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SOIL EXPLORATION REPORT

OF

PROJECT : "Residential Group Development Building at Plot No. P - 17/1, **Mahindra World City, comprised in the survey Numbers 88/2 part, 89/2 part, 90/2 part, 91/2 part, 92/2 part, 95 part , 96/1 part, 96/2 part, 97/1 part, 97/2 part, 98 part, 129/2 part, 130/1, 130/2, 131, 132/1, 132/2, 132/3, 133/1, 133/2, 133/3, 133/4, 134/2, 134/1A, 134/1B, 143 part at Paranur Village, Chengalpattu Taluk, Chengalpattu District with the land extent 9.24 Acres"**

PN : 7728

F.S.ENGINEERS PVT LTD

Foundation & Structural Engineers

Reg.Office : 109,(New No .98)Velachery Road,

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F.S. ENGINEERS PVT. LTD.
NEW No: 98. (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

SOIL EXPLORATION REPORT

PROJECT NO : 7728

PROJECT NAME : "Residential Group Development Building at **Plot No. P - 17/1,** Mahindra World City, comprised in the survey Numbers 88/2 part, 89/2 part, 90/2 part, 91/2 part, 92/2 part, 95 part , 96/1 part, 96/2 part, 97/1 part, 97/2 part, 98 part, 129/2 part, 130/1, 130/2, 131, 132/1, 132/2, 132/3, 133/1, 133/2, 133/3, 133/4, 134/2, 134/1A, 134/1B, 143 part at Paranur Village, Chengalpattu Taluk, Chengalpattu District with the land extent 9.24 Acres"

1. INTRODUCTION

M/s. MWC-Alliance Budget Housing India Pvt Ltd has to proposing to construct "Residential Group Development Building at **Plot No. P - 17/1,** Mahindra World City, comprised in the survey Numbers 88/2 part, 89/2 part, 90/2 part, 91/2 part, 92/2 part, 95 part , 96/1 part, 96/2 part, 97/1 part, 97/2 part, 98 part, 129/2 part, 130/1, 130/2, 131, 132/1, 132/2, 132/3, 133/1, 133/2, 133/3, 133/4, 134/2, 134/1A, 134/1B, 143 part at Paranur Village, Chengalpattu Taluk, Chengalpattu District with the land extent 9.24 Acres"at the location shown in Fig-1. Soil Exploration work was referred to this firm by M/s. MWC-Alliance Budget Housing India Pvt Ltd, with a view to determining the soil properties of the area and to arrive at the most suitable foundation system for the proposed structure. For this purpose thirty boreholes were bored upto depth from 5.00 to 10.50M below ground level. The boreholes were terminated, after drilling the required depth in the medium rock layer. The borehole locations are given in Fig-1. The work comprised of conducting Standard Penetration Tests in the field and collecting samples for testing in the laboratory. The report presents the details of the work, analysis of test results and foundation recommendations made based on the analysis.

2. EXPLORATION TECHNIQUE

Rotary Drilling technique was adopted for boring in this area. Casing pipes and bentonite slurry were used to protect the sides of the boreholes. Standard Penetration Tests were conducted at change of layers and at specified intervals disturbed samples were collected in plastic bags from all the layers for visual observation and classification tests. Undisturbed samples could not be collected since the soil layers met with were essentially cohesion less in nature. Core sample is collected from medium rock layer.

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3. SOIL PROFILE

The profile of the area as observed in the boreholes is given in Figs. 2 to 31. The top soil of 0.5M is non-uniform. The underlying layers are clayey sand, disintegrated rock followed by medium rock present at the depth of 1.0 to 6.0M below G.L. The clayey sand layer is present at the locations of Bh.5,6,7,9,12,13,14,16,17,18,19,21,24,30.Other loactions clayey sand layer is not met with.No water table was met with at the boreholes below ground level at the time of exploration. The water table could however rise 2.0m below GL during heavy rain.

4. ANALYSIS OF TEST RESULTS

1. Standard Penetration Test
2. Grain Size Analysis
3. Determination of Specific Gravity
4. Crushing Strength of Rock
5. Chemical analysis of Soil

An analysis of the results of these tests was presented in this section of the report.

4.1 Standard Penetration Test

These tests were conducted at change of layers and at specified intervals, commencing the test at 1.5 M below ground level. The results are presented graphically in Figs. 2 to 31. The relative density of the cohesionless layers obtained from the N values is given in the borelogs.

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 using the Triangular Chart.

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4.3 Determination of Specific Gravity

The specific gravities of the soil grains were determined from the various samples collected. The results are given in Table-1. No abnormal value is noted in the test results.

4.4 Crushing Strength of Rock

Core sample collected from medium rock layer is tested for determining crushing strength of rock. The results are given in Table -2.

4.5 Chemical Analysis of Soil

Soil samples collected from different depths were tested for determining sulphate,chloride,carbonate contents and pH value. The results are given in Table –3

5. FOUNDATION ANALYSIS

For the proposed structure shallow foundations can be given at any depth from 1.5 M, resting the foundation on the clayey sand/ disintegrated rock layer.

The safe bearing capacity of the cohesionless layers could be computed using the formula,

$$Q_a = (0.5\gamma \times B \times N_\gamma + \gamma D_f N_q) \div 2.5$$

where,

B	=	Width of footing
γ	=	Submerged unit weight of soil taken as 1 gm/cc,
D_f	=	Depth of surcharge
$N\gamma$ Nq	=	Bearing capacity factors based on the N values taken from Fig. 8

Based on the above the SBC that could be adopted are as follows for a minimum width of foundation of 1 M.

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At the location where clayey sand layer is not present the foundation will be placed on disintegrated rock with N>50. The SBC for N>50 is over 5kg/cm^2 however the SBC may be limited to 5kg/cm^2 to allow for any non uniformity.

At the locations of Bh.5,6,7,9,12,13,14,16,17,18,19,21,24,30 were the clayey sand layer is present the SBC at 1.5m depth is 2.5kg/cm^2 as per the N value

If the foundation are on medium rock layer the SBC is 10kg/cm^2

The settlement of the foundations would be elastic and within 25mm.

Over excavation in the foundation trenches should be refilled concrete as per the SBC adopted.

6. EXCAVATION PROCEDURE

1. Vertical cuts could be given in excavation. At any weak soil area a slope of 1.5 vertical to 1 horizantal could be given

2. Slush formed by any water accumulation should be removed and refilled by lean concrete.

3. Excavations in disintegrated rock could be done by normal excavators. In medium rock, jack hammers or controlled blasting would be required for excavation.

4. If water accumulates in the foundation trenches, dewatering should be done by pumping out water from a level minimum 1M lower than the foundation level to maintain downward flow of water. The downward flow of water should be maintained continuously upto 24 hours after laying the PCC.

5. Water should not be allowed to flow over the cut surface. Adequate surface drains should be given prior to commencement of excavation. The exposed side of excavation should be covered by plastic sheet to prevent moisture evaporation.

7. CONCLUSION

1. The area explored has got The top soil of 0.5M is non-uniform. The underlying layers are clayey sand, disintegrated rock followed by medium rock

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present at the depth of 1.0 to 6.0M below G.L. The clayey sand layer is present at the locations of Bh.5,6,7,9,12,13,14,16,17,18,19,21,24,30.Other locations clayey sand layer is not met with. No water table was met with at the boreholes below ground level at the time of exploration. The water table could however rise 2.0m below GL during heavy rain.

2. For the proposed structure shallow foundations can be given at any depth from 1.5 M, resting the foundation on the clayey sand/ disintegrated rock layer. The SBCs that could be adopted for different depths are given in the report.

3. The settlement of the shallow foundation would be elastic and within 25mm.

4. Over excavations in the foundation trenches should be refilled by concrete as per SBC adopted.

5. Suggested excavation procedure and precautions should be adopted while undertaking the construction.

For F.S. ENGINEERS (P) LTD.

(Dr. A. Verghese Chummar) Director

DIRECTOR

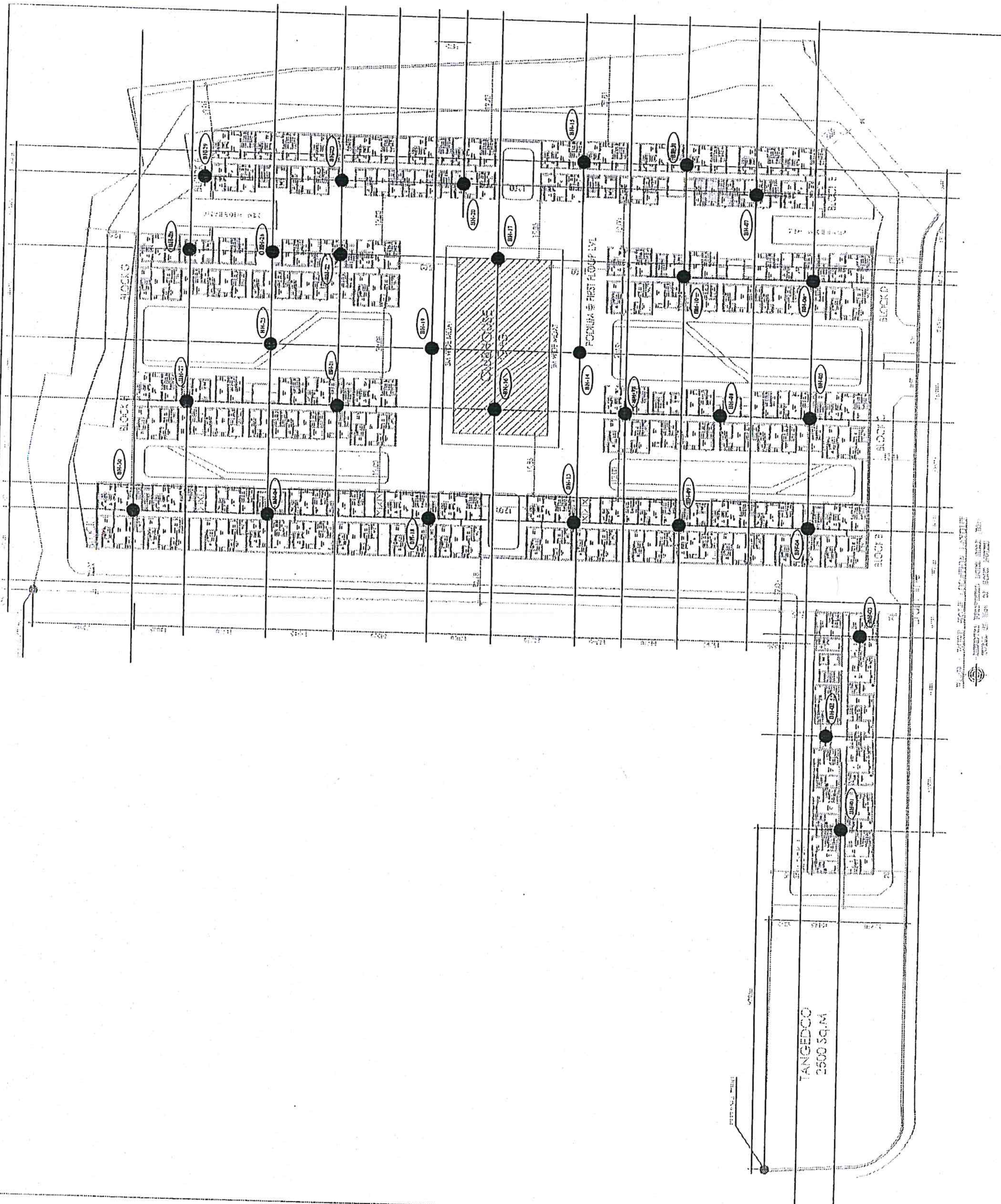
Dated: June 14th, 2023

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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

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Site plan

Fig : 1

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SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 30.05.2023

DATE OF COMPLETION : 31.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	6	V.DENSE	
4 5 6 7 8.00		MEDIUM ROCK MR1 (Yellowish Brown)	5.00	3.00		3.00			REBOUND	
				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING

CORE RECOVERY

Fig 12.

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SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 2

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 31.05.2023

DATE OF COMPLETION : 21.05.2023

G.W.L : 3.10Mtr

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50							
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	0.50	0.50						
				1.00		1.00			REBOUND	
2										
3										
4		MEDIUM ROCK MR2 (Greyish Brown)								
5			9.50							
6										
7										
8										
9										
10										
10.50				10.50						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig :3

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 3

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 03.06.2023

DATE OF COMPLETION : 04.06.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	6	V.DENSE	
4 5 6 7 8.00		MEDIUM ROCK MR2 (Greyish Brown)	5.00	3.00		3.00			REBOUND	
				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING

CORE RECOVERY

Fig : 4

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SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY

BORE HOLE NO : 4 PHASE - 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 30.05.2023

DATE OF COMPLETION : 31.05.2023

G.W.L : 3.00Mtr

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.00							
2						1.50	>50	6	V.DENSE	
3		MEDIUM ROCK MR2 (Greyish Brown)	5.50	2.50		2.50			REBOUND	
4										
5										
6										
7										
8.00				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 5

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 17.05.2023

DATE OF COMPLETION : 18.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	25	30	MEDIUM	
2										
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	2.00							
5.00				5.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 6

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY

BORE HOLE NO : 6 PHASE - 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 18.05.2023

DATE OF COMPLETION : 19.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	23	30	MEDIUM	
2										
3				3.00		3.00	>50	0	V.DENSE	
4		DISINTEGRATED ROCK DR1 (Whitish Brown)	1.50							
5				4.50		4.50			REBOUND	
6		MEDIUM ROCK MR1 (Yellowish Brown)	2.50							
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 7

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 7

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 19.05.2023

DATE OF COMPLETION : 20.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	25	30	MEDIUM	
4		DISINTEGRATED ROCK DR1 (Whitish Brown)	1.50	3.00		3.00	>50	0	V.DENSE	
5 6		MEDIUM ROCK MR1 (Yellowish Brown)	2.50	4.50		4.50			REBOUND	
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 8

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY

BORE HOLE NO : 8 PHASE - 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 16.05.2023

DATE OF COMPLETION : 17.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.60	0.60						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	1.90			1.50	30	30	MEDIUM	
2										
3		MEDIUM ROCK MR1 (Greyish Brown)	4.50	2.50		2.50			REBOUND	
4										
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 9

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FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 9

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 28.05.2023

DATE OF COMPLETION : 28.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50							
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50	0.50						
2						1.50	>50	5	V.DENSE	
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	4.00							
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 10

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SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY

BORE HOLE NO : 10 PHASE - 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 21.05.2023

DATE OF COMPLETION : 21.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	5	V.DENSE	
2										
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR2 (Greyish Brown)	3.00							
5										
6.00				6.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig

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SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 11

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 22.05.2023

DATE OF COMPLETION : 23.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3 4		DISINTEGRATED ROCK DR1 (Whitish Brown)	4.00			1.50	>50	6	V.DENSE	
						3.00	>50	0	V.DENSE	
5 6 7		MEDIUM ROCK MR1 (Yellowish Brown)	3.50	4.50		4.50			REBOUND	
8.00				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 12

F.S. ENGINEERS PVT. LTD.
NEW No: 98. (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

P N : 7728

Director

F.S.ENGINEERS PRIVATE LIMITED
SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION
FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY
BORE HOLE NO : 12 PHASE - 1
TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 28.05.2023
DATE OF COMPLETION : 28.05.2023
G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.00			1.50	24	30	MEDIUM	
3 4 5		MEDIUM ROCK MR1 (Yellowish Brown)	3.50	2.50		2.50			REBOUND	
6.00				6.00						

REMARKS : ALL DIMENSIONS ARE IN METRES
END OF BORING | CORE RECOVERY

Fig : 13

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

P.N: 7728

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY
PHASE - 1

BORE HOLE NO : 13

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 27.05.2023

DATE OF COMPLETION : 27.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	20	30	MEDIUM	
2										
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	4.00							
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 14

For F.S. ENGINEERS (P) LTD.

P N : 7720

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 14

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 21.05.2023

DATE OF COMPLETION :

G.W.L : 3.00Mtr

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	17	30	MEDIUM	
4		DISINTEGRATED ROCK DR1 (Whitish Brown)	1.50	3.00		3.00	>50	0	V.DENSE	
5 6		MEDIUM ROCK MR1 (Yellowish Brown)	2.50	4.50		4.50			REBOUND	
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 15

For F.S. ENGINEERS (P) LTD.

P N : 7728

Director

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 15

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 20.05.2023

DATE OF COMPLETION : 20.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	0	V. DENSE	
4 5 6 7.00		MEDIUM ROCK MR2 (Greyish Brown)	4.00	3.00 7.00		3.00			REBOUND	

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 16

For F.S. ENGINEERS (P) LTD.

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 16

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 23.05.2023

DATE OF COMPLETION : 24.05.2023

G.W.L : 3.00Mtr

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50			1.50	21	30	MEDIUM	
4 5 6 7 8.00		MEDIUM ROCK MR2 (Greyish Brown)	5.00	3.00		3.00			REBOUND	
				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 17

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY
PHASE - 1

BORE HOLE NO : 17

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 24.05.2023

DATE OF COMPLETION : 25.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50							
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.50	0.50		1.50	38	30	DENSE	
2										
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	2.25							
5										
5.25				5.25						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 18

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

P N : 7728

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 18

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 29.05.2023

DATE OF COMPLETION : 29.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.00	2.50		1.50	26	30	MEDIUM	
3 4 5 6		DISINTEGRATED ROCK DR1 (Whitish Brown)	3.50	6.00		3.00	>50	0	V.DENSE	
						4.50	>50	0	V.DENSE	
7		MEDIUM ROCK MR2 (Greyish Brown)	2.00	8.00		6.00			REBOUND	
8.00										

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 19

For F.S. ENGINEERS (P) LTD.

P N : 7728

Director

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 19

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 29.05.2023

DATE OF COMPLETION : 30.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	2.00							
2						1.50	28	30	MEDIUM	
3				2.50		2.50			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	4.50							
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

→ END OF BORING | CORE RECOVERY

Fig : 20

For F.S. ENGINEERS (P) LTD.

P N - 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 20

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 26.05.2023

DATE OF COMPLETION : 26.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	4.00			1.50	>50	9	V.DENSE	
2										
3						3.00	>50	0	V.DENSE	
4										
5		MEDIUM ROCK MR2 (Greyish Brown)	3.50	4.50		4.50			REBOUND	
6										
7										
8.00				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING

CORE RECOVERY

Fig : 21

For F.S. ENGINEERS (P) LTD.

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 21

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 29.05.2023

DATE OF COMPLETION : 29.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	1.50			1.50	27	30	MEDIUM	
2				2.00		2.00			REBOUND	
3										
4		MEDIUM ROCK MR1 (Yellowish Brown)	3.00							
5.00				5.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 22

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

PH NO.17228

F.S.ENGINEERS PRIVATE LIMITED
SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION
FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 22

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 02.06.2023

DATE OF COMPLETION : 02.06.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	0	V.DENSE	
4 5 6		MEDIUM ROCK MR1 (Yellowish Brown)	4.00	3.00		3.00			REBOUND	
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 23

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

P.N: 7728

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 23

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 06.06.2023

DATE OF COMPLETION : 06.06.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	4.50							
2						1.50	26	30	MEDIUM	
3										
4						3.00	>50	0	V.DENSE	
5						4.50	>50	0	V.DENSE	
6		MEDIUM ROCK MR1 (Yellowish Brown)	4.00	5.00		5.00			REBOUND	
7										
8										
9.00				9.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 24

For F.S. ENGINEERS (P) LTD.

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 24

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 31.05.2023

DATE OF COMPLETION : 31.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	1.50	2.00		1.50	9	30	LOOSE	
3 4		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50	4.50		3.00	>50	0	V.DENSE	
5 6 7		MEDIUM ROCK MR2 (Greyish Brown)	3.50	8.00		4.50			REBOUND	
8.00										

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 25

PN(P7728)

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 25

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 30.05.2023

DATE OF COMPLETION : 30.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	1.80			1.50	>50	0	MEDIUM	
2										
				2.30		2.30			REBOUND	
3										
4		MEDIUM ROCK MR2 (Greyish Brown)	2.70							
5.00				5.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

→ END OF BORING

↓ CORE RECOVERY

Fig : 26

For F.S. ENGINEERS (P) LTD.

P.N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY

BORE HOLE NO : 26 PHASE - 1

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 01.06.2023

DATE OF COMPLETION : 01.06.2023

G.W.L : 0.80Mtr

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	6	V.DENSE	
4 5 6 7.00		MEDIUM ROCK MR1 (Yellowish Brown)	4.00	3.00		3.00			REBOUND	
				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 27

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY
PHASE - 1

BORE HOLE NO : 27

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 01.06.2023

DATE OF COMPLETION : 01.06.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1 2 3		DISINTEGRATED ROCK DR1 (Whitish Brown)	3.00			1.50	42	30	V.DENSE	
4 5 6 7		MEDIUM ROCK MR2 (Greyish Brown)	4.50	3.50		3.50			REBOUND	
8.00				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING

CORE RECOVERY

Fig : 28

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

F.S.ENGINEERS PRIVATE LIMITED
SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION
FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 28

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 02.06.2023

DATE OF COMPLETION : 02.06.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.50			1.50	>50	7	V.DENSE	
2										
3				3.00		3.00			REBOUND	
4		MEDIUM ROCK MR1 (Yellowish Brown)	4.00							
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 29

F.S. ENGINEERS PVT. LTD.
NEW No: 98. (OLD No:109,)
VELACHERY ROAD,
GUINDY, CHENNAI-600 032.

For F.S. ENGINEERS (P) LTD.

Director

F.S.ENGINEERS PRIVATE LIMITED
SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION
FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 29

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 31.05.2023

DATE OF COMPLETION : 31.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		DISINTEGRATED ROCK DR1 (Whitish Brown)	2.00							
2						1.50	>50	0	V.DENSE	
3				2.50		2.50			REBOUND	
4		MEDIUM ROCK MR2 (Greyish Brown)	4.50							
5										
6										
7.00				7.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 30

For F.S. ENGINEERS (P) LTD.

P N : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98. (OLD No:109,)
VELACHERY ROAD,
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Director

F.S.ENGINEERS PRIVATE LIMITED

SOIL EXPLORATION AND FOUNDATION DESIGN DIVISION

FIELD BORE LOG

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

BORE HOLE NO : 30

TYPE OF BORING : ROTARY DRILLING

DATE OF COMMENCEMENT : 30.05.2023

DATE OF COMPLETION : 30.05.2023

G.W.L : NIL

DEPTH BELOW GL	SOIL PROFILE	DESCRIPTION OF SOIL	THICKNESS OF LAYER	DEPTH AT WHICH SAMPLES ARE COLLECTED		STANDARD PENETRATION TEST DATA				GRAPHICAL REPRESENTATION OF PENETRATION RESISTANCE
				D.S	U.D.S	DEPTH AT WHICH TEST CONDUCTED	N - VALUE	PENETRATION IN " CMS "	RELATIVE DENSITY CONSISTANCYD	10 20 30 40 >50
		TOP SOIL	0.50	0.50						
1		CLAYEY SAND CS1 (Gravelly) (Brownish Yellow)	3.50			1.50	>50	0	V.DENSE	
2										
3						3.00	>50	0	V.DENSE	
4				4.00		4.00			REBOUND	
5		MEDIUM ROCK MR1 (Yellowish Brown)	4.00							
6										
7										
8.00				8.00						

REMARKS : ALL DIMENSIONS ARE IN METRES

END OF BORING | CORE RECOVERY

Fig : 31

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For F.S. ENGINEERS (P) LTD.

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PRN: 7728

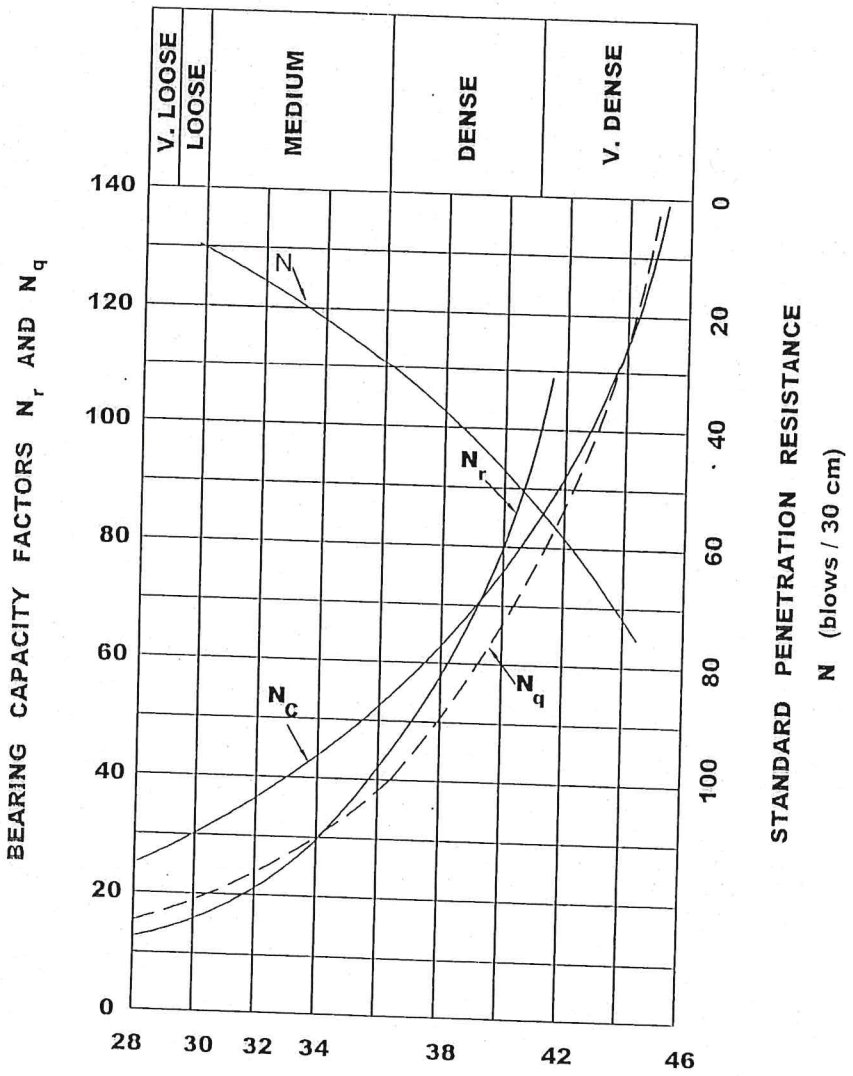


FIG. 32 CURVES SHOWING THE RELATIONSHIP BETWEEN ø N_r N_q, N_c AND N

Ref : Foundation Analysis & Design.
Joseph. E. Bowles.

PN : 7728

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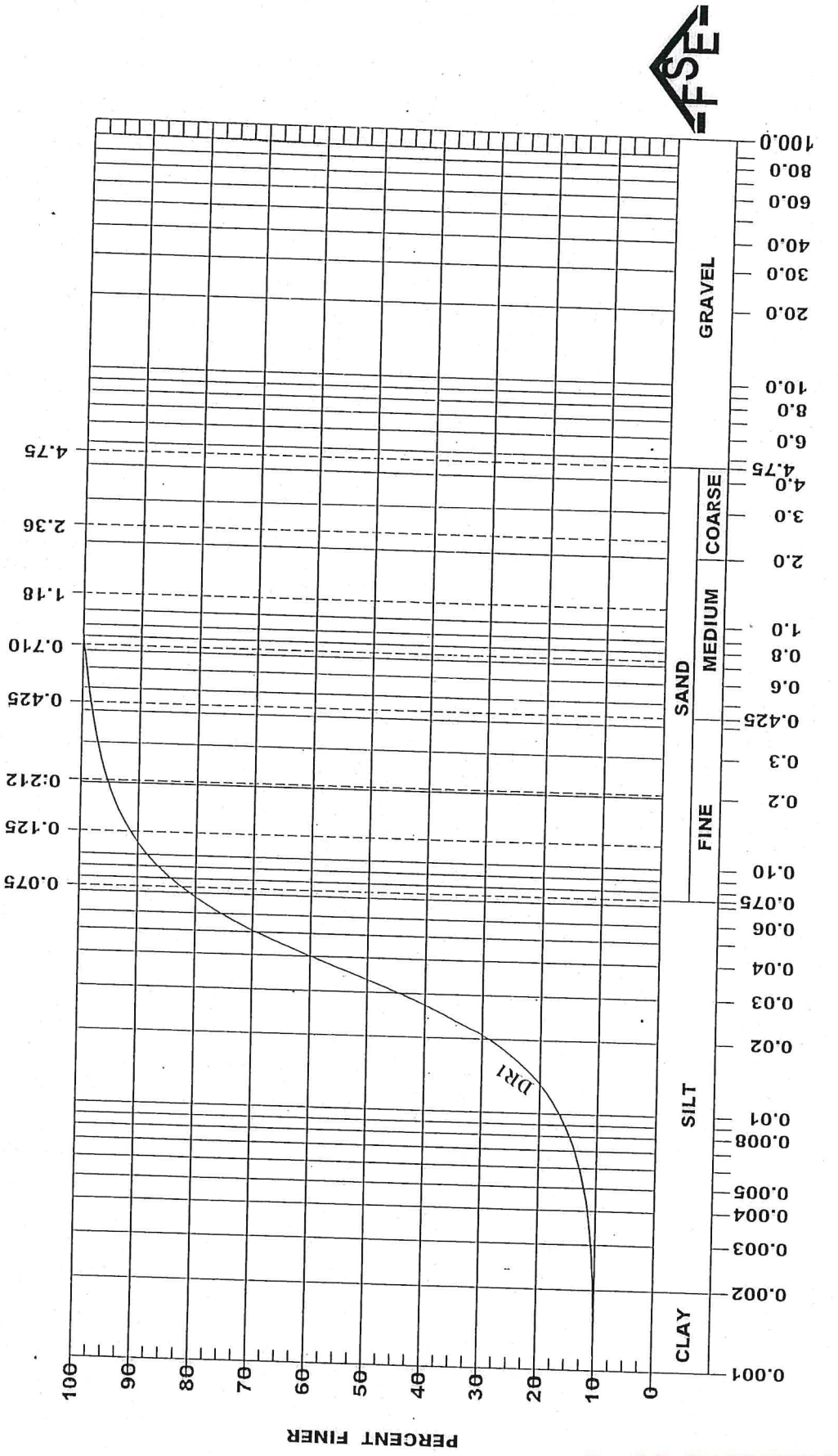


FIG. 33 GRAIN SIZE DISTRIBUTION CURVE

For F.S. ENGINEERS (P) LTD.

Director

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE -1

Sl.No	Depth	Layer	W_L	Wp	Wn	swell	Grain Size Distribution				Sp. Gr.
							Clay	Silt	Sand	Gravel	G
	M		%	%	%	%	%	%	%	%	
1	2	3	4	5	6	7	8	9	10	11	12
BH.1											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	10 (not clay)	15	75	-	2.64
	3.00-8.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.2											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-1.00	DR1	-	-	-	-	10 (not clay)	10	80	-	2.64
	1.00-10.50	MR2	-	-	-	-	-	-	-	-	2.65
BH.3											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	14 (not clay)	10	76	-	2.64
	3.00-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.4											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	DR1	-	-	-	-	15 (not clay)	10	75	-	2.64
	2.50-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.5											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	CS1	-	-	-	-	13	15	72	-	2.64
	2.50-5.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.6											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	10	10	80	-	2.64
	3.00-4.50	DR1	-	-	-	-	11 (not clay)	15	74	-	2.64
	4.50-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.7											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	11	10	79	-	2.64
	3.00-4.50	DR1	-	-	-	-	11 (not clay)	15	74	-	2.64
	4.50-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.8											
	0.00-0.60	TOP	-	-	-	-	-	-	-	-	-
	0.60-2.50	DR1	-	-	-	-	15 (not clay)	15	70	-	2.64
	2.50-7.00	MR1	-	-	-	-	-	-	-	-	2.65

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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE -1

Sl.No	Depth	Layer	W_L	Wp	Wn	swell	Grain Size Distribution				Sp. Gr.
							Clay	Silt	Sand	Gravel	G
	M		%	%	%	%	%	%	%	%	
1	2	3	4	5	6	7	8	9	10	11	12
BH.9											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	10	12	78	-	2.64
	3.00-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.10											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	14 (not clay)	15	71	-	2.64
	3.00-6.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.11											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-4.50	DR1	-	-	-	-	15 (not clay)	10	75	-	2.64
	4.50-8.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.12											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	CS1	-	-	-	-	14	12	74	-	2.64
	2.50-6.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.13											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	15	10	75	-	2.64
	3.00-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.14											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	10	14	76	-	2.64
	3.00-4.50	DR1	-	-	-	-	13 (not clay)	10	77	-	2.64
	4.50-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.15											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	9 (not clay)	12	79	-	2.64
	3.00-7.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.16											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	11	15	74	-	2.64
	3.00-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.17											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	CS1	-	-	-	-	10	15	75	-	2.64
	3.00-5.25	MR1	-	-	-	-	-	-	-	-	2.65

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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE -1

Sl.No	Depth	Layer	W_L	Wp	Wn	swell	Grain Size Distribution				Sp. Gr.
							Clay	Silt	Sand	Gravel	G
	M		%	%	%	%	%	%	%	%	
1	2	3	4	5	6	7	8	9	10	11	12
BH.18											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	CS1	-	-	-	-	12	15	73	-	2.64
	2.50-6.00	DR1	-	-	-	-	15 (not clay)	10	75	-	2.64
	6.00-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.19											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	CS1	-	-	-	-	12	15	73	-	2.64
	2.50-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.20											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-4.50	DR1	-	-	-	-	12 (not clay)	10	78	-	2.64
	4.50-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.21											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.00	CS1	-	-	-	-	13	15	72	-	2.64
	2.00-5.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.22											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	13 (not clay)	15	72	-	2.64
	3.00-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.23											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-5.00	DR1	-	-	-	-	9 (not clay)	12	79	-	2.64
	5.00-9.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.24											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.00	CS1	-	-	-	-	10	13	77	-	2.64
	2.00-4.50	DR1	-	-	-	-	12 (not clay)	13	75	-	2.64
	4.50-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.25											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.30	DR1	-	-	-	-	9 (not clay)	12	79	-	2.64
	2.30-5.00	MR2	-	-	-	-	-	-	-	-	2.65

F.S. ENGINEERS PVT. LTD.
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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE -1

Sl.No	Depth	Layer	W_L	Wp	Wn	swell	Grain Size Distribution				Sp. Gr.
							Clay	Silt	Sand	Gravel	G
	M		%	%	%	%	%	%	%	%	
1	2	3	4	5	6	7	8	9	10	11	12
BH.26											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	10 (not clay)	15	75	-	2.64
	3.00-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.27											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.50	DR1	-	-	-	-	10 (not clay)	12	78	-	2.64
	3.50-8.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.28											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-3.00	DR1	-	-	-	-	12 (not clay)	15	73	-	2.64
	3.00-7.00	MR1	-	-	-	-	-	-	-	-	2.65
BH.29											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-2.50	DR1	-	-	-	-	10 (not clay)	15	75	-	2.64
	2.50-7.00	MR2	-	-	-	-	-	-	-	-	2.65
BH.30											
	0.00-0.50	TOP	-	-	-	-	-	-	-	-	-
	0.50-4.00	CS1	-	-	-	-	10	14	76	-	2.64
	4.00-8.00	MR1	-	-	-	-	-	-	-	-	2.65

Lab table : 1

lab test result

PN : 7728

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
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PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

Crushing Strength of Rock

BH No	Depth	Layer	Crushing Strength Of Rock In kg / cm^2
BH.1	3.00-8.00	MR1	53
BH.2	1.00-10.50	MR2	48
BH.3	3.00-8.00	MR2	45
BH.4	2.50-8.00	MR2	52
BH.5	3.00-5.00	MR1	59
BH.6	4.50-7.00	MR1	40
BH.7	4.50-7.00	MR1	45
BH.8	2.50-7.00	MR1	55
BH.9	3.00-7.00	MR1	49
BH.10	3.00-6.00	MR2	44
BH.11	4.50-8.00	MR1	54
BH.12	2.50-6.00	MR1	56
BH.13	3.00-7.00	MR1	50
BH.14	4.50-7.00	MR1	48
BH.15	3.00-7.00	MR2	42
BH.16	3.00-8.00	MR2	46
BH.17	3.00-5.25	MR1	54
BH.18	6.00-8.00	MR2	51
BH.19	2.50-7.00	MR1	41
BH.20	4.50-7.00	MR2	49
BH.21	2.00-5.00	MR1	58
BH.22	3.00-7.00	MR1	40
BH.23	5.00-9.00	MR1	47
BH.24	4.50-8.00	MR2	57
BH.25	2.30-5.00	MR2	55
BH.26	3.00-7.00	MR1	53
BH.27	3.50-8.00	MR2	45
BH.28	3.00-7.00	MR1	40
BH.29	2.50-7.00	MR2	48
BH.30	4.00-8.00	MR1	50

Table: 2

F.S. ENGINEERS PVT. LTD.
NEW No: 98, (OLD No:109,)
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PN : 7728

For F.S. ENGINEERS (P) LTD.

Director

PROJECT : SOIL INVESTIGATION WORK AT MAHINDRA WORLD CITY PHASE - 1

Chemical Analysis Of Soil

Bh. No	PH	SULPHATE SO_3 in %	CHLORIDE in %	CARBONATE in %
BH.1	7.12	0.05	0.10	0.03
BH.2	7.09	0.04	0.12	0.02
BH.3	7.08	0.03	0.09	0.01
BH.4	7.10	0.05	0.11	0.03
BH.5	7.07	0.02	0.08	0.02
BH.6	7.11	0.01	0.07	0.04
BH.7	7.15	0.04	0.05	0.02
BH.8	7.13	0.02	0.10	0.05
BH.9	7.10	0.03	0.11	0.02
BH.10	7.09	0.01	0.08	0.03
BH.11	7.07	0.06	0.04	0.04
BH.12	7.06	0.03	0.13	0.01
BH.13	7.08	0.07	0.15	0.05
BH.14	7.09	0.08	0.10	0.01
BH.15	7.11	0.03	0.11	0.02
BH.16	7.05	0.02	0.12	0.04
BH.17	7.03	0.01	0.15	0.06
BH.18	7.02	0.04	0.14	0.07
BH.19	7.05	0.05	0.13	0.05
BH.20	7.09	0.09	0.10	0.03
BH.21	7.12	0.07	0.08	0.02
BH.22	7.10	0.06	0.05	0.05
BH.23	7.13	0.05	0.13	0.01
BH.24	7.05	0.04	0.16	0.04
BH.25	7.06	0.03	0.11	0.07
BH.26	7.07	0.02	0.12	0.06
BH.27	7.13	0.01	0.09	0.04
BH.28	7.06	0.09	0.08	0.03
BH.29	7.02	0.03	0.10	0.02
BH.30	7.01	0.05	0.12	0.01

Table : 3

P N : 7728

F.S. ENGINEERS PVT. LTD.
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For F.S. ENGINEERS (P) LTD.

Director

Our services go beyond

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.

Smarter Tools, Stronger Decisions

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

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