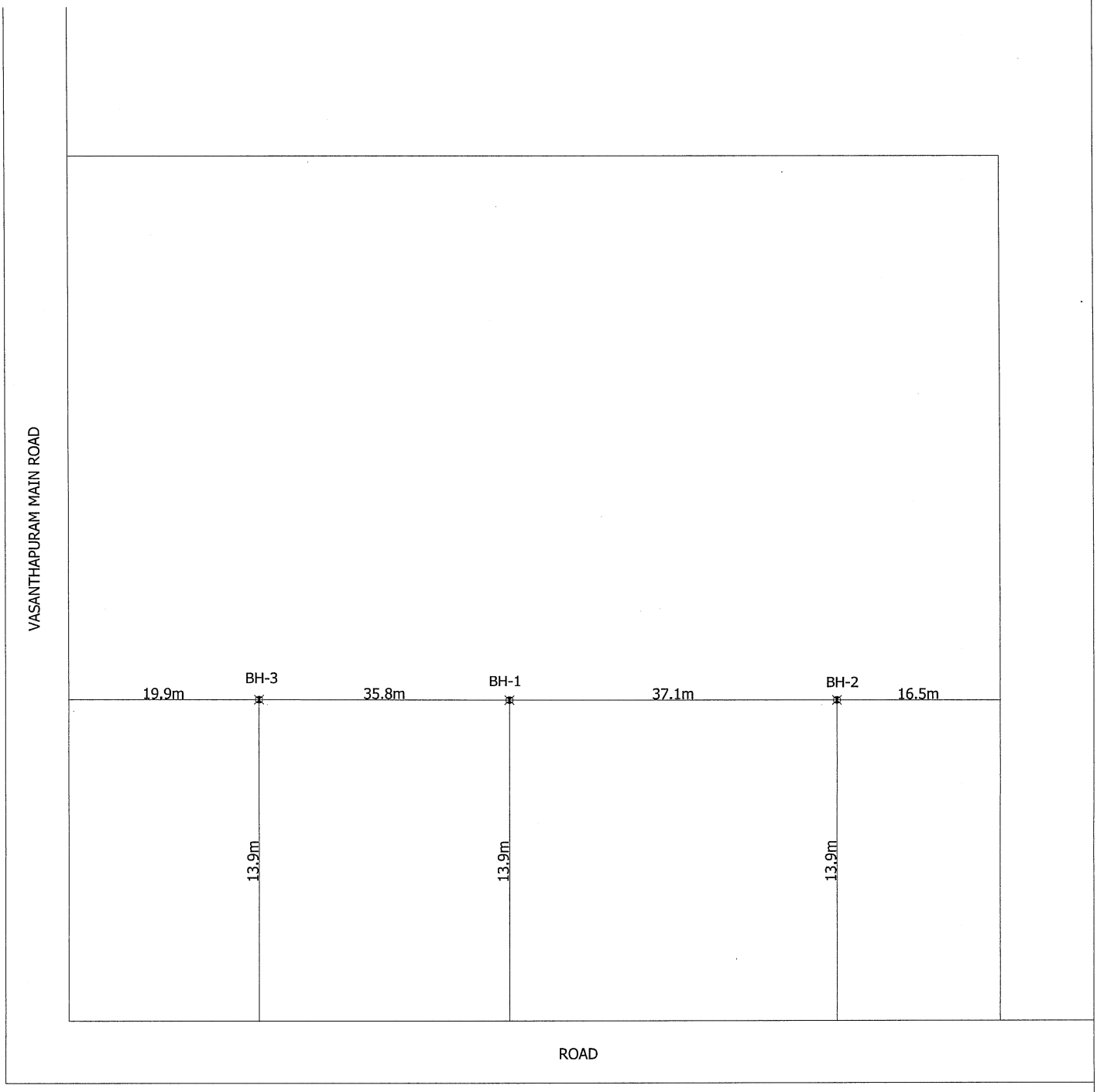
For CLAY			Stiffness factor R, in m $= \sqrt[4]{\frac{EI}{KB}}$	
k_1=	9	MN/m^2	L1/R=	0
K=	3	MN/m^3	Lf/R (Free Head)=	1.9
R=	3.07	m	Lf/R (Fixed Head)=	2.2
For SAND			Stiffness factor T, in m $= \sqrt[5]{\frac{EI}{\eta_h}}$	
η_h=	0	MN/m^3	L_f/T(Free Head)=	1.9
T=	#DIV/0!	m	L_f/T(Fixed Head)=	2.2
L_1/T=	#DIV/0!			

Output for CLAY Soil

Z_f (Free Head)/ Depth of Fixity =	5.83	m
Z_f (Fixed Head) / Depth of Fixity =	6.75	m

Result

Lateral Load Free Head =	**1.21**	**Tones**
Lateral Load Fixed Head =	**3.11**	**Tones**



TITLE: DRAWING SHOWING THE SOIL INVESTIGATION BORE HOLE LOCATIONS

PROJECT: PROPOSED CONSTRUCTION OF "VIRAAM" RESIDENTIAL BUILDING

LEGEND:		
BH: BORE HOLE	-SOIL TEST LOCATION	
ACTIVITY	EXECUTED BY	SCALE: N T S
FOREMEN	DEVARAJ	
DRAFTING	AK	

MARS SYNERGY GEOTECH Pvt Ltd
(An ISO 9001: 2015 Certified Company)
Engineering Survey & Soil Investigation
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DRAWING NO: MSGTPL/SI-6256-R2/24-25

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

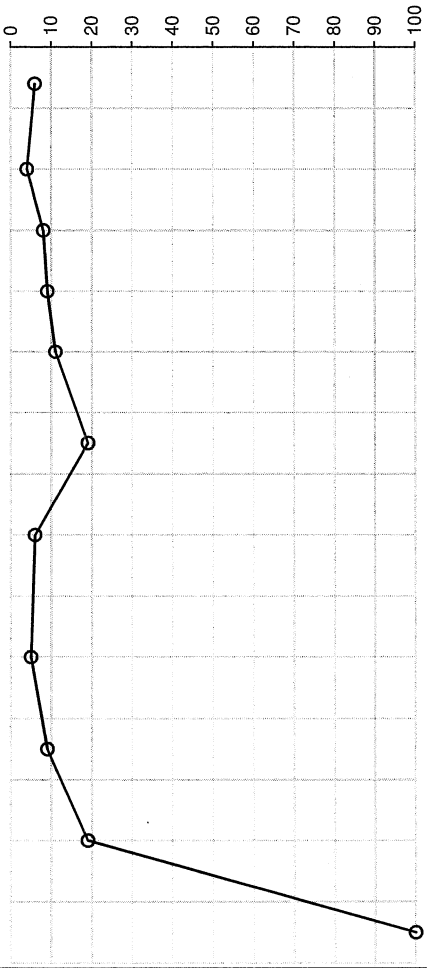
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	**BH-1**	
G.W.T (m)	(-)1.50	
Date of Start	17-Aug-2024	
Date of Complete	20-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	1 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
0.0										
0.5	1.0	Filledup Soil								
0.6					SPT	0.6	2	3	3	6
1.5	1.0	Soft Brownish CLAY		CI						
2.0					SPT	2.0	2	2	2	4
2.5	1.0	Loose Brownish Clayey SAND		SC						
3.0					SPT	3.0	5	4	4	8
3.5	2.0	Stiff Greyish CLAY		CH						
4.0					SPT	4.0	3	4	5	9
4.5										
5.0					SPT	5.0	4	5	6	11
5.5	1.5	Medium Dense Greyish Silty Fine SAND		SM						
6.0										
6.5					SPT	6.5	7	9	10	19
7.0	3.5	Medium Stiff Greyish CLAY		CH						
7.5										
8.0					SPT	8.0	2	3	3	6
8.5										
9.0										
9.5										
10.0					SPT	10.0	3	2	3	5
10.5	1.5	Stiff Greyish CLAY		CH						
11.0										
11.5					SPT	11.5	3	4	5	9
12.0	1.5	Very Stiff Brownish and Light Greyish Sandy CLAY		CI						
12.5										
13.0					SPT	13.0	7	9	10	19
13.5	1.5	Very Dense Brownish and Light Greyish Clayey SAND		SC						
14.0										
14.5					SPT	14.5	27	40	Blows for 10	
15.0										
Borehole Termination Depth (m)										**20.5**

Graphical Representation of SPT



EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table

SPT- Standard Penetration Test
UDS- Undisturbed Sample

DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

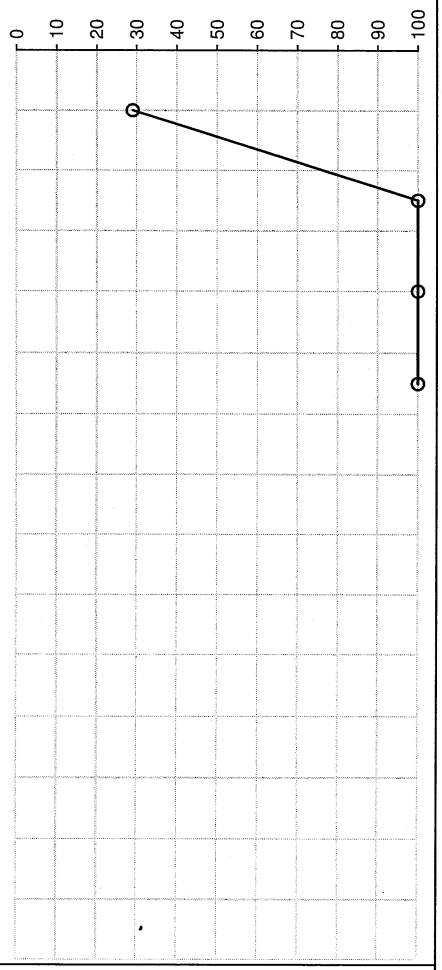
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	BH-1	
G.W.T (m)	(-)1.50	
Date of Start	17-Aug-2024	
Date of Complete	20-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	2 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
15.0										
15.5	1.5	Very Stiff Brownish CLAY		CH						
16.0					SPT	16.0	7	9	20	**29**
16.5										
17.0										
17.5					SPT	17.5	17	35	50 Blows for 1cm	
18.0										
18.5	4.5	Hard Brownish and Light Greyish CLAY		CH						
19.0					SPT	19.0	35	50 Blows for 7cm		
19.5										
20.0										
20.5					SPT	20.5	50 Blows for 11cm			
21.0										
21.5										
22.0										
22.5										
23.0										
23.5										
24.0										
24.5										
25.0										
25.5										
26.0										
26.5										
27.0										
27.5										
28.0										
28.5										
29.0										
29.5										
30.0										

Graphical Representation of SPT



Borehole Termination Depth (m) 20.5

EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table
SPT- Standard Penetration Test
UDS- Undisturbed Sample
DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

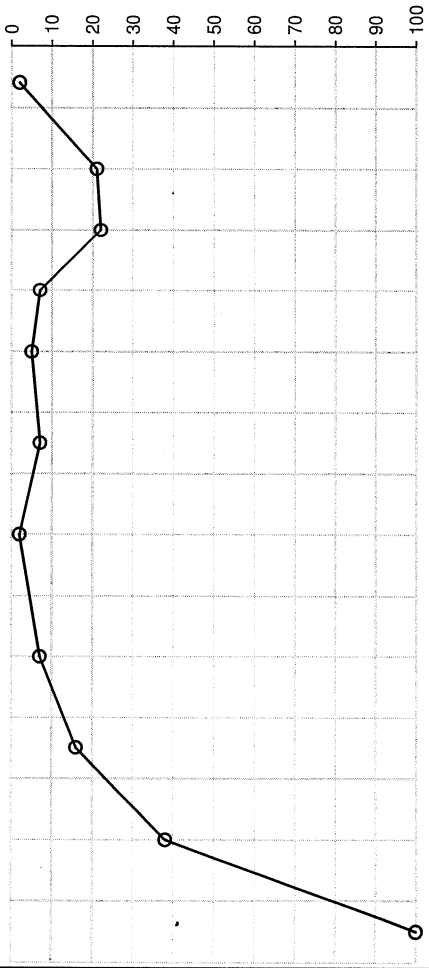
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	**BH-2**	
G.W.T (m)	(-)1.50	
Date of Start	21-Aug-2024	
Date of Complete	22-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	1 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
0.0										
0.5	1.0	Filledup Soil								
0.6					SPT	0.6	1	1	1	2
1.5										
2.0	2.0	Medium Dense Brownish Fine to Medium SAND		SM	SPT	2.0	7	9	12	21
2.5										
3.0					SPT	3.0	7	10	12	22
3.5	1.0	Medium Stiff Greyish Sandy CLAY		CI						
4.0					SPT	4.0	3	3	4	7
4.5	1.0	Medium Stiff Greyish CLAY		CH						
5.0					SPT	5.0	3	2	3	5
5.5										
6.0	1.5	Medium Stiff Greyish Sandy CLAY		CI						
6.5					SPT	6.5	4	3	4	7
7.0										
7.5	1.5	Very Loose Greyish Clayey SAND		SC						
8.0					SPT	8.0	0	1	1	2
8.5										
9.0	2.0	Medium Stiff Greyish Sandy CLAY		CI						
9.5										
10.0					SPT	10.0	2	3	4	7
10.5										
11.0	1.5	Medium Dense Greyish Clayey SAND		SC						
11.5					SPT	11.5	7	7	9	16
12.0										
12.5	1.5	Dense Brownish and Light Greyish Clayey SAND		SC						
13.0					SPT	13.0	14	16	22	38
13.5										
14.0	2.0	Very Dense Brownish and Light Greyish Clayey Sand with Gravel		GP						
14.5					SPT	14.5	38	28	26	54
15.0										

Graphical Representation of SPT



Borehole Termination Depth (m) 20.5

EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table

SPT- Standard Penetration Test
UDS- Undisturbed Sample

DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

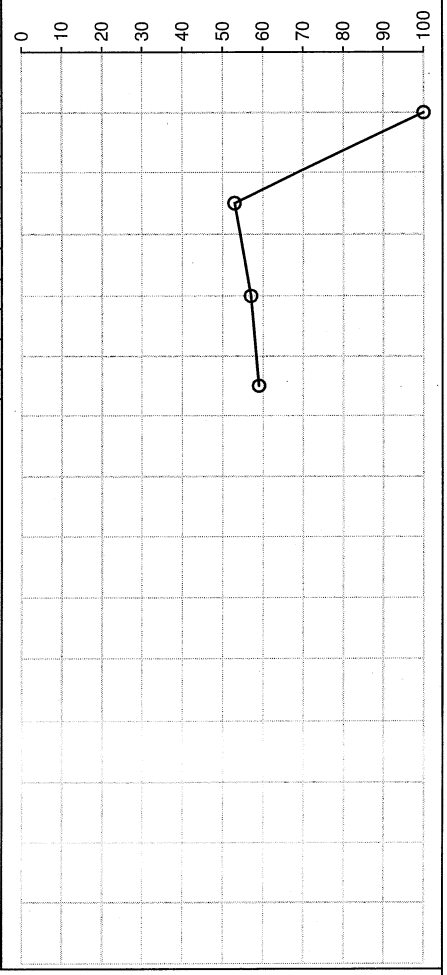
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	BH-2	
G.W.T (m)	(-)1.50	
Date of Start	21-Aug-2024	
Date of Complete	22-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	2 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
15.0										
15.5	1.0	Very Dense Brownish and Light Greyish Clayey Sand with Gravel		GP						
16.0					SPT	16.0	39	50 Blows for 11cm		
16.5										
17.0										
17.5					SPT	17.5	16	25	28	**53**
18.0										
18.5	4.5	Hard Brownish and Light Greyish CLAY		CH						
19.0					SPT	19.0	22	27	30	**57**
19.5										
20.0										
20.5					SPT	20.5	23	27	32	**59**
21.0										
21.5										
22.0										
22.5										
23.0										
23.5										
24.0										
24.5										
25.0										
25.5										
26.0										
26.5										
27.0										
27.5										
28.0										
28.5										
29.0										
29.5										
30.0										

Graphical Representation of SPT



Borehole Termination Depth (m) 20.5

EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table
SPT- Standard Penetration Test
UDS- Undisturbed Sample
DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

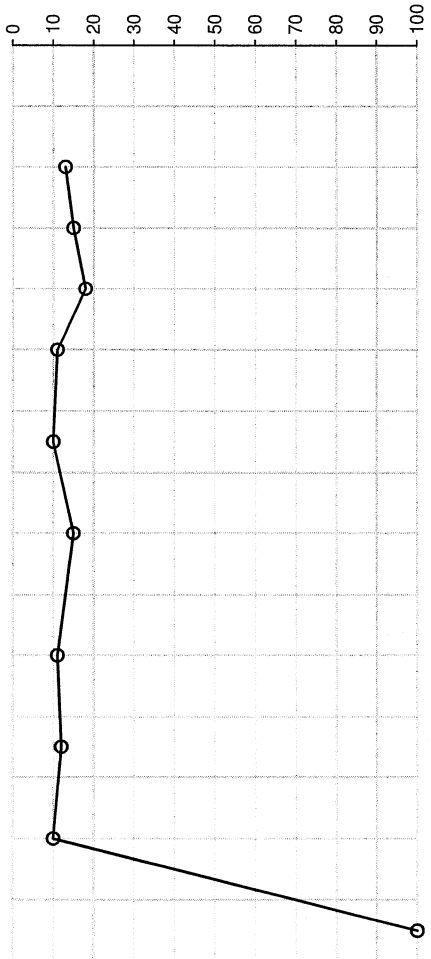
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	BH-3	
G.W.T (m)	(-)1.50	
Date of Start	24-Aug-2024	
Date of Complete	25-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	1 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
0.0										
0.5	1.0	Filledup Soil								
0.6						0.6	-	-	-	-
1.5										
2.0					SPT	2.0	5	6	7	13
2.5	3.0	Medium Dense Brownish fine to Medium SAND		SW						
3.0					SPT	3.0	7	8	7	15
3.5										
4.0					SPT	4.0	5	8	10	18
4.5										
5.0					SPT	5.0	4	5	6	11
5.5										
6.0										
6.5					SPT	6.5	4	5	5	10
7.0										
7.5										
8.0	7.5	Stiff Greyish CLAY		CH	SPT	8.0	5	7	8	15
8.5										
9.0										
9.5										
10.0					SPT	10.0	5	5	6	11
10.5										
11.0										
11.5					SPT	11.5	5	6	6	12
12.0										
12.5	1.5	Loose Brownish Clayey SAND		SC						
13.0					SPT	13.0	4	5	5	10
13.5										
14.0	1.5	Hard Brownish CLAY		CH						
14.5					SPT	14.5	20	29	40	69
15.0										

Graphical Representation of SPT



Borehole Termination Depth (m) 20.5

EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table
SPT- Standard Penetration Test
UDS- Undisturbed Sample
DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

BOREHOLE LOG

Project No: MSGTPL/SI-6256-R2/24-25

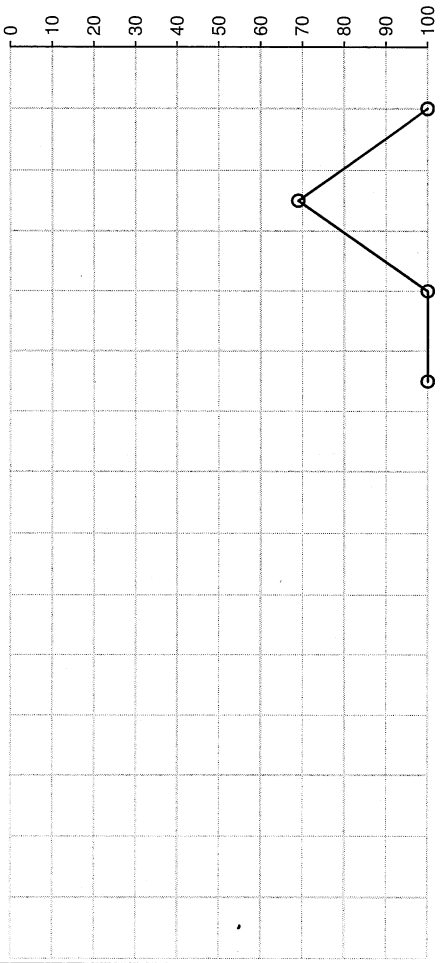
Project: Proposed Construction of "VIRAAM" Residential Building

Location	
Ground R.L	-
Drilling	Rotary

Borehole No	BH-3	
G.W.T (m)	(-)1.50	
Date of Start	24-Aug-2024	
Date of Complete	25-Aug-2024	
Dia of Bore (mm)	100	Sheet
Termination Depth (m)	20.50	2 of 2

Depth below EGL (m)	Layer Thickness	Soil Layers Description	Soil Symbol	IS-Classification	Type Field Test	Test Depth (m)	SPT Values Record 0 to 45cm			SPT- N- Value
15.0										
15.5	1.5	Very Dense Brownish and Light Greyish Clayey SAND		SC						
16.0					SPT	16.0	19	20	33	53
16.5										
17.0										
17.5					SPT	17.5	20	29	40	**69**
18.0										
18.5	4.5	Hard Brownish and Light Greyish CLAY		CH						
19.0					SPT	19.0	39	50 Blows for 8cm		
19.5										
20.0										
20.5					SPT	20.5	45	50 Blows for 5cm		
21.0										
21.5										
22.0										
22.5										
23.0										
23.5										
24.0										
24.5										
25.0										
25.5										
26.0										
26.5										
27.0										
27.5										
28.0										
28.5										
29.0										
29.5										
30.0										

Graphical Representation of SPT



Borehole Termination Depth (m) 20.5

EGL- Existing Ground Level
R.L- Reduced Level
GWT- Ground Water Table

SPT- Standard Penetration Test
UDS- Undisturbed Sample

DS- Disturbed Sample
CR- Core Recovery
RQD- Rock Quality Designation

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25

Project :Proposed Construction of "VIRAAM" Residential Building

BH No 1 | **Ground Water Level:(-)1.50m** | **Termination Depth:20.50m**

SUMMARY OF TEST RESULTS

N Value	Layer Thickness	Depth (m)	Soil Description	IS Classification	Index Properties (%)						Specific Gravity	Grain Size Analysis (%)				
					NMC	W_L	W_P	I_P	Ic	FreeSwell		Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
	1.0	0.00	Filledup Soil													
6		0.60														
	1.0		Soft Brownish CLAY	CI												
4		2.00			30	42	17	25			2.61					
	1.0		Loose Brownish Clayey SAND	SC												
8		3.00			20							0	1	19	40	40
	2.0		Stiff Greyish CLAY	CH												
9		4.00			29	52	20	32			2.62					
11		5.00			36	52	22	30								
	1.5		Medium Dense Greyish Silty Fine SAND	SM												
19		6.50			20						2.66	0	0	13	74	13
6	3.5	8.00	Medium Stiff Greyish CLAY	CH	39	53	14	38								
5		10.00			37						2.62					
9	1.5	11.50	Stiff Greyish CLAY	CH	33											
19	1.5	13.00	Very Stiff Brownish and Light Greyish Sandy CLAY	CI	21						2.60	1	1	20	25	53
>100	1.5	14.50	Very Dense Brownish and Light Greyish Clayey SAND	SC	18							3	12	24	18	43
29	1.5	16.00	Very Stiff Brownish CLAY	CH	39	68	24	44			2.62					
>100		17.50			35	83	33	50								
>100	4.5	19.00	Hard Brownish and Light Greyish CLAY	CH	30						2.62					
>100		20.50			31	74	29	45								

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25

Project :Proposed Construction of "VIRAAM" Residential Building

BH No 2 | **Ground Water Level:(-)1.50m** | **Termination Depth:20.50m**

SUMMARY OF TEST RESULTS

N Value	Layer Thickness	Depth (m)	Soil Description	IS Classification	Index Properties (%)						Specific Gravity	Grain Size Analysis (%)				
					NMC	W_L	W_P	I_P	Ic	FreeSwell		Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
	1.0	0.00	Filledup Soil													
2		0.60														
	2.0		Medium Dense Brownish Fine to Medium SAND	SM												
21		2.00			18						2.63	0	0	46	40	14
22		3.00			20							1	0	40	45	14
	1.0		Medium Stiff Greyish Sandy CLAY	CI												
7		4.00			44						2.60	0	0	14	11	75
	1.0		Medium Stiff Greyish CLAY	CH												
5		5.00			35	57	20	37								
	1.5		Medium Stiff Greyish Sandy CLAY	CI												
7		6.50			35						2.61	0	0	11	25	64
	1.5		Very Loose Greyish Clayey SAND	SC												
2		8.00														
	2.0		Medium Stiff Greyish Sandy CLAY	CI												
7		10.00			29							0	1	10	35	54
	1.5		Medium Dense Greyish Clayey SAND	SC												
16		11.50			21							0	2	11	40	47
	1.5		Dense Brownish and Light Greyish Clayey SAND	SC												
38		13.00			15						2.61	6	5	18	29	42
	3.0		Very Dense Brownish and Light Greyish Clayey Sand with Gravel	GP												
54		14.50			17							22	24	21	11	22
>100		16.00			13							34	17	16	12	21
	4.5		Hard Brownish and Light Greyish CLAY	CH												
53		17.50			32	75	22	53			2.62					
57		19.00			27											
59		20.50			29	66	29	36								

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25

Project :Proposed Construction of "VIRAAM" Residential Building

BH No 3 | **Ground Water Level:(-)1.50m** | **Termination Depth:20.50m**

SUMMARY OF TEST RESULTS

N Value	Layer Thickness	Depth (m)	Soil Description	IS Classification	Index Properties (%)						Specific Gravity	Grain Size Analysis (%)				
					NMC	W_L	W_P	I_P	Ic	FreeSwell		Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt & Clay
	1.0	0.00	Filledup Soil													
		0.60														
13		2.00	Medium Dense Brownish fine to Medium SAND	SW	15							0	0	56	36	8
	3.0															
15		3.00			16						2.64	0	0	60	32	8
18		4.00			16							0	0	55	35	10
11		5.00	Stiff Greyish CLAY	CH	35	65	25	40			2.60					
10		6.50			37											
	7.5															
15		8.00			35											
11		10.00			33	63	28	36								
12		11.50			34	55	21	34								
	1.5		Loose Brownish Clayey SAND	SC												
10		13.00			21						2.62	0	5	50	27	18
	1.5		Hard Brownish CLAY	CH												
69		14.50			27	70	27	44			2.61					
	1.5		Very Dense Brownish and Light Greyish Clayey SAND	SC												
53		16.00			19						2.62	0	2	25	35	38
69		17.50	Hard Brownish and Light Greyish CLAY	CH	27	60	26	35			2.64					
	4.5															
>100		19.00			36											
>100		20.50			33	75	34	41								

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-2
Sample Received on:26.08.2024
Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	1		1		1		1		1		1	
Depth (m)	2.0		3.0		4.0		5.0		6.5		8.0	
Tare No	429	590	391	502	521	386	532	337	566	314	501	469
Wt of Tare (gr)	45.27	45.24	44.92	45.25	44.81	45.43	44.62	45.20	44.90	46.04	45.18	45.11
Tare + Soil (gr)	80.77	78.58	82.63	78.33	72.00	70.13	65.83	73.06	69.90	74.19	74.99	77.72
Tare+Dry soil (gr)	72.65	70.90	76.27	72.75	65.84	64.55	60.21	65.68	65.72	69.49	66.58	68.50
Wt of Water (gr)	8.12	7.68	6.36	5.58	6.16	5.58	5.62	7.38	4.18	4.70	8.41	9.22
Wt Dry soil (gr)	27.38	25.66	31.35	27.50	21.03	19.12	15.59	20.48	20.82	23.45	21.40	23.39
Water Content (%)	29.66	29.93	20.29	20.29	29.29	29.18	36.05	36.04	20.08	20.04	39.30	39.42
Average Water Content (%)	30		20		29		36		20		39	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-2
Sample Received on:26.08.2024
Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	1		1		1		1		1		1	
Depth (m)	10.0		11.5		13.0		14.5		16.0		17.5	
Tare No	415	569	594	338	323	427	302	411	462	361	385	304
Wt of Tare (gr)	44.77	44.80	44.83	45.52	44.62	43.73	45.27	44.78	44.17	44.55	45.05	45.79
Tare + Soil (gr)	80.33	81.71	78.86	79.13	78.69	66.99	76.51	73.45	77.95	72.80	79.74	72.60
Tare+Dry soil (gr)	70.80	71.81	70.34	70.68	72.76	62.94	71.85	69.13	68.43	64.83	70.74	65.62
Wt of Water (gr)	9.53	9.90	8.52	8.45	5.93	4.05	4.66	4.32	9.52	7.97	9.00	6.98
Wt Dry soil (gr)	26.03	27.01	25.51	25.16	28.14	19.21	26.58	24.35	24.26	20.28	25.69	19.83
Water Content (%)	36.61	36.65	33.40	33.59	21.07	21.08	17.53	17.74	39.24	39.30	35.03	35.20
Average Water Content (%)	37		33		21		18		39		35	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-2
Sample Received on:26.08.2024
Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	1		1		2		2		2		2	
Depth (m)	19.0		20.5		2.0		3.0		4.0		5.0	
Tare No	409	582	383	476	431	412	309	335	322	583	544	565
Wt of Tare (gr)	45.03	44.62	44.26	45.00	44.14	43.89	44.93	44.71	45.12	45.23	43.95	45.02
Tare + Soil (gr)	72.58	76.00	65.86	73.23	75.76	75.86	74.23	70.06	72.40	73.69	81.49	71.58
Tare+Dry soil (gr)	66.16	68.73	60.74	66.54	71.05	71.08	69.32	65.82	64.06	64.97	71.69	64.64
Wt of Water (gr)	6.42	7.27	5.12	6.69	4.71	4.78	4.91	4.24	8.34	8.72	9.80	6.94
Wt Dry soil (gr)	21.13	24.11	16.48	21.54	26.91	27.19	24.39	21.11	18.94	19.74	27.74	19.62
Water Content (%)	30.38	30.15	31.07	31.06	17.50	17.58	20.13	20.09	44.03	44.17	35.33	35.37
Average Water Content (%)	30		31		18		20		44		35	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-2
Sample Received on:26.08.2024
Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	2		2		2		2		2		2	
Depth (m)	6.5		10.0		11.5		13.0		14.5		16.0	
Tare No	374	534	315	447	336	514	419	380	339	459	367	546
Wt of Tare (gr)	44.30	44.74	44.98	45.30	44.89	45.60	44.70	45.29	44.70	45.29	45.54	45.09
Tare + Soil (gr)	73.54	75.46	77.47	77.42	77.59	74.83	78.02	77.13	79.99	77.13	78.50	80.13
Tare+Dry soil (gr)	65.91	67.47	70.16	70.19	71.90	69.73	73.55	72.86	74.76	72.39	74.59	76.01
Wt of Water (gr)	7.63	7.99	7.31	7.23	5.69	5.10	4.47	4.27	5.23	4.74	3.91	4.12
Wt Dry soil (gr)	21.61	22.73	25.18	24.89	27.01	24.13	28.85	27.57	30.06	27.10	29.05	30.92
Water Content (%)	35.31	35.15	29.03	29.05	21.07	21.14	15.49	15.49	17.40	17.49	13.46	13.32
Average Water Content (%)	35		29		21		15		17		13	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
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Method Use: IS-2720 P-2
Sample Received on:26.08.2024
Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	2		2		2		3		3		3	
Depth (m)	17.5		19.0		20.5		2.0		3.0		4.0	
Tare No	405	519	487	328	416	401	531	372	466	450	479	406
Wt of Tare (gr)	44.83	45.30	44.77	45.10	44.88	44.33	45.11	45.59	43.86	44.93	45.85	45.19
Tare + Soil (gr)	72.28	72.90	72.33	71.08	72.52	66.70	76.30	73.06	74.90	73.22	74.81	77.00
Tare+Dry soil (gr)	65.57	66.15	66.45	65.54	66.24	61.62	72.14	69.38	70.59	69.31	70.74	72.59
Wt of Water (gr)	6.71	6.75	5.88	5.54	6.28	5.08	4.16	3.68	4.31	3.91	4.07	4.41
Wt Dry soil (gr)	20.74	20.85	21.68	20.44	21.36	17.29	27.03	23.79	26.73	24.38	24.89	27.40
Water Content (%)	32.35	32.37	27.12	27.10	29.40	29.38	15.39	15.47	16.12	16.04	16.35	16.09
Average Water Content (%)	32		27		29		15		16		16	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
Project :Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
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Test Started on:26.08.2024
Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	3		3		3		3		3		3	
Depth (m)	5.0		6.5		8.0		10.0		11.5		13.0	
Tare No	529	417	446	516	402	528	461	567	547	399	458	349
Wt of Tare (gr)	44.40	44.21	43.50	43.11	45.43	45.43	44.67	44.67	44.81	44.28	45.23	45.11
Tare + Soil (gr)	77.46	72.81	73.20	77.22	80.06	77.36	69.09	71.19	69.95	68.09	80.81	74.75
Tare+Dry soil (gr)	68.93	65.44	65.16	67.96	70.99	69.02	63.01	64.61	63.63	62.09	74.54	69.58
Wt of Water (gr)	8.53	7.37	8.04	9.26	9.07	8.34	6.08	6.58	6.32	6.00	6.27	5.17
Wt Dry soil (gr)	24.53	21.23	21.66	24.85	25.56	23.59	18.34	19.94	18.82	17.81	29.31	24.47
Water Content (%)	34.77	34.72	37.12	37.26	35.49	35.35	33.15	33.00	33.58	33.69	21.39	21.13
Average Water Content (%)	35		37		35		33		34		21	

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

Project No: MSGTPL/SI-6256-R2/24-25
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Test Completed on:27.08.2024

Natural Moisture Content Data Sheet

BH.No/ Pit no	3		3		3		3		3			
Depth (m)	14.5		16.0		17.5		19.0		20.5			
Tare No	598	490	599	390	499	580	556	310	517	484		
Wt of Tare (gr)	44.40	45.11	45.48	45.24	44.21	45.39	44.45	45.61	45.25	44.23		
Tare + Soil (gr)	69.59	76.89	75.06	79.53	74.80	68.39	72.18	76.26	71.87	71.50		
Tare+Dry soil (gr)	64.20	70.04	70.35	74.10	68.30	63.52	64.81	68.14	65.20	64.68		
Wt of Water (gr)	5.39	6.85	4.71	5.43	6.50	4.87	7.37	8.12	6.67	6.82		
Wt Dry soil (gr)	19.80	24.93	24.87	28.86	24.09	18.13	20.36	22.53	19.95	20.45		
Water Content (%)	27.22	27.48	18.94	18.81	26.98	26.86	36.20	36.04	33.43	33.35		
Average Water Content (%)	27		19		27		36		33			

Tested by: K.N Reviewed by:R.N Authorized by:V.A

MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

SPECIFIC GRAVITY TEST

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Sample Received on:26.08.2024
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Test Completed on:27.08.2024

BH.No	1
Depth(m)	2.0

Pycnometer number			1	28
Weight of bottle	w_1	g	33.7600	34.3100
Weight of bottle + soil	w_2	g	59.5190	53.4400
Weight of bottle + soil + water	w_3	g	101.7260	98.0500
Weight of bottle full of water	w_4	g	85.8400	86.2600
Weight of soil	w_2-w_1	g	25.7590	19.1300
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.60903	2.60627
Average value G_s			2.61	

BH.No	1
Depth(m)	4.0

Pycnometer number			32	42
Weight of bottle	w1	g	46.3000	34.4900
Weight of bottle + soil	w2	g	61.0790	53.8840
Weight of bottle + soil + water	w3	g	105.8780	99.1960
Weight of bottle full of water	w4	g	96.7500	87.2100
Weight of soil	w2-w1	g	14.7790	19.3940
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61529	2.61798
Average value Gs			2.62	

Tested by: D.J Reviewed by:R.N Authorized by:V.A

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MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

SPECIFIC GRAVITY TEST

Project No:MSGTPL/SI-6256-R2/24-25
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Method Use: IS-2720 P-3
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Test Completed on:27.08.2024

BH.No	1
Depth(m)	6.5

Pycnometer number			52	77
Weight of bottle	w_1	g	35.4000	34.2500
Weight of bottle + soil	w_2	g	52.8830	57.5140
Weight of bottle + soil + water	w_3	g	97.6910	100.8300
Weight of bottle full of water	w_4	g	86.7900	86.3200
Weight of soil	w_2-w_1	g	17.4830	23.2640
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.65618	2.65753
Average value G_s			2.66	

BH.No	1
Depth(m)	10.0

Pycnometer number			7	18
Weight of bottle	w1	g	33.9900	35.9000
Weight of bottle + soil	w2	g	54.2300	57.8220
Weight of bottle + soil + water	w3	g	99.7330	101.9300
Weight of bottle full of water	w4	g	87.2300	88.3900
Weight of soil	w2-w1	g	20.2400	21.9220
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61600	2.61537
Average value Gs			2.62	

Tested by: D.J Reviewed by:R.N Authorized by:V.A

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BH.No	1
Depth(m)	13.0

Pycnometer number			73	74
Weight of bottle	w_1	g	37.1100	34.5900
Weight of bottle + soil	w_2	g	53.4690	50.4090
Weight of bottle + soil + water	w_3	g	98.7300	96.7400
Weight of bottle full of water	w_4	g	88.6600	87.0000
Weight of soil	w_2-w_1	g	16.3590	15.8190
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.60121	2.60224
Average value G_s			2.60	

BH.No	1
Depth(m)	16.0

Pycnometer number			59	3
Weight of bottle	w1	g	34.6100	32.8100
Weight of bottle + soil	w2	g	50.0230	44.9570
Weight of bottle + soil + water	w3	g	97.3100	91.8700
Weight of bottle full of water	w4	g	87.8000	84.3600
Weight of soil	w2-w1	g	15.4130	12.1470
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61105	2.61958
Average value Gs			2.62	

Tested by: D.J Reviewed by:R.N Authorized by:V.A

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Client Name: M/s. Aaalam Promoters Private Limited
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BH.No	1
Depth(m)	19.0

Pycnometer number			16	63
Weight of bottle	w_1	g	34.7900	33.0300
Weight of bottle + soil	w_2	g	48.4210	47.2380
Weight of bottle + soil + water	w_3	g	94.8600	94.3300
Weight of bottle full of water	w_4	g	86.4300	85.5400
Weight of soil	w_2-w_1	g	13.6310	14.2080
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.62084	2.62237
Average value G_s			2.62	

BH.No	2
Depth(m)	2.0

Pycnometer number			4	50
Weight of bottle	w1	g	35.0700	34.4800
Weight of bottle + soil	w2	g	50.9940	51.3330
Weight of bottle + soil + water	w3	g	97.3840	97.8400
Weight of bottle full of water	w4	g	87.5000	87.3900
Weight of soil	w2-w1	g	15.9240	16.8530
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.63642	2.63205
Average value Gs			2.63	

Tested by: D.J Reviewed by:R.N Authorized by:V.A

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BH.No	2
Depth(m)	4.0

Pycnometer number			7	71
Weight of bottle	w_1	g	33.9900	36.3500
Weight of bottle + soil	w_2	g	51.6970	51.0580
Weight of bottle + soil + water	w_3	g	98.1000	96.5600
Weight of bottle full of water	w_4	g	87.2000	87.5000
Weight of soil	w_2-w_1	g	17.7070	14.7080
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.60129	2.60411
Average value G_s			2.60	

BH.No	2
Depth(m)	6.5

Pycnometer number			86	77
Weight of bottle	w1	g	35.3600	34.2500
Weight of bottle + soil	w2	g	54.0790	51.2610
Weight of bottle + soil + water	w3	g	98.0300	96.8200
Weight of bottle full of water	w4	g	86.4800	86.3200
Weight of soil	w2-w1	g	18.7190	17.0110
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61110	2.61266
Average value Gs			2.61	

Tested by: D.J

Reviewed by:R.N

Authorized by:V.A

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Test Completed on:27.08.2024

BH.No	2
Depth(m)	13.0

Pycnometer number			28	20
Weight of bottle	w_1	g	34.3100	31.3100
Weight of bottle + soil	w_2	g	55.4470	55.3910
Weight of bottle + soil + water	w_3	g	99.3100	95.7960
Weight of bottle full of water	w_4	g	86.2600	80.9300
Weight of soil	w_2-w_1	g	21.1370	24.0810
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61370	2.61324
Average value G_s			2.61	

BH.No	2
Depth(m)	17.5

Pycnometer number			49	1
Weight of bottle	w1	g	34.5600	33.7600
Weight of bottle + soil	w2	g	49.0600	49.4430
Weight of bottle + soil + water	w3	g	94.7000	95.5500
Weight of bottle full of water	w4	g	85.7300	85.8400
Weight of soil	w2-w1	g	14.5000	15.6830
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.62206	2.62565
Average value Gs			2.62	

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BH.No	3
Depth(m)	3.0

Pycnometer number			6	85
Weight of bottle	w_1	g	34.5400	34.8600
Weight of bottle + soil	w_2	g	54.1740	56.1610
Weight of bottle + soil + water	w_3	g	99.4700	99.7560
Weight of bottle full of water	w_4	g	87.2600	86.5100
Weight of soil	w_2-w_1	g	19.6340	21.3010
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.64467	2.64444
Average value G_s			2.64	

BH.No	3
Depth(m)	5.0

Pycnometer number			10	58
Weight of bottle	w1	g	34.3600	34.6500
Weight of bottle + soil	w2	g	51.7920	53.1890
Weight of bottle + soil + water	w3	g	97.5600	97.3100
Weight of bottle full of water	w4	g	86.8300	85.8800
Weight of soil	w2-w1	g	17.4320	18.5390
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.60101	2.60782
Average value Gs			2.60	

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BH.No	3
Depth(m)	13.0

Pycnometer number			41	2
Weight of bottle	w_1	g	39.4200	35.9100
Weight of bottle + soil	w_2	g	63.7110	55.1590
Weight of bottle + soil + water	w_3	g	108.0300	99.2500
Weight of bottle full of water	w_4	g	93.0100	87.3400
Weight of soil	w_2-w_1	g	24.2910	19.2490
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.62011	2.62284
Average value G_s			2.62	

BH.No	3
Depth(m)	14.5

Pycnometer number			32	18
Weight of bottle	w1	g	46.3000	35.9000
Weight of bottle + soil	w2	g	63.9140	53.5760
Weight of bottle + soil + water	w3	g	107.6200	99.3100
Weight of bottle full of water	w4	g	96.7500	88.3900
Weight of soil	w2-w1	g	17.6140	17.6760
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.61180	2.61634
Average value Gs			2.61	

Tested by: D.J

Reviewed by:R.N

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BH.No	3
Depth(m)	16.0

Pycnometer number			27	42
Weight of bottle	w_1	g	35.1400	34.4900
Weight of bottle + soil	w_2	g	53.8840	58.1090
Weight of bottle + soil + water	w_3	g	99.2900	101.8170
Weight of bottle full of water	w_4	g	87.7000	87.2100
Weight of soil	w_2-w_1	g	18.7440	23.6190
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.62007	2.62084
Average value G_s			2.62	

BH.No	3
Depth(m)	17.5

Pycnometer number			26	48
Weight of bottle	w1	g	35.0400	40.1700
Weight of bottle + soil	w2	g	49.3160	55.2880
Weight of bottle + soil + water	w3	g	96.1000	102.9300
Weight of bottle full of water	w4	g	87.2300	93.5300
Weight of soil	w2-w1	g	14.2760	15.1180
Specific gravity	$\frac{w2-w1}{(w4-w1)-(w3-w2)}$		2.64077	2.64393
Average value Gs			2.64	

Tested by: D.J Reviewed by:R.N Authorized by:V.A

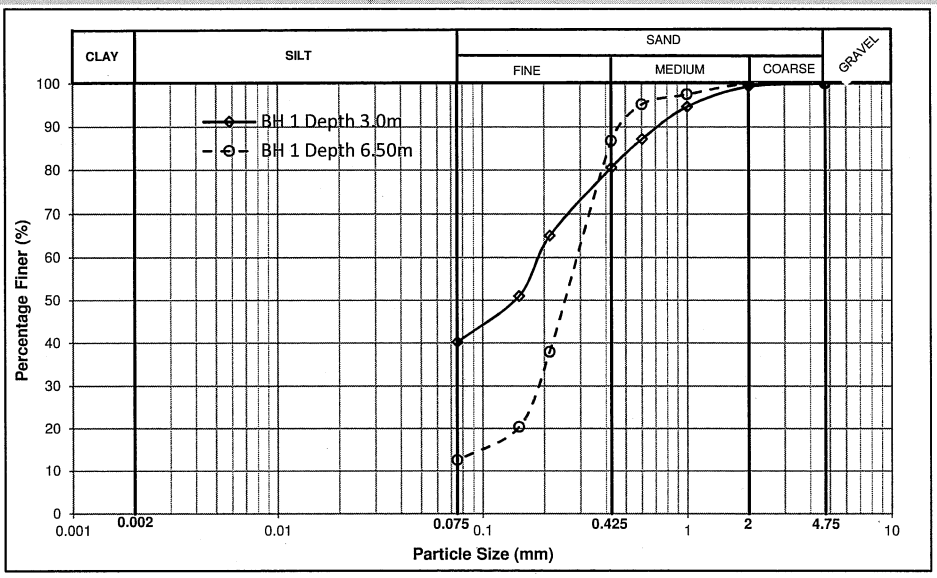
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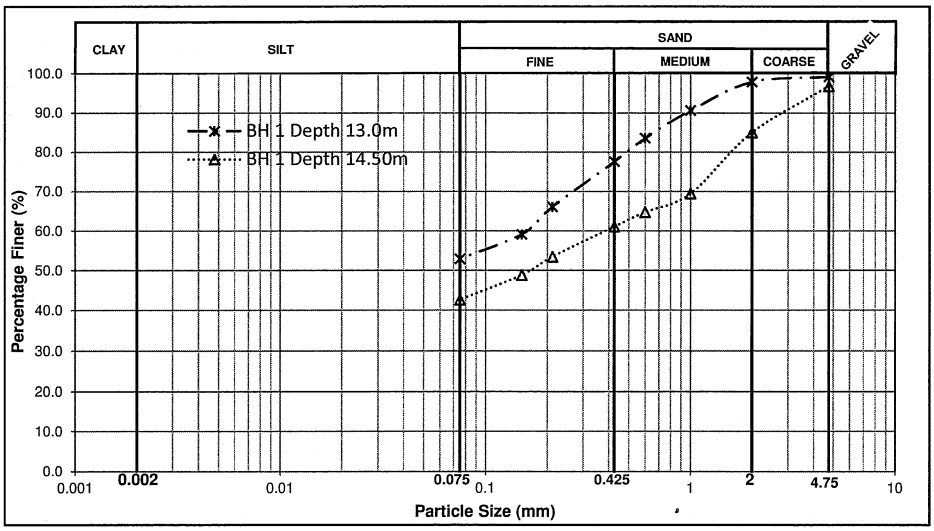
Project No: MSGTPL/SI-6256-R2/24-25

Project : Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-4
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

GRAIN SIZE ANALYSIS





BH-No	Depth	Gravel	SAND (%)			SILT& CLAY	D_{10}	D_{30}	D_{60}	Cu	Cc
	(m)	(%)	Coarse	Medium	Fine	(%)	(mm)	(mm)	(mm)		
1	3.0m	0	1	19	40	40			0.190		
1	6.50m	0	0	13	74	13		0.184	0.308		
1	13.0m	1	1	20	25	53			0.157		
1	14.50m	3	12	24	18	43			0.393		

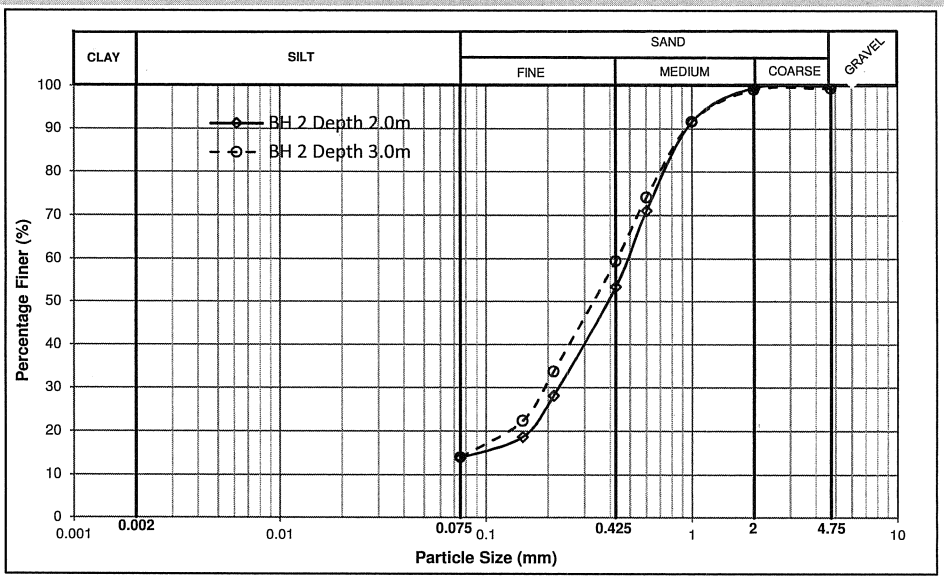
Tested by: A.A Reviewed by:R.N Authorized by:V.A

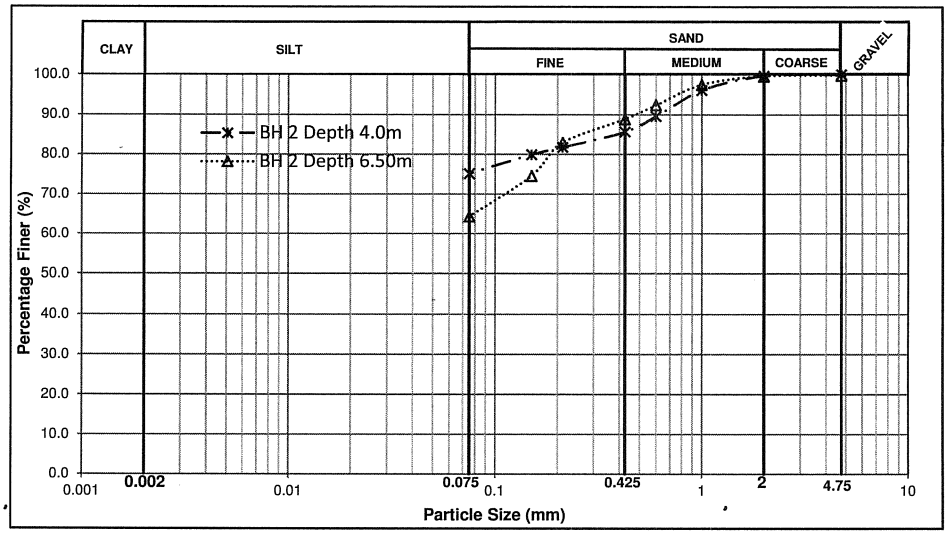
Project No: MSGTPL/SI-6256-R2/24-25

Project : Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-4
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

GRAIN SIZE ANALYSIS





BH-No	Depth	Gravel	SAND (%)			SILT& CLAY	D_{10}	D_{30}	D_{60}	Cu	Cc
	(m)	(%)	Coarse	Medium	Fine	(%)	(mm)	(mm)	(mm)		
2	2.0m	0	0	46	40	14		0.228	0.491		
2	3.0m	1	0	40	45	14		0.192	0.432		
2	4.0m	0	0	14	11	75					
2	6.50m	0	0	11	25	64					

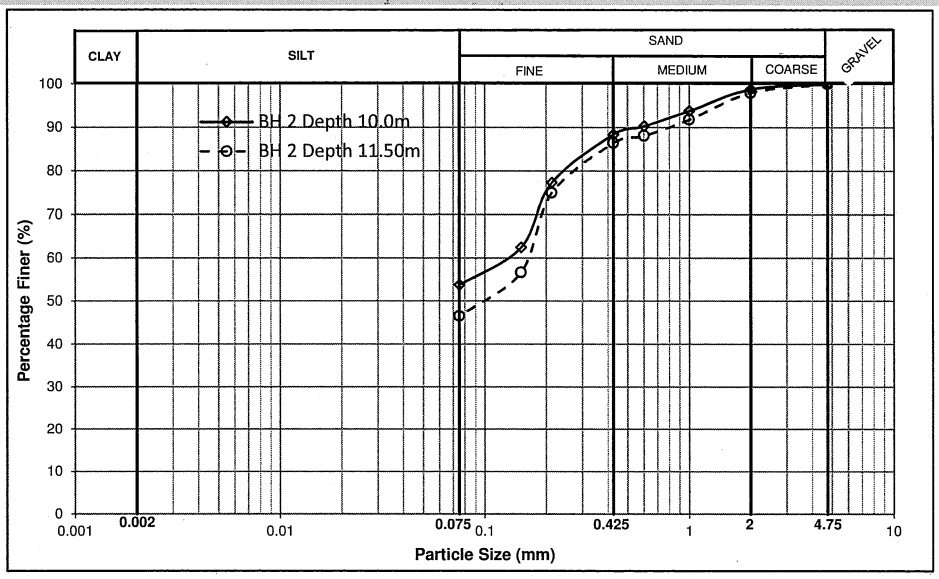
Tested by: A.A Reviewed by:R.N Authorized by:V.A

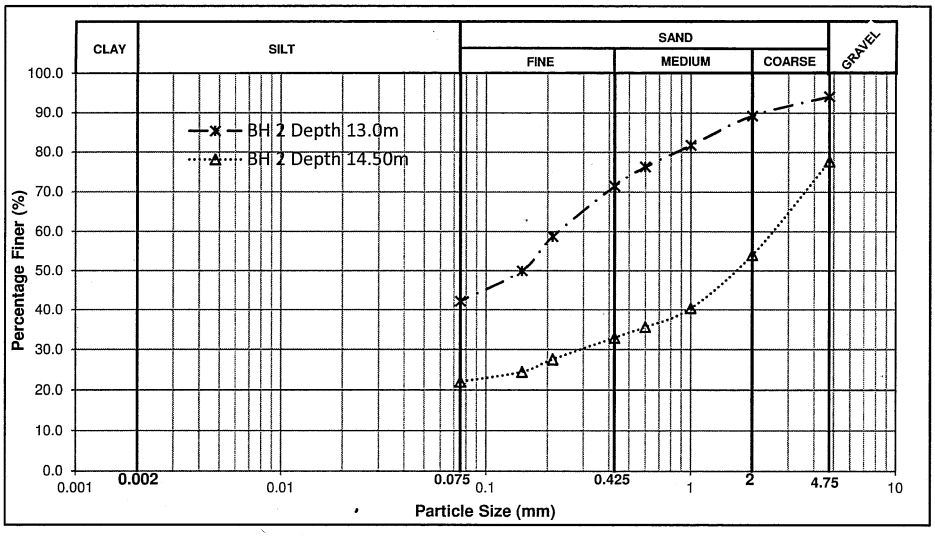
Project No: MSGTPL/SI-6256-R2/24-25

Project : Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-4
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

GRAIN SIZE ANALYSIS





BH-No	Depth	Gravel	SAND (%)			SILT& CLAY	D_{10}	D_{30}	D_{60}	Cu	Cc
	(m)	(%)	Coarse	Medium	Fine	(%)	(mm)	(mm)	(mm)		
2	10.0m	0	1	10	35	54			0.129		
2	11.50m	0	2	11	40	47			0.161		
2	13.0m	6	5	18	29	42			0.232		
2	14.50m	22	24	21	11	22		0.308	2.692		

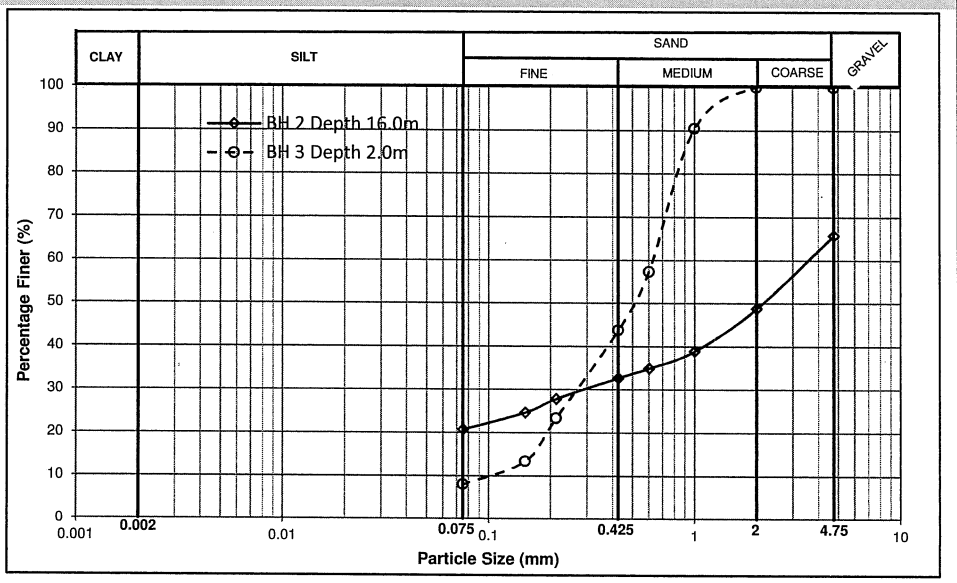
Tested by: A.A Reviewed by:R.N Authorized by:V.A

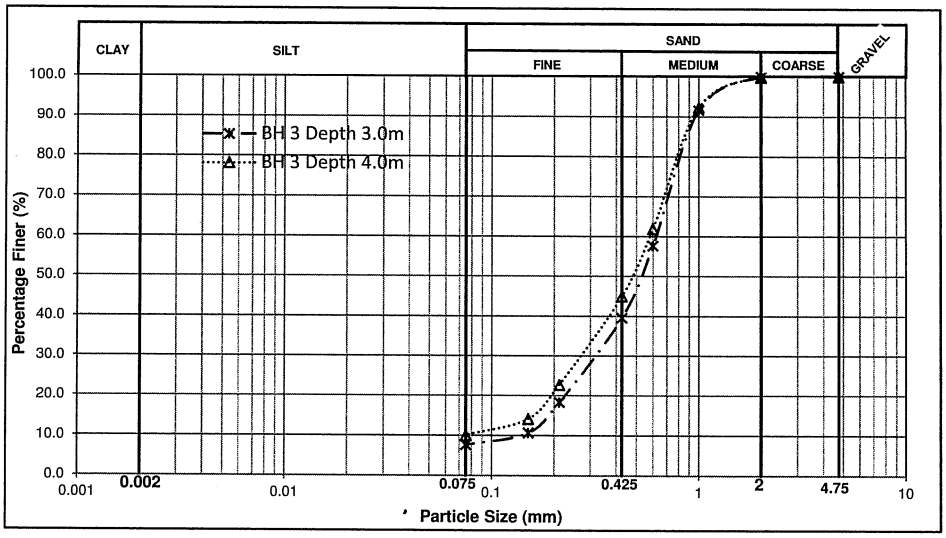
Project No: MSGTPL/SI-6256-R2/24-25

Project : Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-4
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

GRAIN SIZE ANALYSIS





BH-No	Depth	Gravel	SAND (%)			SILT& CLAY	D_{10}	D_{30}	D_{60}	Cu	Cc
	(m)	(%)	Coarse	Medium	Fine	(%)	(mm)	(mm)	(mm)		
2	16.0m	34	17	16	12	21		0.309	3.820		
3	2.0m	0	0	56	36	8	0.103	0.282	0.632	6.15	1.22
3	3.0m	0	0	60	32	8	0.135	0.329	0.628	4.66	1.28
3	4.0m	0	0	55	35	10		0.282	0.580		

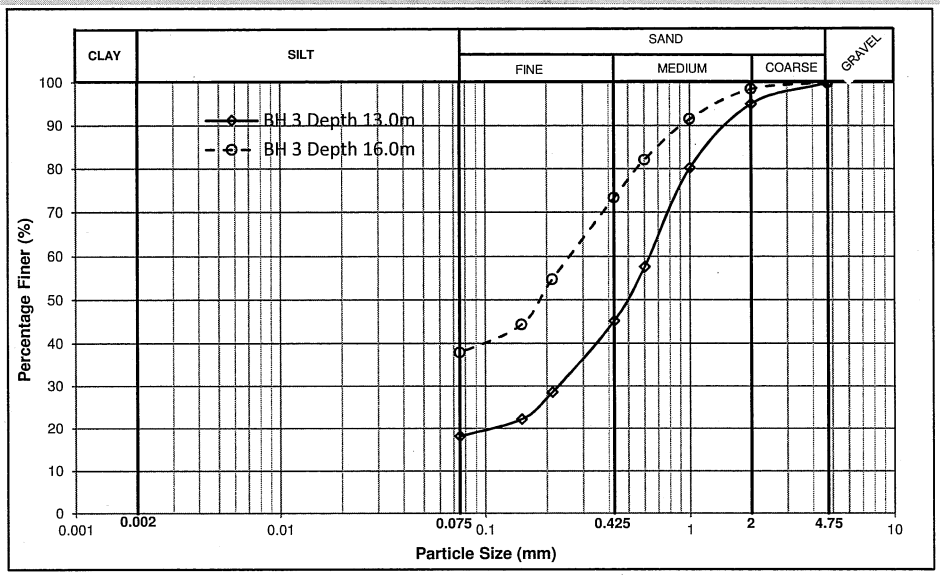
Tested by: A.A Reviewed by:R.N Authorized by:V.A

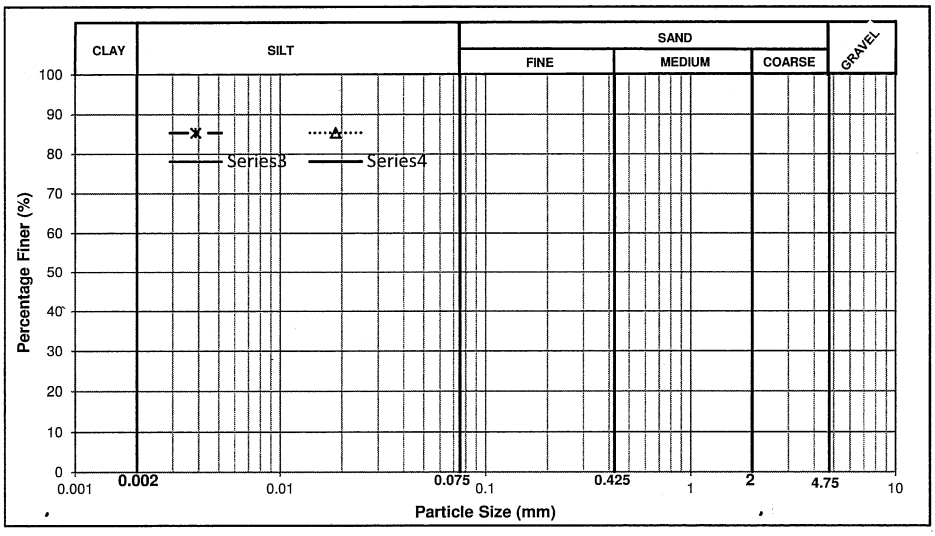
Project No: MSGTPL/SI-6256-R2/24-25

Project : Proposed Construction of "VIRAAM" Residential Building

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-4
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

GRAIN SIZE ANALYSIS





BH-No	Depth	Gravel	SAND (%)			SILT& CLAY	D_{10}	D_{30}	D_{60}	Cu	Cc
	(m)	(%)	Coarse	Medium	Fine	(%)	(mm)	(mm)	(mm)		
3	13.0m	0	5	50	27	18		0.231	0.643		
3	16.0m	0	2	25	35	38			0.273		

Tested by: A.A Reviewed by:R.N Authorized by:V.A

ATTERBERG LIMITS DATA SHEET

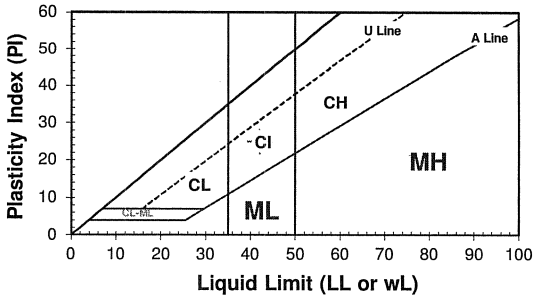
IS-2720-Part-5

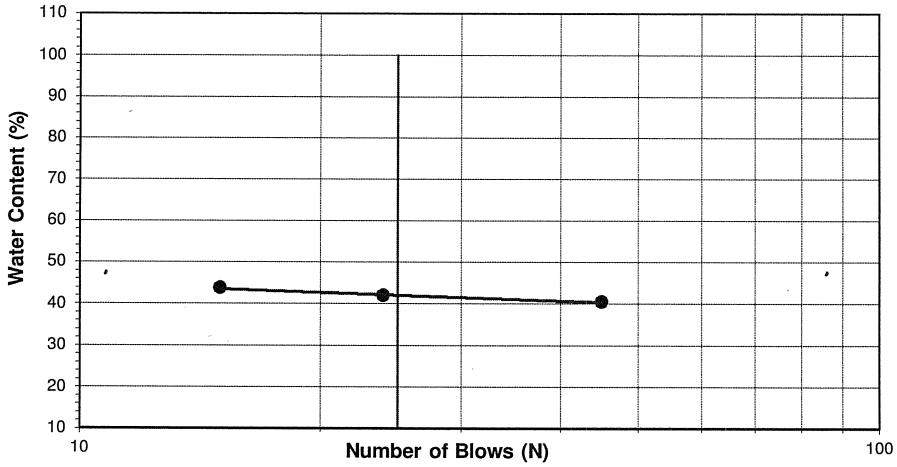
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	2.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	15	24	45					
Tare Number	---	---	460	389	496		424			
Weight of Empty Tare	M_C	(g)	44.93	44.79	44.92		44.55			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	76.2	73.68	76.61		75.84			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	66.70	65.15	67.48		71.25			
Weight of Soil	M_S	(g)	21.77	20.36	22.56		26.70			
Weight of Water	M_W	(g)	9.50	8.53	9.13		4.59			
Water Content	w	(%)	**43.6**	**41.9**	**40.5**		**17.2**			

Liquid Limit (LL or w_L) (%)	**42**
Plastic Limit (PL or w_P) (%)	**17**
Plasticity Index (PI) (%)	**25**
Soil Classification	**CI**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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MS GEOTECH
Geotechnical, Geophysical & Engineering Survey in Offshore & Onshore

ATTERBERG LIMITS DATA SHEET

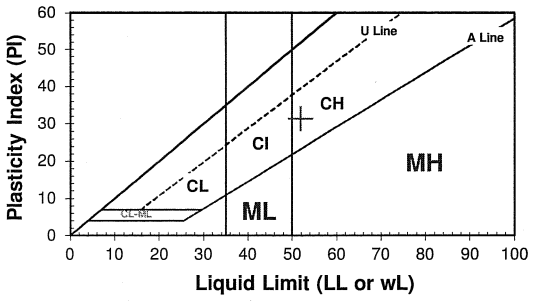
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Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	4.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	18	24	43					
Tare Number	---	---	339	491	473		590			
Weight of Empty Tare	M_C	(g)	45.54	45.73	44.66		45.24			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	75.04	70.05	72.19		76.6			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	64.70	61.71	63.12		71.27			
Weight of Soil	M_S	(g)	19.16	15.98	18.46		26.03			
Weight of Water	M_W	(g)	10.34	8.34	9.07		5.33			
Water Content	*w*	(%)	**54.0**	**52.2**	**49.1**		**20.5**			

Liquid Limit (LL or w_L) (%)	**52**
Plastic Limit (PL or w_P) (%)	**20**
Plasticity Index (PI) (%)	**31**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

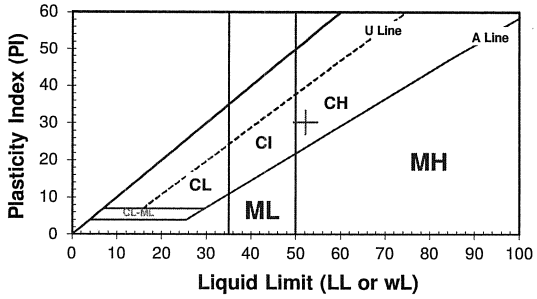
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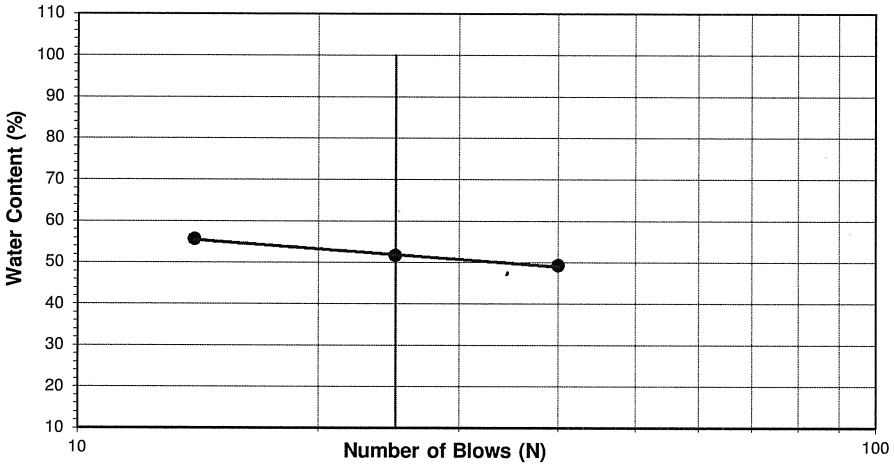
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	5.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	14	25	40					
Tare Number	---	---	371	591	332		363			
Weight of Empty Tare	M_C	(g)	44.84	44.86	44.7		45.37			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.58	78.35	78.18		69.73			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	63.31	66.95	67.15		65.33			
Weight of Soil	M_S	(g)	18.47	22.09	22.45		19.96			
Weight of Water	M_W	(g)	10.27	11.40	11.03		4.40			
Water Content	w	(%)	**55.6**	**51.6**	**49.1**		**22.0**			

Liquid Limit (LL or w_L) (%)	**52**
Plastic Limit (PL or w_P) (%)	**22**
Plasticity Index (PI) (%)	**30**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

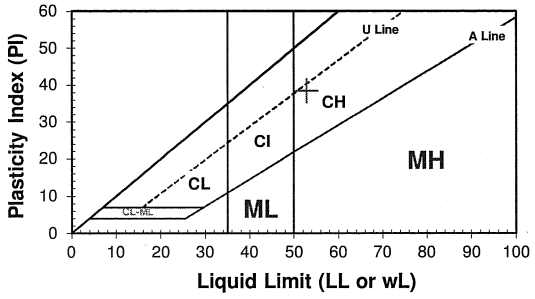
IS-2720-Part-5

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	8.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	15	24	40					
Tare Number	---	---	457	589	545		447			
Weight of Empty Tare	M_C	(g)	45.02	44.83	43.06		45.3			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.84	71.73	72.59		61.76			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	63.77	62.46	62.50		59.7			
Weight of Soil	M_S	(g)	18.75	17.63	19.44		14.40			
Weight of Water	M_W	(g)	10.07	9.27	10.09		2.06			
Water Content	w	(%)	**53.7**	**52.6**	**51.9**		**14.3**			

Liquid Limit (LL or w_L) (%)	**53**
Plastic Limit (PL or w_P) (%)	**14**
Plasticity Index (PI) (%)	**38**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

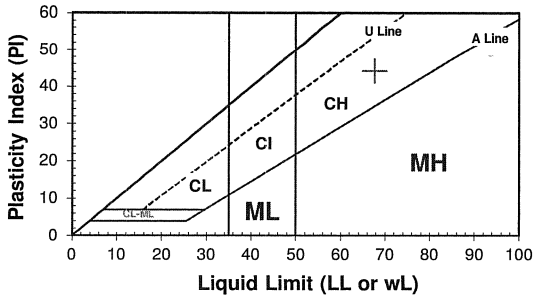
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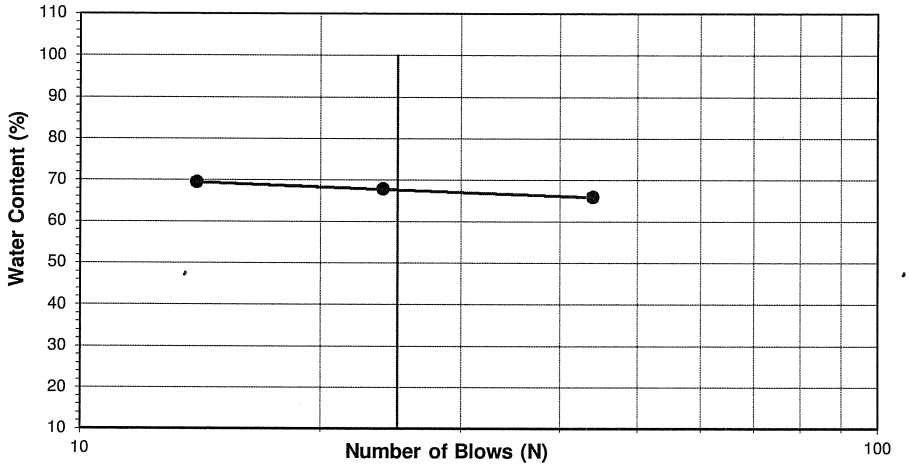
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	16.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	14	24	44					
Tare Number	---	---	378	358	413		492			
Weight of Empty Tare	M_C	(g)	45.61	44.73	45.35		44.09			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.04	71.52	69.01		68.58			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	61.80	60.70	59.62		63.91			
Weight of Soil	M_S	(g)	16.19	15.97	14.27		19.82			
Weight of Water	M_W	(g)	11.24	10.82	9.39		4.67			
Water Content	w	(%)	**69.4**	**67.8**	**65.8**		**23.6**			

Liquid Limit (LL or w_L) (%)	**68**
Plastic Limit (PL or w_P) (%)	**24**
Plasticity Index (PI) (%)	**44**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

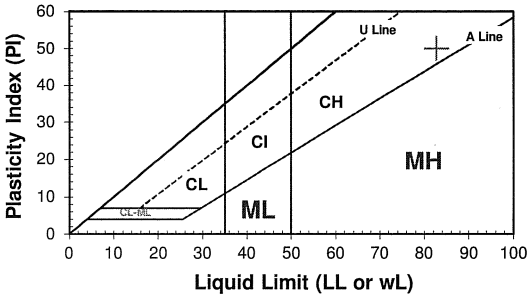
IS-2720-Part-5

Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	17.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	17	25	43					
Tare Number	---	---	440	455	516		483			
Weight of Empty Tare	M_C	(g)	44.6	45.39	43.11		44.29			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	76	77.44	75.53		70.19			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	61.40	62.92	61.28		63.8			
Weight of Soil	M_S	(g)	16.80	17.53	18.17		19.51			
Weight of Water	M_W	(g)	14.60	14.52	14.25		6.39			
Water Content	*w*	(%)	**86.9**	**82.8**	**78.4**		**32.8**			

Liquid Limit (LL or w_L) (%)	**83**
Plastic Limit (PL or w_P) (%)	**33**
Plasticity Index (PI) (%)	**50**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

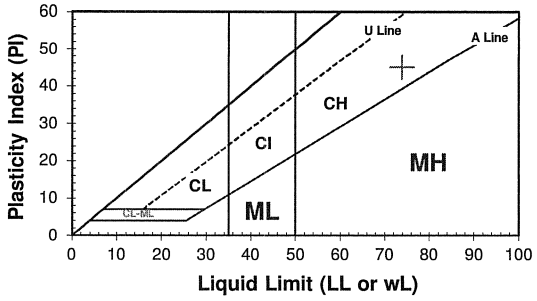
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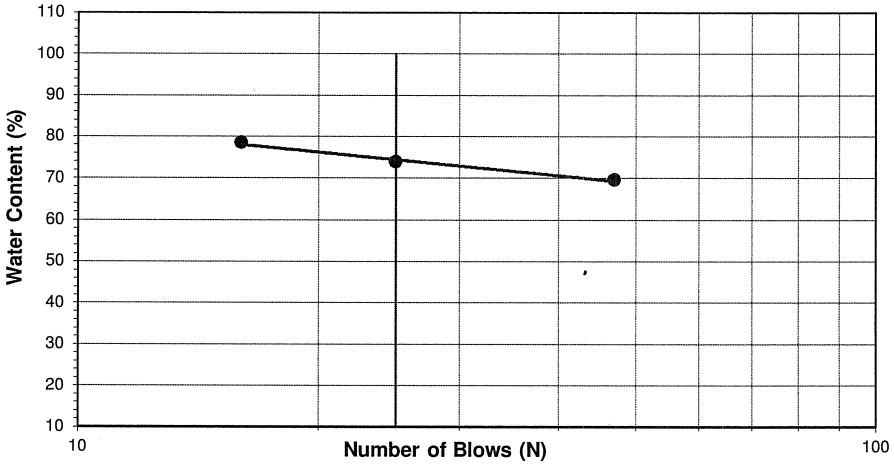
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	1
Sample Depth:	20.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	16	25	47					
Tare Number	---	---	390	331	400		428			
Weight of Empty Tare	M_C	(g)	45.24	45	45.37		44.86			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.26	74.02	71.63		63.01			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	60.95	61.70	60.86		58.94			
Weight of Soil	M_S	(g)	15.71	16.70	15.49		14.08			
Weight of Water	M_W	(g)	12.31	12.32	10.77		4.07			
Water Content	w	(%)	**78.4**	**73.8**	**69.5**		**28.9**			

Liquid Limit (LL or w_L) (%)	**74**
Plastic Limit (PL or w_P) (%)	**29**
Plasticity Index (PI) (%)	**45**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

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ATTERBERG LIMITS DATA SHEET

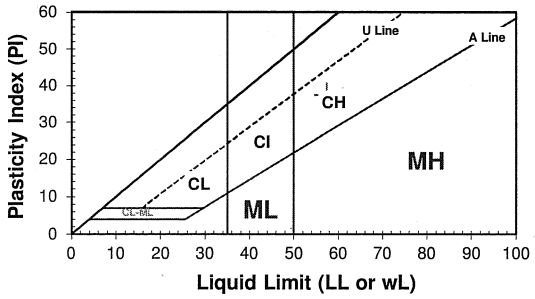
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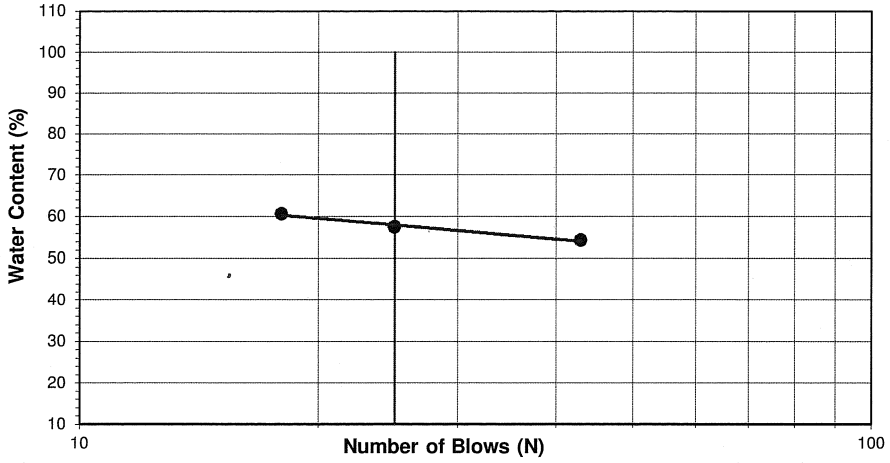
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	2
Sample Depth:	5.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	18	25	43					
Tare Number	---	---	394	497	545		537			
Weight of Empty Tare	M_C	(g)	43.11	45.29	44.28		44.29			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	71.2	72.54	70.63		64.26			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	60.61	62.60	61.36		60.93			
Weight of Soil	M_S	(g)	17.50	17.31	17.08		16.64			
Weight of Water	M_W	(g)	10.59	9.94	9.27		3.33			
Water Content	w	(%)	**60.5**	**57.4**	**54.3**		**20.0**			

Liquid Limit (LL or w_L) (%)	**57**
Plastic Limit (PL or w_P) (%)	**20**
Plasticity Index (PI) (%)	**37**
Soil Classification	**CH**





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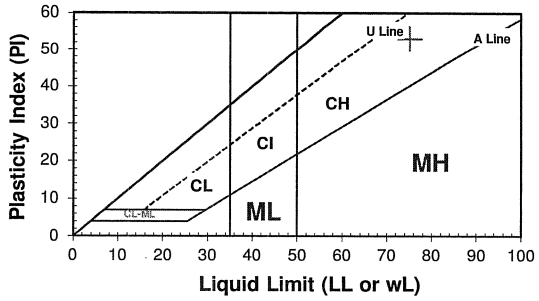
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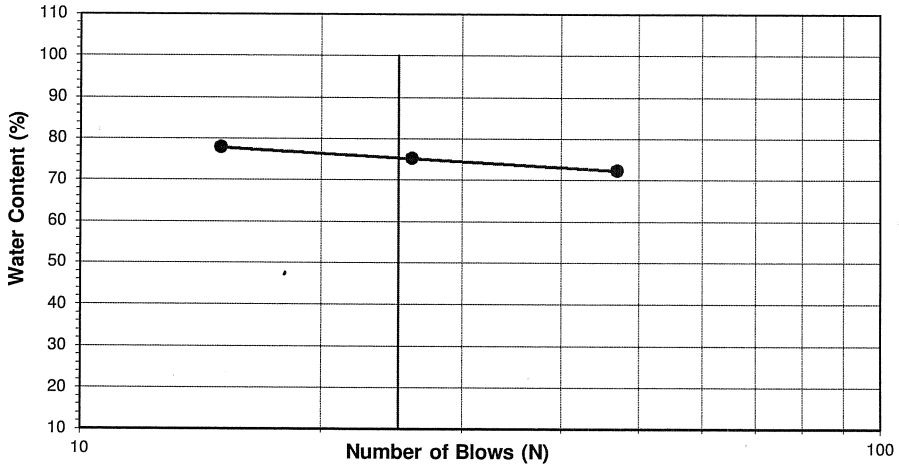
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	2
Sample Depth:	17.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	15	26	47					
Tare Number	---	---	578	264	356		386			
Weight of Empty Tare	M_C	(g)	44.55	45.07	44.72		45.43			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	74.51	72.39	69.83		60.75			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	61.40	60.67	59.30		57.98			
Weight of Soil	M_S	(g)	16.85	15.60	14.58		12.55			
Weight of Water	M_W	(g)	13.11	11.72	10.53		2.77			
Water Content	w	(%)	**77.8**	**75.1**	**72.2**		**22.1**			

Liquid Limit (LL or w_L) (%)	**75**
Plastic Limit (PL or w_P) (%)	**22**
Plasticity Index (PI) (%)	**53**
Soil Classification	**CH**





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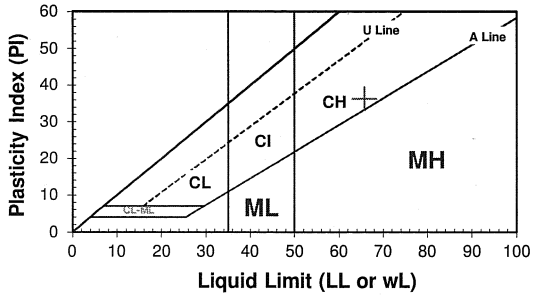
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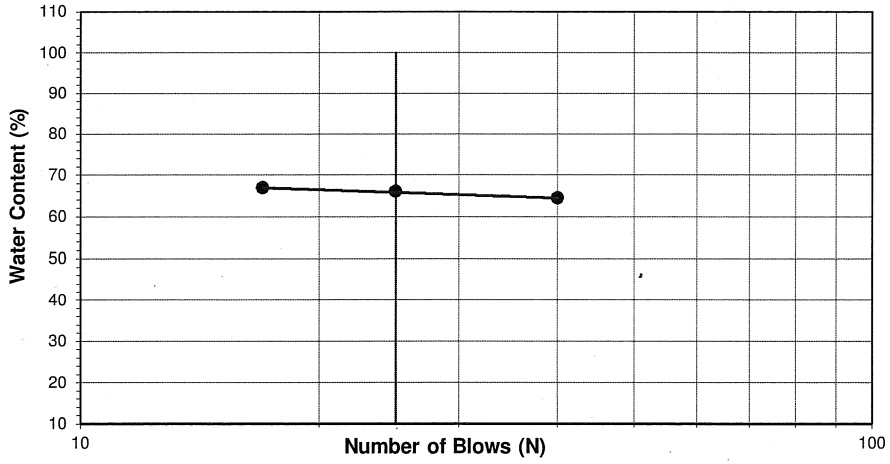
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	2
Sample Depth:	20.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	17	25	40					
Tare Number	---	---	352	370	553		595			
Weight of Empty Tare	M_C	(g)	45.34	45.18	44.02		44.73			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	72.64	69.44	72.26		72.39			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	61.70	59.80	61.21		66.09			
Weight of Soil	M_S	(g)	16.36	14.62	17.19		21.36			
Weight of Water	M_W	(g)	10.94	9.64	11.05		6.30			
Water Content	w	(%)	**66.9**	**65.9**	**64.3**		**29.5**			

Liquid Limit (LL or w_L) (%)	**66**
Plastic Limit (PL or w_P) (%)	**29**
Plasticity Index (PI) (%)	**36**
Soil Classification	**CH**





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ATTERBERG LIMITS DATA SHEET

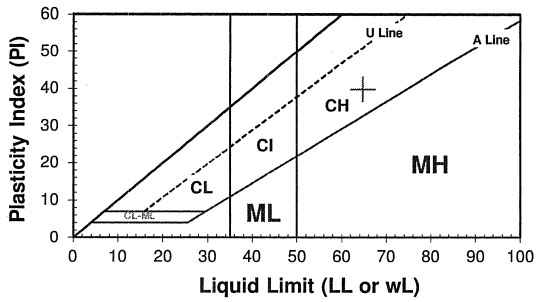
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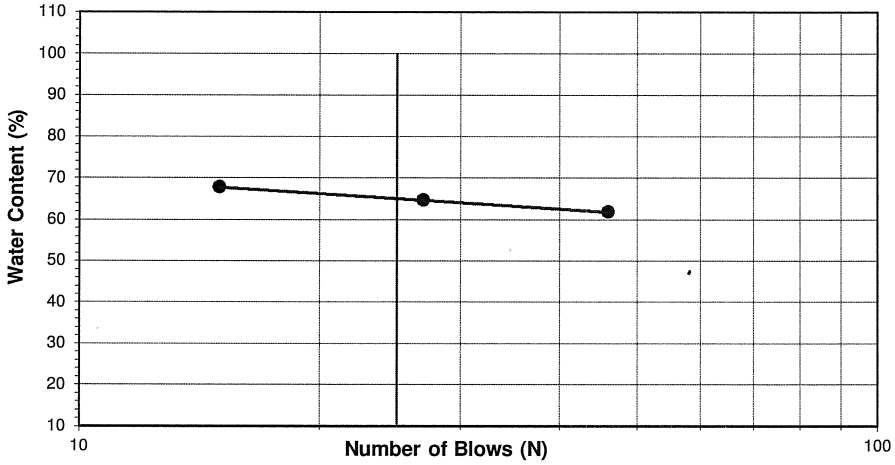
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	5.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	15	27	46					
Tare Number	---	---	350	398	481		395			
Weight of Empty Tare	M_C	(g)	45.41	45.71	44.29		44.23			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	76	71.22	71.05		70.2			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	63.65	61.20	60.83		65			
Weight of Soil	M_S	(g)	18.24	15.49	16.54		20.77			
Weight of Water	M_W	(g)	12.35	10.02	10.22		5.20			
Water Content	w	(%)	**67.7**	**64.7**	**61.8**		**25.0**			

Liquid Limit (LL or w_L) (%)	**65**
Plastic Limit (PL or w_P) (%)	**25**
Plasticity Index (PI) (%)	**40**
Soil Classification	**CH**





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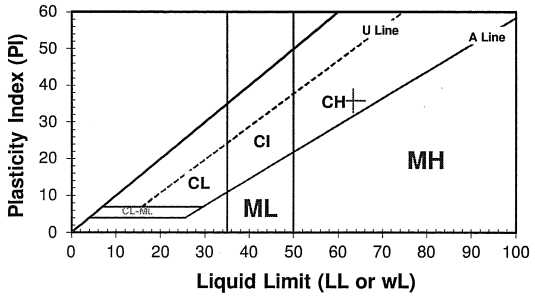
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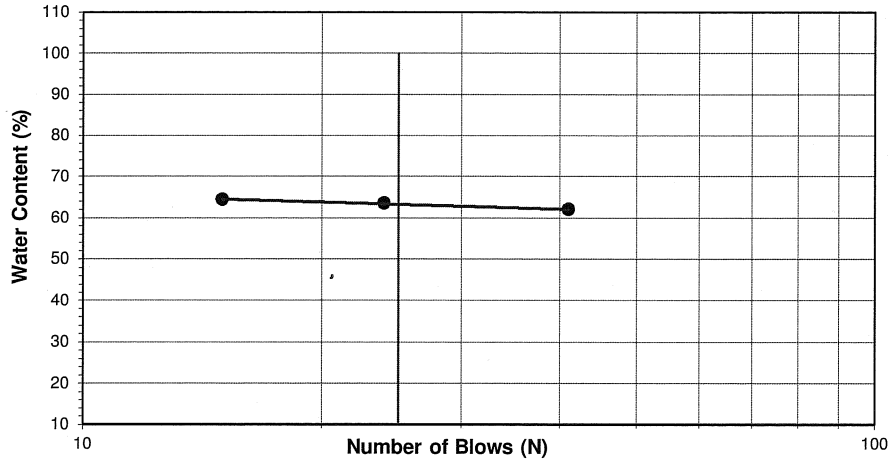
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	10.0m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	15	24	41					
Tare Number	---	---	585	570	550		534			
Weight of Empty Tare	M_C	(g)	45.17	45.75	45.02		44.74			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.25	71.5	70.96		67.18			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	62.25	61.51	61.03		62.33			
Weight of Soil	M_S	(g)	17.08	15.76	16.01		17.59			
Weight of Water	M_W	(g)	11.00	9.99	9.93		4.85			
Water Content	w	(%)	**64.4**	**63.4**	**62.0**		**27.6**			

Liquid Limit (LL or w_L) (%)	**63**
Plastic Limit (PL or w_P) (%)	**28**
Plasticity Index (PI) (%)	**36**
Soil Classification	**CH**





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ATTERBERG LIMITS DATA SHEET

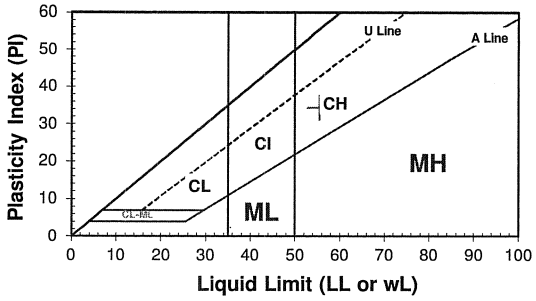
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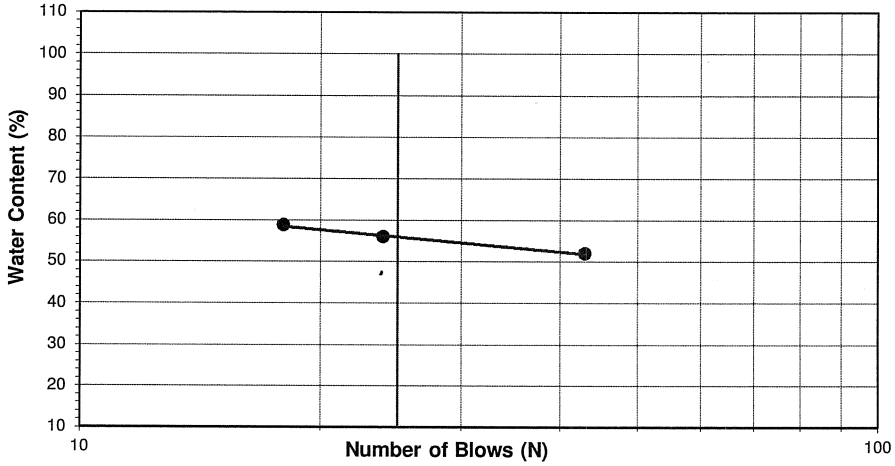
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	11.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	18	24	43					
Tare Number	---	---	326	388	456		580			
Weight of Empty Tare	M_C	(g)	44.73	44.5	45.3		45.39			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	73.16	76.46	77.65		64.08			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	62.65	65.00	66.60		60.81			
Weight of Soil	M_S	(g)	17.92	20.50	21.30		15.42			
Weight of Water	M_W	(g)	10.51	11.46	11.05		3.27			
Water Content	w	(%)	**58.6**	**55.9**	**51.9**		**21.2**			

Liquid Limit (LL or w_L) (%)	**55**
Plastic Limit (PL or w_P) (%)	**21**
Plasticity Index (PI) (%)	**34**
Soil Classification	**CH**





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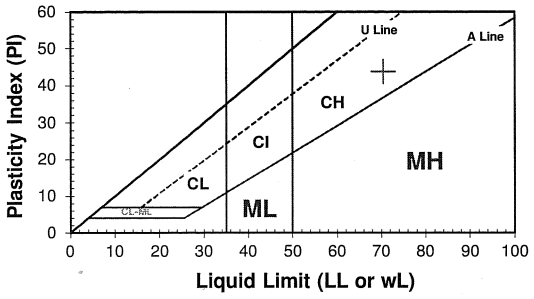
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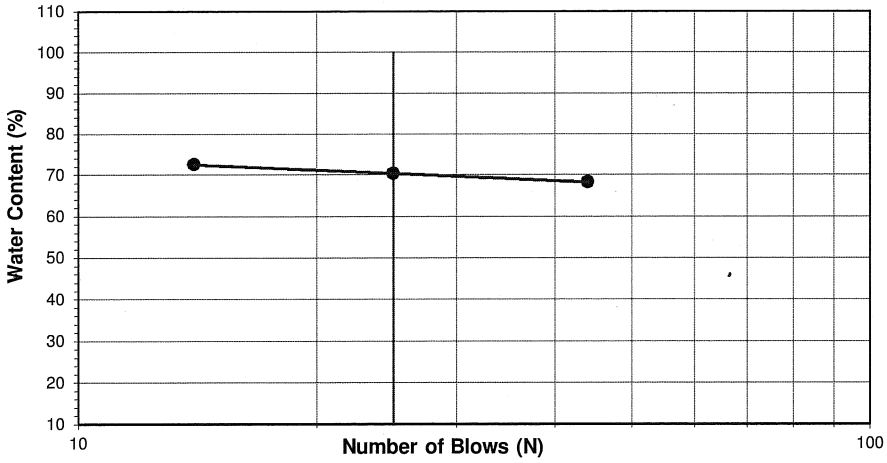
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	14.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	14	25	44					
Tare Number	---	---	417	552	437		551			
Weight of Empty Tare	M_C	(g)	44.21	45.05	45.47		45.6			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	74.09	74.19	73.06		72.6			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	61.53	62.17	61.87		66.92			
Weight of Soil	M_S	(g)	17.32	17.12	16.40		21.32			
Weight of Water	M_W	(g)	12.56	12.02	11.19		5.68			
Water Content	*w*	(%)	**72.5**	**70.2**	**68.2**		**26.6**			

Liquid Limit (LL or w_L) (%)	**70**
Plastic Limit (PL or w_P) (%)	**27**
Plasticity Index (PI) (%)	**44**
Soil Classification	**CH**





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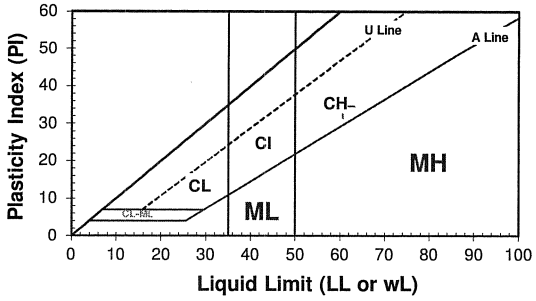
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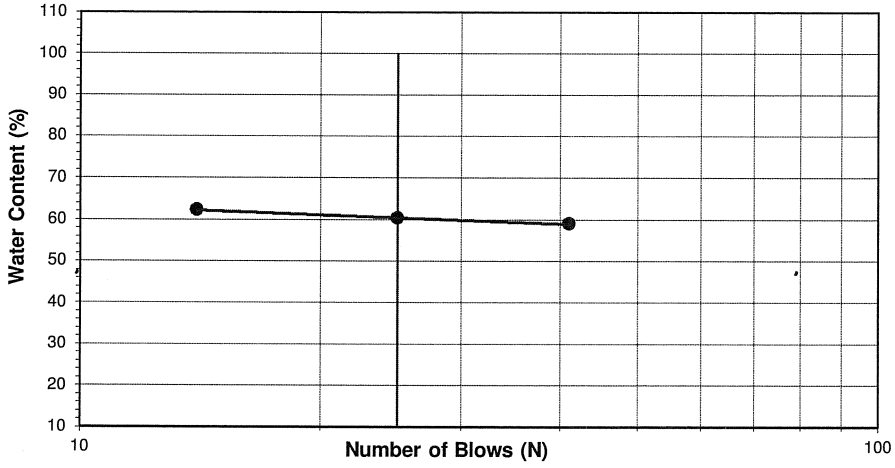
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	17.50m
Project No:	**MSGTPL/SI-6256-R2/24-25**

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	14	25	41					
Tare Number	---	---	468	347	341		425			
Weight of Empty Tare	M_C	(g)	44.99	44.54	45.04		44.82			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	74.01	70.79	73.28		65.34			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	62.88	60.91	62.81		61.11			
Weight of Soil	M_S	(g)	17.89	16.37	17.77		16.29			
Weight of Water	M_W	(g)	11.13	9.88	10.47		4.23			
Water Content	w	(%)	**62.2**	**60.4**	**58.9**		**26.0**			

Liquid Limit (LL or w_L) (%)	**60**
Plastic Limit (PL or w_P) (%)	**26**
Plasticity Index (PI) (%)	**35**
Soil Classification	**CH**





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ATTERBERG LIMITS DATA SHEET

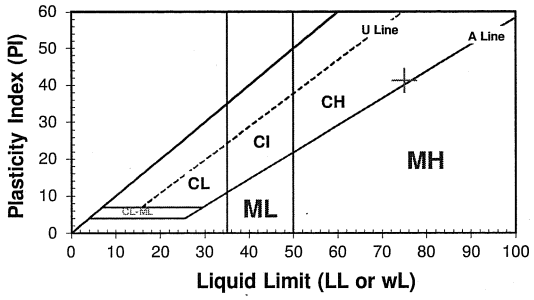
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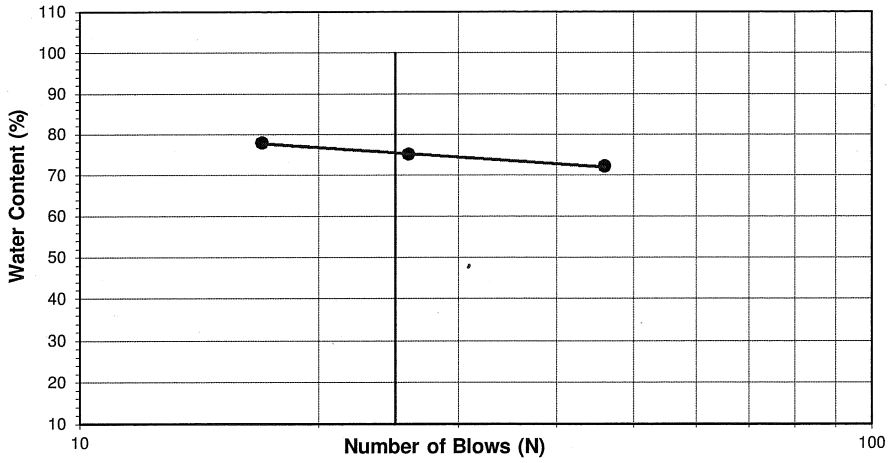
Name & Address of Lab: M/s. Mars Synergy Geotech Private Limited ; # 30/25, Throwpathy Amman Koil Main Road, Velachery, Chennai - 600 042.
Client Name: M/s. Aaalam Promoters Private Limited
Method Use: IS-2720 P-5
Sample Received on:26.08.2024
Test Started on:27.08.2024
Test Completed on:28.08.2024

Project :	"VIRAAM" Residential Building
Location:	Mangadu
Boring No:	3
Sample Depth:	20.50m
Project No:	MSGTPL/SI-6256-R2/24-25

TEST			LIQUID LIMIT				PLASTIC LIMIT			
Variable	NO		1	2	3		1	2		
	Var.	Units								
Number of Blows	N	blows	17	26	46					
Tare Number	---	---	464	493	584		512			
Weight of Empty Tare	M_C	(g)	44.82	44.98	45.15		44.52			
Wt of Tare + Soil (Wet)	M_{CMS}	(g)	70.36	71.36	72.03		69.23			
Wt of Tare + Soil (Dry)	M_{CDS}	(g)	59.18	60.05	60.78		62.99			
Weight of Soil	M_S	(g)	14.36	15.07	15.63		18.47			
Weight of Water	M_W	(g)	11.18	11.31	11.25		6.24			
Water Content	w	(%)	**77.9**	**75.0**	**72.0**		**33.8**			

Liquid Limit (LL or w_L) (%)	**75**
Plastic Limit (PL or w_P) (%)	**34**
Plasticity Index (PI) (%)	**41**
Soil Classification	**CH**





Tested by: D.J Reviewed by:R.N Authorized by:V.A

....END OF THE REPORT.....

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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

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