# **MARUTI** Spectrum

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## **PROJECT PROFILE**

Job No. 20-Dec-2022 /36/ SMC

TITLE:

Soil Investigation work for the proposed **Ground/Parking + 11 storey** Residential Building having height 35 m and covering **2416.76**Sqm. at plinth/Parking Level of **1. PIXEL GOODS & SUPPLY PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI. SHIVAM GOYAL 2.AVIANA PROJECTS PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI. AVINASH AGARWAL 3. SRI SANDIP KUMAR AGARWAL** at **ZILA PARISHAD ROAD, JYOTINAGARA , SILIGURI.** 

GPS Coordinates:	N - 26° 44'38.4144" E - 88°26'49.0812"	
Date of Issuance:	26/12/2022.	
Schedule of Land:		
Mouza –	DABGRAM,	
Pargana –	Baikunthapur,	Plot No. 53,55(R.S.)
Khatian No	682 (R.S.).	
P.S	BHAKTINAGAR	
Dist:	JALPAIGURI.	
Ward No	41	
Area of Plot:	<b>5416.72</b> Sqm.	

#### **Description of the Plot:**

Plot is more or less uniform in level and no significant slope was observed.

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#### **PURPOSE OF THE WORK**

The Owners intend to erect a G+11 Storey Residential Building on the plot with land schedule as mentioned elsewhere in this report. Therefore, it was felt necessary by them to undertake asoil exploration work, the results of which will cater to the needs of the esteemed Structural Engineer in designing and erecting a structural framework for the proposed building, both foundation as well as the superstructure, in such a way that the final construction is safe and reliable from every aspect of Structural and Geotechnical Engineering. Moreover, the same is a mandatory requirement to be complied with so that the stipulations as laid out by the Approving Authority are satisfied.

#### **SCOPE OF WORK**

The scope of work was limited due to limited fund allocation and hence a Soil Investigation Programmed of limited scale and extent, as desired by the Owner and suggested by the StructuralEngineer and/or LBS/Architect who were appointed as 'Licensed Technical Personnel' for this project, was designed and adopted. Keeping into consideration, the above-mentioned aspectsof the project as well as the fact that there was nothing much uncommon and critical in the said design proposal the following Test Schedule was adopted, with exemptions as listed below. (Ref. page 5). Altogether 6 Bore Holes were advanced in the ground up to the necessary and practicable depth and data and sample collected from them were sent to the Laboratory for processing.

- Tri Axial Shear Test or Unconfined Compression test was not done since the sieve analysis results indicated cohesion less soil. Moreover, good quality undisturbedsample, which could have been put to Tri-Axial Shear Test could not be collected.
- 2. Hydrometer analysis was not done as quantities of fines in the samples were insignificant.
- 3. As the water table was too high (-0.0 m) and above the founding level, for field density at founding level, samples as retrieved from the split spoon sampler had to be relied upon. Because, collection of samples by core cutter for Field Density and Field Moisture content determination became impossible and hence Determination of Field density by sand replacement method or core cutter method had to beabandoned.
- As no significant plasticity was observed in the little amount of fines retrieved from (finer than 75µ) Sieve Analysis, determination of Atterberg Limits and Plasticity index, and Consolidation test was not attempted.
- 5. Net allowable bearing capacity was determined by primarily utilizing the field SPT values after necessary correction, while necessary weightage was given to φ values determined otherwise.

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#### METHODOLOGY

- As the building under consideration is at the design stage only, very limited amount of information regarding the construction detail, like approximate plinth geometry, number of floors, height of the building, type of foundation the structural Engineer expected etc. was available. As limited fund was made available by the owners for the purpose of Geo-technical Investigation, it was decided after discussion with and as desired by the other technical personnel involved to go for Six Bore Holes, as shown in the attached site plan.
- Accordingly, samples were collected by percussion drilling up to a depth of 10.0 m., 9.0 m, 9.0m, 9.0m, 10.0m, 8.0m, 10.0m for Bore Hole 1, 2, 3, 4, 5, 6, 7, respectively, while SPT was carried out at regular intervals simultaneously. The samples thus collected were packed and sealed to prevent moisture loss and was send to Laboratory for further examination. The water table wasascertained from an open well available nearby. The existing ground level is equal to the abutting road level.
- As detailed in page 3 and 5, all samples were subjected to tests at the Laboratory and test results were recorded.
- The data thus collected from Field Tests and Laboratory Examination was processed and presented systematically in section titled "TABLES & CHARTS" of this report.
- The final results were examined, analyzed and necessary information and/or recommendations for the design and construction of foundation of the proposed building was made available for the Structural Engineer. A soft copy of the report was also made available for uploading.
- No attempt has been made to obtain Atterberg limit, Consolidation test, Unconfined Compressive Strength, Free Swell Index and Sulphate content of the soil sample as the soil type can be defined as poorly graded sand.

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# SCHEDULE OF TESTS

- FIELD TESTS
  - Field Density by Sand Replacement Method [I.S. 2720 Part28]Or Field Density by Core Cutter Method [I.S. 2720 Part 29]
  - 2. Determination of Field Moisture Content [ I.S. 2720 Part 2]
  - 3. Standard Penetration Test [ I.S. 2131]
  - 4. Determination of Depth of Water Table.
  - 5. Collection of Sample for:
    - (a) Grain Size Analysis.
    - (b) Determination of Specific Gravity.
    - (c) Determination of Moisture Content.
    - (d) Determination of Relative Density.
    - (e) Determination of Bulk Density.

## • LABORATORY TESTS

- 1. Sieve Analysis and/or Hydrometer Analysis. [I.S. 2720 Part 4]
- 2. Determination of Bulk Density.
- 3. Determination of Specific Gravity. [I.S. 2720 Part 3]
- 4. Determination of Moisture Content. [I.S. 2720 Part 2]
- 5. Determination of Relative Density. [I.S. 2720 Part 14]
- 6. Direct Shear Test. [I.S. 2720 Part 13]
- Tri- Axial Shear Test. [I.S. 2720 Part 11] Or Unconfined Compression Test. [I.S. 2720 Part 10]

#### DATA PROCESSING

- 1. Grain Size Distribution.
- 2. Preparation of Bore Log and Classification of Soil.
- 3. Determination of necessary Index Properties.
- 4. Determination of Design SPT Value.
- 5. Settlement Analysis.
- 6. Determination of Bearing Capacity.

#### CONCLUSION

- 1. Analysis of Results.
- 2. Recommendation on the type and depth of Foundation.
- 3. Recommendation on the Net allowable Bearing Capacity and Settlement.

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Dr. Sulagno Banerjee BCE, MCE, PhD, C. Eng (I) Geo-Technical Engineer (I-14) Siliguri Municipal Corporation

[Limited to Geotechnical Investigation Only]

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## PHOTOGRAPH



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💽 GPS Map Camera

Siliguri, West Bengal, India Mou Satyam Apartment, Zila Parishad Rd, Ward 41, Don Bosco Colony, Siliguri, West Bengal 734004, India Lat 26.743826° Long 88.446432° 24/11/22 02:22 PM GMT +05:30

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# TABLES & CHARTS

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		JOB NO.:	20-Dec-202	2 /36/ SMC		B.H.NO:	1	SHEET:					
		OWNER:	PIXEL GOOL	DS & SUPPLY PVT. L	TD.	START DATE:	23.11.2022	END DATE:	23. <mark>11.202</mark> 2				
		LOCATION	ZILA PARISH	AD ROAD,JYOTINAGA	RA "SILIGURI	CASING DEPTH	ł:	EASTING:	88°26'49.0812''				
		DRILLING M	METHOD:	PERCUSS	ION	G.W.DEPTH :	0	NORTHING:	26° 44′ 38.414	4"			
	2		2	8/%		WEATHER:	() ()	B.H. ELEV:			30	82 8	
Serial NO	DEPTH (m)	THICK (m)	DESCRIPTION		Ledg.		SPT COUNTS		FIELD N	.D N VALUES		L.L %	P.L %
									0	* 5 5 8	ž		
1	1	0 TO 1	MEDIUN	I TO FINE SAND		2	4	4	8	N			
2	1	1TO 2	MEDIUN	I TO FINE SAND		4	5	7	12			12 - 2	
3	1	2 TO 3	MEDIUM	TO FINE SAND		6	10	11	21	$\rangle$			
4	1	3 TO <mark>4</mark>	MEDIUN	I TO FINE SAND		5	8	9	17				
5	1	<mark>4 TO 5</mark>	MEDIUN	I TO FINE SAND		6	9	11	20			8-8	_
6	1	5 TO 6	MEDIUN	I TO FINE SAND		9	11	12	23				·
7	1	6 TO 7	MEDIUM	I TO FINE SAND	_	5	10	10	20				
8		7 TO 8	MEDIUM	TO FINE SAND		6	9	12	21			20	
9		8 TO 9	MEDIUN	I TO FINE SAND		8	10	13	23				
10		9 TO 10	MEDIUM	TO FINE SAND		6	8	10	18 5	1			

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		JOB NO.:	20-Dec-2022 /36/ SM	C	B.H.NO:	2	SHEET:				
		OWNER:	PIXEL GOODS & SUPPL	Y PVT. LTD.	START DATE:	23.11.2022	END DATE:	23.11.2022			
		LOCATION	ZILA PARISHAD ROAD,JY	OTINAGARA ,SILIGUR	CASING DEPTH:		EASTING:	88°26'49.0812''			
		DRILLING N	NETHOD: P	RCUSSION	G.W.DEPTH : 0	0	NORTHING:	26° 44'38.4144''			
		9. 1	16		WEATHER:		B.H. ELEV:				
Serial NO	DEPTH (m)	THICK (m)	DESCRIPTION	Ledg.	S	PT COUNTS		FIFLD N VALUES		W %	L.L P.L % %
								0.0	55888		
1	1	0 TO 1	MEDIUM TO FINE	SAND	2	2	4	6			
2	1	1 TO 2	MEDIUM TO FINE	SAND .	3	5	6	11			
3	1	2 TO 3	MEDIUM TO FINE	SAND	7	7	10	17			
4	1	3 TO 4	MEDIUM TO FINE	SAND	8	9	11	20			
5	1	4 TO 5	MEDIUM TO FINE	SAND	10	12	13	» 25			
6	1	<mark>5 TO 6</mark>	MEDIUM TO FINE	SAND	10	13	15	° 28			
7	1	6 TO 7	MEDIUM TO FINE	SAND	8	10	12	22			
8	1	7T08	MEDIUM TO FINE	SAND	6	6	9	15	$\langle$		
9	1	8 TO 9	MEDIUM TO FINE	SAND	8	10	13	23 •			

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		JOB NO.:	20-Dec-202	2 /36/ SMC		B.H.NO:	3	SHEET:						
		OWNER:	PIXEL GOOL	)S & SUPPLY PVT. L	TD.	START DATE:	23.1 <mark>1.2</mark> 022	END DATE: 23.11.2022		2				
		LOCATION	ZILA PARISH/	ND ROAD, JYOTINAGA	RA "SILIGURI	CASING DEPTH		EASTING:	88°26′49.	0812″				
		DRILLING N	METHOD:	OD: PERCUSSION		G.W.DEPTH :	0	NORTHING:	26° 44′ 38.4144″					
				4		WEATHER:		B.H. ELEV:						
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1	1	0TO1	MEDIUM	TO FINE SAND		1	6	7	13	*	<b>1</b>			
2	1	1T02	MEDIUM	TO FINE SAND		8	10	11	21	N				
3	1	2 TO 3	MEDIUM	TO FINE SAND		6	8	9	17	÷				
4	1	3 TO 4	MEDIUM	TO FINE SAND		8	10	10	20					
5	1	<mark>4 TO 5</mark>	MEDIUM	TO FINE SAND		7	10	9	19	÷				
6	1	5 TO 6	MEDIUM	TO FINE SAND		10	12	13	25					
7	1	6 TO 7	MEDIUM	TO FINE SAND		8	11	12	23	ų				
8	1	7T08	MEDIUM	TO FINE SAND		9	13	13	26					
9	1	8 TO 9	MEDIUM	TO FINE SAND		7	9	7	16		/			

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		JOB NO.:	20-Dec-202	2 /36/ SMC		B.H.NO:	4	SHEET:						
		OWNER:	PIXEL GOOL	)S & SUPPLY PVT. L	TD.	START DATE:	24.11.2022	END DATE:	24.11.202	2		Ī		
		LOCATION	ZILA PARISH	ND ROAD,JYOTINAGA	RA ,SILIGURI	CASING DEPTH:		EASTING:	88°26′49.	0812″				
		DRILLING N	METHOD:	OD: PERCUSSION		G.W.DEPTH :	0	NORTHING:	26° 44' 38.4144''					
				li 1/2		WEATHER:		B.H. ELEV:						
Serial DEPTH NO (m) T		THICK (m)	DES	CRIPTION	Ledg.		SPT COUNTS		FIELD	) N VA	LUES	W %	L.L %	P.L %
	7% St	6 - 90.9% 1	0		18 4)					0 #	5 5 6 5			
1	1	0T01	MEDIUM	TO FINE SAND		2	4	5	9					
2	1	1TO 2	MEDIUM	TO FINE SAND		3	5	7	12					
3	1	2 TO 3	MEDIUM	TO FINE SAND		5	8	10	18					
4	1	3 TO 4	MEDIUM	TO FINE SAND		6	8	9	17					
5	1	4 TO 5	MEDIUM	TO FINE SAND		8	10	8	18	ų				
6	1	5 TO 6	MEDIUM	TO FINE SAND		12	11	13	24					
7	1	6TO 7	MEDIUM	TO FINE SAND		13	13	13	26					
8	1	7T08	MEDIUM	TO FINE SAND		12	10	14	24					
9	1	8TO 9	MEDIUM	TO FINE SAND		10	8	10	18					

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J		JOB NO.:	20-Dec-202.	2 /36/ SMC		B.H.NO:	5	SHEET:					
		OWNER:	PIXEL GOOD	IS & SUPPLY PVT. L	TD.	START DATE:	24.11.2022	END DATE:	24.11.2022				
		LOCATION	ZILA PARISHA	D ROAD,JYOTINAGAI	RA ,SILIGURI	CASING DEPTH: G.W.DEPTH : 0	;	EASTING:	88°26′49.0812′′				
		DRILLING N	Nethod:	PERCUSSI	ON		0	NORTHING:	26° 44' 38.4144'				
6	19		1			WEATHER:		B.H. ELEV:					
Serial NO	DEPTH (m)	THICK (m)	DESCRIPTION Ledg.		S	PT COUNTS		FIELD N VA	LUES	W %	L.L %	P.L %	
1	1	0T01	MEDIUM	TO FINE SAND		2	2	4	6				
2	1	1TO 2	MEDIUM	TO FINE SAND		4	6	7	13				
3	1	2 TO 3	MEDIUM	TO FINE SAND		5	8	11	19				
4	1	3 TO 4	MEDIUM	TO FINE SAND		7	10	11	21				
5	1	4 TO 5	MEDIUM	TO FINE SAND		9	12	10	22				
6	1	5 TO 6	MEDIUM	TO FINE SAND		12	16	16	32				
7	1	6T07	MEDIUM	TO FINE SAND		11	14	13	27				
8	1	7T08	MEDIUM	TO FINE SAND		12	16	14	30				
9	1	8 TO 9	MEDIUM	TO FINE SAND		10	11	10	21				
10	1	9 TO 10	MEDIUM	TO FINE SAND		8	9	8	17 5				

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0		JOB NO.:	20-Dec-202	2 /36/ SMC		B.H.NO:	6	SHEET:					
		OWN <mark>E</mark> R:	PIXEL GOOD	IS & SUPPLY PVT. L	TD.	START DATE:	<mark>23.11.2</mark> 022	END DATE:	23.11. <mark>2</mark> 02	2			
		LOCATION	ZILA PARISH/	ND ROAD,JYOTINAGAI	RA ,SILIGURI	CASING DEPTH:	0	EASTING:	88°26′49.0812′′				
		DRILLING N	NETHOD:	PERCUSSI	ON	G.W.DEPTH: C		NORTHING:	: 26° 44′ 38.4144″				
			17			WEATHER:		B.H. ELEV:					
Serial NO	DEPTH (m) THICK (m)		HICK (m) DESCRIPTION L		Ledg.	S	SPT COUNTS		FIELD N VALUES			/ L.L %	P.L %
1	1	0TO1	MEDIUM	TO FINE SAND		2	3	4	7	•			
2	1	1TO 2	MEDIUM	TO FINE SAND		4	5	8	13			Γ	
3	1	2 TO 3	MEDIUM	TO FINE SAND		6	6	10	16	*		Γ	Π
4	1	3 TO 4	MEDIUM	TO FINE SAND		8	9	10	19	1			
5	1	4 TO 5	MEDIUM	TO FINE SAND		8	10	12	22				
6	1	5TO 6	MEDIUM	TO FINE SAND		11	12	13	25				
7	1	6T07	MEDIUM	TO FINE SAND		11	13	14	27	6			
8	1	7T08	MEDIUM	TO FINE SAND		12	16	15	31				

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		JOB NO.:	20-Dec-202	2 /36/ SMC		B.H.NO:	7	SHEET:					
		ow <mark>n</mark> er:	PIXEL GOOL	)S & SUPPLY PVT. L	TD.	START DATE:	23.11.2022	END DATE:	23. <mark>11.2</mark> 022				
		LOCATION	ZILA PARISH/	ND ROAD, JYOTINAGAI	RA ,SILIGURI	CASING DEPTH	H:	EASTING:	88°26′49.08	812″			
		DRILLING N	NETHOD:	PERCUSS	ION	G.W.DEPTH :	0	NORTHING:	26° 44' 38.4	144″			
					WEATHER:		B.H. ELEV:						
Serial NO	DEPTH (m)	THICK (m)	DES	CRIPTION	Ledg.	5	PT COUNTS		FIELD	N VALUES	W %	/ L.L 5 %	. P.L %
							8				1		
1	1	0TO1	MEDIUM	TO FINE SAND		2	2	4	6	*. <b>\</b>			
2	1	1TO 2	MEDIUM	TO FINE SAND		3	5	5	10				
3	1	2 TO 3	MEDIUM	TO FINE SAND		6	6	10	16	•			
4	1	3 TO 4	MEDIUM	TO FINE SAND		6	8	11	19	•			
5	1	4 TO 5	MEDIUM	TO FINE SAND		7	9	12	21				
6	1	5 T O 6	MEDIUM	TO FINE SAND		8	11	12	23				
7	1	6 T O 7	MEDIUM	TO FINE SAND		9	12	13	25				
8	1	7T08	MEDIUM	TO FINE SAND		11	12	16	28				
9	1	8 T O 9	MEDIUM	TO FINE SAND		10	11	11	22	. /			
10	1	9 TO 10	MEDIUM	TO FINE SAND	د. در دور در ا	8	9	9	18				

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# PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-1 AT DEPTH 2 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-1 AT DEPTH 3 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-1 AT DEPTH 4 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-1 AT DEPTH 6 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-1 AT DEPTH 10 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-2 AT DEPTH 2 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-2 AT DEPTH 3 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-2 AT DEPTH 4 m

1. PIXEL GOODS & SUPPLY PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI.

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-2 AT DEPTH 5 m

1. PIXEL GOODS & SUPPLY PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI.

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#### PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-2 AT DEPTH 6 m

1. PIXEL GOODS & SUPPLY PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI.

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-3 AT DEPTH 2 m

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# PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-3 AT DEPTH 3 m

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#### PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-3 AT DEPTH 4 m

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#### PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-3 AT DEPTH 6 m

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# PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-4 AT DEPTH 2 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-4 AT DEPTH 3 m

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## PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-5 AT DEPTH 3 m

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## PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-5 AT DEPTH 9 m

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## PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-7 AT DEPTH 2 m

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PARTICLE SIZE DISTRIBUTION CURVE, OF B.H-7 AT DEPTH 4 m

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B.H-1:											
CORRECTIO	IN OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED Compactness Net Allowable bearing Pressure for a settlement of   SPT VALUES of Sand 25mm from emperical equation of Terzaghi and Peck   Nc (1948) for SPT Criteria (kN/m²)						PHI(ANGLE OF Internal Friction of
			6					FOO	TING SIZE		SOIL)
							2.0mX2.0m	2.5mX2.5	2.75mX2.75m	3.0mX3.0m	
1	1.016	10.158	3.07036	8	19.343282	Medium	) )				<u>30-36</u>
2	1.016	20,316	2.17107	12	20.516649	Medium	202.700	173.036	162.826	154.548	30-36
3	1.016	30.474	1.77267	21	29.315604	Medium					30-36
4	1.016	40.632	1.53518	17	20.552237	Medium					30-36
5	1.016	50.790	1.37311	20	21.626447	Medium					30-36
6	1.016	60.948	1.25347	23	22.703478	Medium	()				30-36
7	1.016	71.105	1.16049	20	18.277684	Medium					30-36
8	1.016	81.263	1.08554	21	17.952068	Medium					30-36
9	1.016	91.421	1.02345	23	18.537312	Medium	) 				<mark>30-36</mark>
10	1.016	101.579	0.97093	18	13.762987	Medium					30-36

SHIVAM GOYAL 2.AVIANA PROJECTS PVT. LTD. REPRESENTED BY ONE OF ITS

B.H-2:											
CORRECTIO	N OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES NC	Compactness of Sand	Net Allowat 25mm from (	ettlement of aghi and Peck <sup>2</sup> )	PHI(ANGLE OF Internal Friction of Soil)		
							2.0mX2.0m	2.5mX2.5	2.75mX2.75m	3.0mX3.0m	
1	0.978	9.783	3.12861	6	14.782681	medium					30-36
2	0.978	19.566	2.21226	11	19.163712	medium	187.044	159.672	150.250	142.611	30-36
3	0.978	29.350	1.8063	17	24.18189	medium					30-36
4	0.978	39.133	1,5643	20	24.637802	medium					30-36
5	0.978	48.916	1.39916	25	27.5459	medium					30-36
6	0.978	58,699	1.27725	28	28.163353	medium					30-36
7	0.978	<mark>68.48</mark> 2	1.1825	22	20.48687	medium					30-36
8	0.978	78.266	1.10613	15	13.066167	medium					30-36
9	0.978	88.049	1.04287	23	18.888981	medium					30-36

SHIVAM GOYAL 2.AVIANA PROJECTS PVT. LTD. REPRESENTED BY ONE OF ITS

B.H-3:											
CORRECTIO	IN OF N:										
DEPTH (m)	UNIT WEIGHT g/cm³	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES NC	Compactness of Sand	Net Allowat 25mm from ( (;	PHI(ANGLE OF Internal Friction of			
									SOIL)		
							2.0mX2.0m	2.5mX2.5	2.7 <mark>5</mark> mX2.75m	3.0mX3.0m	
1	0.982	9.824	3.12215	13	31.963032	dense					36-41
2	<mark>0.98</mark> 2	19.647	2.20769	21	36.509755	dense	387.771	331.023	311,490	295.654	36-41
3	0.982	29.471	1.80258	17	24.131978	medium					30-36
4	0.982	39.295	1.56108	20	24.586948	medium					30-36
5	0.982	49.119	1.39627	19	20.891673	medium					30-36
6	0.982	<mark>58.94</mark> 2	1.27461	25	25.093949	medium			5		<u>30-36</u>
7	0.982	68.766	1.18006	23	21.373884	medium					30-36
8	0.982	78.590	1.10385	26	22.601277	medium					30-36
9	0.982	88.413	1.04072	16	13.113039	medium					<mark>30-36</mark>

SHIVAM GOYAL 2.AVIANA PROJECTS PVT. LTD. REPRESENTED BY ONE OF ITS

B.H-4:											
CORRECTIO	IN OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES Nc	Compactness of Sand	Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m <sup>2</sup> )				PHI(ANGLE OF Internal Friction of
	)							F00	TING SIZE		SOIL
							2.0mX2.0m	2.5mX2.5	2.75 <mark>m</mark> X2.75m	3.0mX3.0m	
1	1.009	10.094	3.08007	9	21.829965	medium					30-36
2	1.009	20.188	2.17794	12	20.581488	medium	203.451	173.677	163.429	155.120	30-36
3	1.009	30.282	1.77828	18	25.207072	medium		Shelo Alashi K	5	e P	<mark>30-36</mark>
4	1.009	40.376	1.54003	17	20.617189	medium					30-36
5	1.009	50.47 <mark>0</mark>	1.37745	18	19.525314	medium		5			30-36
6	1.009	60.564	1.25743	24	23.765456	medium					<u>30-36</u>
7	1.009	70.658	1.16416	26	23.836081	medium					30-36
8	1.009	80.752	1.08897	24	20.581488	medium					30-36
9	1.009	90.846	1.02669	18	14.55331	medium					30-36

SHIVAM GOYAL 2.AVIANA PROJECTS PVT. LTD. REPRESENTED BY ONE OF ITS

8.H-5:											
CORRECTIO	N OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES NC	Compactness of Sand	Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m <sup>2</sup> )				PHI(ANGLE OF Internal Friction of
								FOO	TING SIZE		SOIL)
							2.0mX2.0m	2.5mX2.5	2.75mX2.75m	3.0mX3.0m	
1	1.075	10.746	2.98521	6	14.105119	medium					<mark>30-36</mark>
2	1.075	21.491	2.11086	13	21.609955	medium	215.352	183.837	172.989	164.194	30-36
3	1.075	32.237	1.72351	19	25.788049	medium					<b>30-36</b>
4	1.075	42.983	1.49261	21	24.683959	medium					<u>30-36</u>
5	1.075	53,728	1.33503	22	23.129338	medium					<u>30-36</u>
6	1.075	<mark>64.4</mark> 74	1.21871	32	30.711418	dense					36-41
7	1.075	75.220	1.1283	27	23.990553	medium					30-36
8	1.075	85.966	1.05543	30	24.934564	medium					30-36
9	1.075	96.711	0.99507	21	16.455973	medium					30-36
10	1.075	107.457	0.94401	17	12.637886	medium					30-36

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8.H-6:											
CORRECTIO	N OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES Nc	Compactness of Sand	Net Allowal 25mm from (	PHI(ANGLE OF Internal Friction of			
							FOOTING SIZE			SOIL)	
							2.0mX2.0m	2.5mX2.5	2.75mX2.75m	3.0mX3.0m	
1	0.969	<mark>9.694</mark>	3.14304	1	17.326024	medium					30-36
2	0.969	19.387	2.22247	13	22.752505	medium	228.574	195.123	183.610	174.275	30-36
3	0.969	29.081	1.81464	16	22.864422	medium	- 1947 - 1947		i dakasalasi k	5	30-36
4	0.969	38.774	1.57152	19	23.51389	medium					<u>30-36</u>
5	0.969	<mark>48.4</mark> 68	1.40561	22	24.35222	medium			5		<u>30-36</u>
6	0.969	<mark>58,161</mark>	1.28314	25	25.261856	medium					30-36
7	0.969	67.855	1.18796	27	25.258969	medium					30-36
8	0.969	77,549	1.11123	31	27.127987	medium					<mark>30-36</mark>

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8.H-7:											
CORRECTIO	N OF N:										
DEPTH (m)	UNIT WEIGHT g/cm <sup>3</sup>	EFFECTIVE Overburden Pressure (p.)	C,	No	CORRECTED SPT VALUES NC	CORRECTED Compactness N SPT VALUES of Sand 29 Nc 24	Net Allowat 25mm from ( (:	PHI(ANGLE OF Internal Friction of			
								8 	SOIL)		
							2.0mX2.0m	2.5mX2.5	2.75mX2.75m	3.0mX3.0m	
1	1.035	10.352	3.0415	6	14.371077	medium					<u>30-36</u>
2	1.035	20.703	2.15066	10	16.936477	medium	161.271	137.670	129.547	122.960	30-36
3	1.035	31.055	1.75601	16	22.125721	medium					<u>30-36</u>
4	1.035	41.407	1.52075	19	22.754206	medium					30-36
5	1.035	51.758	1.3602	21	22.494294	medium					30-36
6	1.035	62.110	1.24169	23	22.490043	medium		5			30-36
7	1.035	72.461	1.14958	25	22.632319	medium					<mark>30-36</mark>
8	1.035	82.813	1.07533	28	23.711068	medium					30-36
9	1.035	93.165	1.01383	22	17.56465	medium					30-36
10	1.035	103.516	0.96181	18	13.633601	medium					30-36

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 $\phi = 31.3598^{\circ}$ 

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$$\phi = 31.188^{\circ}$$

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φ = 30.3629°

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φ = **30.168**°

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 $\phi = 27.647^{\circ}$ 

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Taking local shear Failure:

φ = 29.732°

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**Taking local shear Failure:** 

 $\phi = 30.462^{\circ}$ 

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M		
		2	2.	.5
PROPERTY	BORE HOLE	BORE HOLE II	BORE HOLE I	BORE HOLE II
In -situ Density - g [ gms/cc]	1.99	2.014	1.99	2.014
Moisture Content - w [%]	21.07	27.93	21.07	27.93
Specific Gravity - G	2.622	2.642	2.622	2.642
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.6422	1.5740	1.6422	1.5740
Voids Ratio e	0.596	0.679	0.596	0.679
Saturated Density - gsat	2.016	1.978	2.016	1.978
Submerged Density - gsub	1.016	0.978	1.016	0.978
Angle of Internal Friction φ for DESIGN considering local failure	31.36	31.19	31.36	31.19
Depth of Foundation Df [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5
Saturated Density - gsat	2.016	1.978	2.016	1.978
N <sub>C</sub>	42.80	42.09	42.80	42.09
Nq	27.64	26.99	27.64	26.99
N <sub>Y</sub>	25.87	25.09	25.87	25.09
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	241.83	230.99	259.21	247.54
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	202.70	187.04	173.04	159.67

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

 $R_{w2} = 0.5(1 + D_{w2}/B) =$ 

 $\begin{array}{l} q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} = 0.5(1+D_{w1}/D_{f}) \\ = 0.5 \end{array}$ 

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DIRECTOR SRI. AVINASH AGARWAL 3. SRI SANDIP KUMAR AGARWAL. Job No.: 20-Dec-2022 /36/ SMC

 $D_{w2} =$ 

0

Index Properties of Soil San CALCULATION FOR COHES	Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL			5M & 3.0X3.0M
	2	.75	3	3
PROPERTY	BORE HOLE	BORE HOLE II	BORE HOLE I	BORE HOLE II
In -situ Density - g [gms/cc]	1.99	2.014	1.99	2.014
Moisture Content - w [%]	21.07	27.93	21.07	27.93
Specific Gravity - G	2.622	2.642	2.622	2.642
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.6422	1.5740	1.6422	1.5740
Voids Ratio e	0.596	0.679	0.596	0.679
Saturated Density - gsat	2.016	1.978	2.016	1.978
Submerged Density - gsub	1.016	0.978	1.016	0.978
Angle of Internal Friction φ for DESIGN considering local failure	31.36	31.19	31.36	31.19
Depth of Foundation Df [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	2.016	1.978	2.016	1.978
Nc	42.80	42.09	42.80	42.09
Nq	27.64	26.99	27.64	26.99
N <sub>Y</sub>	25.87	25.09	25.87	25.09
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	267.91	255.81	276.60	264.08
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	162.83	150.25	154.55	142.61

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{array}{l} q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} = 0.5(1+D_{w1}/D_{f}) \\ = 0.5 \\ R_{w2} = 0.5(1+D_{w2}/B) = 0.5 \end{array}$$

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Index Properties of Soil San CALCULATION FOR COHES	nple & SBC IONLESS SOIL	FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M		
		2	2.	5
PROPERTY	BORE HOLE	BORE HOLE IV	BORE HOLE III	BORE HOLE IV
In -situ Density - g [ gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	27.52	23.80	27.52	23.80
Specific Gravity - G	2.646	2.636	2.646	2.636
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.5791	1.6266	1.5791	1.6266
Voids Ratio e	0.676	0.620	0.676	0.620
Saturated Density - gsat	1.982	2.009	1.982	2.009
Submerged Density - gsub	0.982	1.009	0.982	1.009
Angle of Internal Friction φ for DESIGN considering local failure	30.36	30.17	30.36	30.17
Depth of Foundation D <sub>f</sub> [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5
Saturated Density - gsat	1.982	2.009	1.982	2.009
Nc	38.70	37.89	38.70	37.89
Nq	23.87	23.14	23.87	23.14
NY	21.35	20.46	21.35	20.46
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	200.95	196.39	215.06	210.10
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	387.77	203.45	331.02	173.68

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil San CALCULATION FOR COHES	Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M	
	2	.75	3	\$
PROPERTY	BORE HOLE III	BORE HOLE IV	BORE HOLE III	BORE HOLE IV
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	27.52	23.80	27.52	23.80
Specific Gravity - G	2.646	2.636	2.646	2.636
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.5791	1.6266	1.5791	1.6266
Voids Ratio e	0.676	0.620	0.676	0.620
Saturated Density - gsat	1.982	2.009	1.982	2.009
Submerged Density - gsub	0.982	1.009	0.982	1.009
Angle of Internal Friction φ for DESIGN considering local failure	30.36	30.17	30.36	30.17
Depth of Foundation D <sub>f</sub> [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	1.982	2.009	1.982	2.009
Nc	38.70	37.89	38.70	37.89
Nq	23.87	23.14	23.87	23.14
N <sub>Y</sub>	21.35	20.46	21.35	20.46
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	222.11	216.95	229.17	223.80
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	311.49	163.43	295.65	155.12

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M		1 & 2.5X2.5M
		2	2.	5
PROPERTY	BORE HOLE V	BORE HOLE VI	BORE HOLE V	BORE HOLE VI
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	16.70	28.97	16.70	28.97
Specific Gravity - G	2.651	2.638	2.651	2.638
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.7255	1.5613	1.7255	1.5613
Voids Ratio e	0.536	0.689	0.536	0.689
Saturated Density - gsat	2.075	1.969	2.075	1.969
Submerged Density - gsub	1.075	0.969	1.075	0.969
Angle of Internal Friction φ for DESIGN considering local failure	27.65	29.73	27.65	29.73
Depth of Foundation D <sub>f</sub> [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5
Saturated Density - gsat	2.075	1.969	2.075	1.969
N <sub>C</sub>	31.51	36.55	31.51	36.55
Nq	17.89	21.98	17.89	21.98
N <sub>Y</sub>	14.99	19.17	14.99	19.17
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	151.35	181.46	161.72	194.04
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	215.35	228.57	183.84	195.12

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} &= 0.5(1+D_{w1}/D_{f}) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = D_{w2} = 0 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M		5M & 3.0X3.0M
	2	.75	3	3
PROPERTY	BORE HOLE V	BORE HOLE VI	BORE HOLE V	BORE HOLE VI
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	16.70	28.97	16.70	28.97
Specific Gravity - G	2.651	2.638	2.651	2.638
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.7255	1.5613	1.7255	1.5613
Voids Ratio e	0.536	0.689	0.536	0.689
Saturated Density - gsat	2.075	1.969	2.075	1.969
Submerged Density - gsub	1.075	0.969	1.075	0.969
Angle of Internal Friction φ for DESIGN considering local failure	27.65	29.73	27.65	29.73
Depth of Foundation Df [m]	2	2	2	2
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	2.075	1.969	2.075	1.969
Nc	31.51	36.55	31.51	36.55
Nq	17.89	21.98	17.89	21.98
N <sub>Y</sub>	14.99	19.17	14.99	19.17
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	166.90	200.33	172.08	206.62
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	172.99	183.61	164.19	174.27

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = D_{w2} = 0 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M	
	,	2 2.5	
PROPERTY	BORE HOLE VII	BORE HOLE VII	
In -situ Density - g [gms/cc]	2.01	2.01	
Moisture Content - w [%]	20.86	20.86	
Specific Gravity - G	2.641	2.641	
Density of Water - gw	1	1	
Dry Density - gd [gms/cc]	1.6660	1.6660	
Voids Ratio e	0.585	0.585	
Saturated Density - gsat	2.035	2.035	
Submerged Density - gsub	1.035	1.035	
Angle of Internal Friction φ for DESIGN considering local failure	30.46	30.46	
Depth of Foundation Df [m]	2	2	
Depth of Water Table Dw [m]	0	0	
Least lateral dimension of Square Footing B [m]	2	2.5	
Saturated Density - gsat	2.035	2.035	
N <sub>C</sub>	39.10	39.10	
Nq	24.25	24.25	
N <sub>Y</sub>	21.80	21.80	
R <sub>w2</sub>	0.5	0.5	
С	0	0	
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	210.07	224.86	
Factor of Safety adopted	3	3	
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	161.27	137.67	

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} &= 0.5(1+D_{w1}/D_{f}) \\ &= 0.5 \end{aligned}$$

 $R_{w2} = 0.5(1+D_{w2}/B) = D_{w2} = 0$ 

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Index Properties of Soil San CALCULATION FOR COHES	Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M	
	2.	75	3	3
PROPERTY	BORE HOLE VII		BORE HOLE VII	
In -situ Density - g [ gms/cc]	2.01		2.01	
Moisture Content - w [%]	20.86		20.86	
Specific Gravity - G	2.641		2.641	
Density of Water - gw	1		1	
Dry Density - gd [gms/cc]	1.6660		1.6660	
Voids Ratio e	0.585		0.585	
Saturated Density - gsat	2.035		2.035	
Submerged Density - gsub	1.035		1.035	
Angle of Internal Friction φ for DESIGN considering local failure	30.46		30.46	
Depth of Foundation Df [m]	2		2	
Depth of Water Table Dw [m]	0		0	
Least lateral dimension of Square Footing B [m]	2.75		3	
Saturated Density - gsat	2.035		2.035	
N <sub>C</sub>	39.10		39.10	
Nq	24.25		24.25	
NY	21.80		21.80	
R <sub>w2</sub>	0.5		0.5	
C	0		0	
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	232.26		239.65	
Factor of Safety adopted	3		3	
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	129.55		122.96	

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

$$q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}]$$

$$R_{w1} = 0.5(1+D_{w1}/D_{f})$$

$$= 0.5$$

$$R_{w2} = 0.5(1+D_{w2}/B) = D_{w2} = 0$$

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Index Properties of Soil San CALCULATION FOR COHES	Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M		
		2	2.	.5	
PROPERTY	BORE HOLE	BORE HOLE II	BORE HOLE I	BORE HOLE II	
In -situ Density - g [gms/cc]	1.99	2.014	1.99	2.014	
Moisture Content - w [%]	21.07	27.93	21.07	27.93	
Specific Gravity - G	2.622	2.642	2.622	2.642	
Density of Water - gw	1	1	1	1	
Dry Density - gd [gms/cc]	1.6422	1.5740	1.6422	1.5740	
Voids Ratio e	0.596	0.679	0.596	0.679	
Saturated Density - gsat	2.016	1.978	2.016	1.978	
Submerged Density - g <sub>sub</sub>	1.016	0.978	1.016	0.978	
Angle of Internal Friction φ for DESIGN considering local failure	31.36	31.19	31.36	31.19	
Depth of Foundation Df [m]	3	3	3	3	
Depth of Water Table Dw [m]	0	0	0	0	
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5	
Saturated Density - gsat	2.016	1.978	2.016	1.978	
N <sub>C</sub>	42.80	42.09	42.80	42.09	
Nq	27.64	26.99	27.64	26.99	
N <sub>Y</sub>	25.87	25.09	25.87	25.09	
R <sub>w2</sub>	0.5	0.5	0.5	0.5	
С	0	0	0	0	
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	327.97	313.39	345.36	329.94	
Factor of Safety adopted	3	3	3	3	
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	202.70	187.04	173.04	159.67	

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M		5M & 3.0X3.0M
	2	.75	3	3
PROPERTY	BORE HOLE	BORE HOLE II	BORE HOLE I	BORE HOLE II
In -situ Density - g [ gms/cc]	1.99	2.014	1.99	2.014
Moisture Content - w [%]	21.07	27.93	21.07	27.93
Specific Gravity - G	2.622	2.642	2.622	2.642
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.6422	1.5740	1.6422	1.5740
Voids Ratio e	0.596	0.679	0.596	0.679
Saturated Density - gsat	2.016	1.978	2.016	1.978
Submerged Density - gsub	1.016	0.978	1.016	0.978
Angle of Internal Friction φ for DESIGN considering local failure	31.36	31.19	31.36	31.19
Depth of Foundation Df [m]	3	3	3	3
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	2.016	1.978	2.016	1.978
N <sub>C</sub>	42.80	42.09	42.80	42.09
Nq	27.64	26.99	27.64	26.99
N <sub>Y</sub>	25.87	25.09	25.87	25.09
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	354.05	338.21	362.74	346.48
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	162.83	150.25	154.55	142.61

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

 $\begin{array}{l} q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} = 0.5(1+D_{w1}/D_{f}) \\ = & 0.5 \\ R_{w2} = 0.5(1+D_{w2}/B) = & D_{w2} = & 0 \end{array}$ 

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Index Properties of Soil San CALCULATION FOR COHES	FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M			
		2	2.	5
PROPERTY	BORE HOLE	BORE HOLE IV	BORE HOLE III	BORE HOLE IV
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	27.52	23.80	27.52	23.80
Specific Gravity - G	2.646	2.636	2.646	2.636
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.5791	1.6266	1.5791	1.6266
Voids Ratio e	0.676	0.620	0.676	0.620
Saturated Density - gsat	1.982	2.009	1.982	2.009
Submerged Density - gsub	0.982	1.009	0.982	1.009
Angle of Internal Friction φ for DESIGN considering local failure	30.36	30.17	30.36	30.17
Depth of Foundation Df [m]	3	3	3	3
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5
Saturated Density - gsat	1.982	2.009	1.982	2.009
Nc	38.70	37.89	38.70	37.89
Nq	23.87	23.14	23.87	23.14
N <sub>Y</sub>	21.35	20.46	21.35	20.46
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	273.22	267.17	287.32	280.88
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	387.77	203.45	331.02	173.68

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

 $\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L) + \gamma D_f N_q R_{w1} + 0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2} - \gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = D_{w2} = 0 \end{aligned}$ 

1. PIXEL GOODS & SUPPLY PVT. LTD. REPRESENTED BY ONE OF ITS DIRECTOR SRI.

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Index Properties of Soil San CALCULATION FOR COHES	FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M			
	2	.75	3	;
PROPERTY	BORE HOLE	BORE HOLE IV	BORE HOLE III	BORE HOLE IV
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	27.52	23.80	27.52	23.80
Specific Gravity - G	2.646	2.636	2.646	2.636
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.5791	1.6266	1.5791	1.6266
Voids Ratio e	0.676	0.620	0.676	0.620
Saturated Density - gsat	1.982	2.009	1.982	2.009
Submerged Density - gsub	0.982	1.009	0.982	1.009
Angle of Internal Friction φ for DESIGN considering local failure	30.36	30.17	30.36	30.17
Depth of Foundation D <sub>f</sub> [m]	3	3	3	3
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	1.982	2.009	1.982	2.009
N <sub>C</sub>	38.70	37.89	38.70	37.89
Nq	23.87	23.14	23.87	23.14
NY	21.35	20.46	21.35	20.46
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	294.38	287.73	301.43	294.59
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	311.49	163.43	295.65	155.12

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M		
	2 2.5			
PROPERTY	BORE HOLE V	BORE HOLE VI	BORE HOLE V	BORE HOLE VI
In -situ Density - g [ gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	16.70	28.97	16.70	28.97
Specific Gravity - G	2.651	2.638	2.651	2.638
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.7255	1.5613	1.7255	1.5613
Voids Ratio e	0.536	0.689	0.536	0.689
Saturated Density - gsat	2.075	1.969	2.075	1.969
Submerged Density - gsub	1.075	0.969	1.075	0.969
Angle of Internal Friction φ for DESIGN considering local failure	27.65	29.73	27.65	29.73
Depth of Foundation D <sub>f</sub> [m]	3	3	3	3
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2	2	2.5	2.5
Saturated Density - gsat	2.075	1.969	2.075	1.969
Nc	31.51	36.55	31.51	36.55
Nq	17.89	21.98	17.89	21.98
NY	14.99	19.17	14.99	19.17
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	206.28	247.02	216.65	259.61
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	215.35	228.57	183.84	195.12

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M		
2.75 3			3	
PROPERTY	BORE HOLE V	BORE HOLE VI	BORE HOLE V	BORE HOLE VI
In -situ Density - g [gms/cc]	2.01	2.014	2.01	2.014
Moisture Content - w [%]	16.70	28.97	16.70	28.97
Specific Gravity - G	2.651	2.638	2.651	2.638
Density of Water - gw	1	1	1	1
Dry Density - gd [gms/cc]	1.7255	1.5613	1.7255	1.5613
Voids Ratio e	0.536	0.689	0.536	0.689
Saturated Density - gsat	2.075	1.969	2.075	1.969
Submerged Density - gsub	1.075	0.969	1.075	0.969
Angle of Internal Friction φ for DESIGN considering local failure	27.65	29.73	27.65	29.73
Depth of Foundation Df [m]	3	3	3	3
Depth of Water Table Dw [m]	0	0	0	0
Least lateral dimension of Square Footing B [m]	2.75	2.75	3	3
Saturated Density - gsat	2.075	1.969	2.075	1.969
N <sub>C</sub>	31.51	36.55	31.51	36.55
Nq	17.89	21.98	17.89	21.98
N <sub>Y</sub>	14.99	19.17	14.99	19.17
R <sub>w2</sub>	0.5	0.5	0.5	0.5
С	0	0	0	0
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	221.84	265.90	227.02	272.19
Factor of Safety adopted	3	3	3	3
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	172.99	183.61	164.19	174.27

and according to text book V.N.S. MOORTHY page 668, these values can be increased to

2 to 3 times without excessive settlements occuring.

$$\begin{aligned} q_{na} &= 1/F[CN_c(1+0.3B/L)+\gamma D_f N_q R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_f] \\ R_{w1} &= 0.5(1+D_{w1}/D_f) \\ &= 0.5 \\ R_{w2} &= 0.5(1+D_{w2}/B) = 0.5 \end{aligned}$$

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.0MX2.0M & 2.5X2.5M	
	,	2.5	
PROPERTY	BORE HOLE VII	BORE HOLE VII	
In -situ Density - g [gms/cc]	2.01	2.01	
Moisture Content - w [%]	20.86	20.86	
Specific Gravity - G	2.641	2.641	
Density of Water - gw	1	1	
Dry Density - gd [gms/cc]	1.6660	1.6660	
Voids Ratio e	0.585	0.585	
Saturated Density - gsat	2.035	2.035	
Submerged Density - g <sub>sub</sub>	1.035	1.035	
Angle of Internal Friction φ for DESIGN considering local failure	30.46	30.46	
Depth of Foundation Df [m]	3	3	
Depth of Water Table Dw [m]	0	0	
Least lateral dimension of Square Footing B [m]	2	2.5	
Saturated Density - gsat	2.035	2.035	
Nc	39.10	39.10	
Nq	24.25	24.25	
NY	21.80	21.80	
R <sub>w2</sub>	0.5	0.5	
С	0	0	
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	285.54	300.32	
Factor of Safety adopted	3	3	
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	161.27	137.67	

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

 $\begin{array}{l} q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} = 0.5(1+D_{w1}/D_{f}) \\ = & 0.5 \\ R_{w2} = 0.5(1+D_{w2}/B) = & D_{w2} = & 0 \end{array}$ 

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Index Properties of Soil Sample & SBC CALCULATION FOR COHESIONLESS SOIL		FOOTING SIZE : 2.75MX2.75M & 3.0X3.0M		
2.2		75 3		3
PROPERTY	BORE HOLE VII		BORE HOLE VII	
In -situ Density - g [gms/cc]	2.01		2.01	
Moisture Content - w [%]	20.86		20.86	
Specific Gravity - G	2.641		2.641	
Density of Water - gw	1		1	
Dry Density - gd [gms/cc]	1.6660		1.6660	
Voids Ratio e	0.585		0.585	
Saturated Density - gsat	2.035		2.035	
Submerged Density - g <sub>sub</sub>	1.035		1.035	
Angle of Internal Friction φ for DESIGN considering local failure	30.46		30.46	
Depth of Foundation D <sub>f</sub> [m]	3		3	
Depth of Water Table Dw [m]	0		0	
Least lateral dimension of Square Footing B [m]	2.75		3	
Saturated Density - gsat	2.035		2.035	
N <sub>C</sub>	31.51		31.51	
Nq	17.89		17.89	
NY	14.99		14.99	
R <sub>w2</sub>	0.5		0.5	
С	0		0	
Net Allowable bearing Pressure (kN/m2) From TERZAGHI BEARING CAPACITY EQUATIONS	217.62		222.71	
Factor of Safety adopted	3		3	
Net Allowable bearing Pressure for a settlement of 25mm from emperical equation of Terzaghi and Peck (1948) for SPT Criteria (kN/m2)	129.55		122.96	

and according to text book V.N.S. MOORTHY page 668, these values can be increased to 2 to 3 times without excessive settlements occuring.

 $\begin{array}{l} q_{na} = 1/F[CN_{c}(1+0.3B/L)+\gamma D_{f}N_{q}R_{w1}+0.5\gamma BN_{\gamma}(1-0.2B/L)R_{w2}-\gamma D_{f}] \\ R_{w1} = 0.5(1+D_{w1}/D_{f}) \\ = 0.5 \\ R_{w2} = 0.5(1+D_{w2}/B) = 0.5 \end{array}$ 

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#### Q<sub>all</sub>= $1/F (q(N_q-1) + 0.5 \text{ s} \gamma BN_{\gamma})$ BH1 BH2 BH3 BH4 BH5 BH6 BH7 F 3 3 3 3 3 3 3 1.0158 0.9783 0.9824 1.0094 1.0746 0.9694 1.0352 γ D 2 2 2 2 2 2 2 D 3 3 3 3 3 3 3 D 4.5 4.5 4.5 4.5 4.5 4.5 4.5 27.64 26.99 23.87 23.14 17.89 21.98 24.25 Na Nγ 25.87 25.09 21.35 20.46 14.99 19.17 21.80 s 0.5 0.5 0.5 0.5 0.5 0.5 0.5 В 1 1 1 1 1 1 1 Q<sub>all2m</sub> kN/m2 179.2363 202.3094 189.9726 167.2678 166.171 134.4117 151.037 Q<sub>all3m</sub> kN/m2 292.513 274.7299 242.1636 240.6499 194.904 218.8147 259.4523 Q<sub>all4.5m</sub> kN/m3 427.8185 401.8659 354.5073 352.3683 285.6426 320.4811 379.7762

### **RAFT FOOTING CAPACITY :**

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### **FINAL SAFE BEARING CAPACITY OF SOIL**

### <u>At Depth of Foundation = 2m.</u>

TYPE OF FOOTING	SIZE OF FOOTING (mxm)	NET ALLOWABLE BEARING CAPACITY OF SOIL [t/m <sup>2</sup> ]
	2.00 X 2.00	15.13
ISOLATED	2.50 X 2.50	16.17
SQUARE	2.75 X 2.75	16.69
	3.00 X 3.00	17.21

### **FINAL SAFE BEARING CAPACITY OF SOIL**

### <u>At Depth of Foundation = 3m.</u>

TYPE OF FOOTING	SIZE OF FOOTING (mxm)	NET ALLOWABLE BEARING CAPACITY OF SOIL [t/m <sup>2</sup> ]
	2.00 X 2.00	20.63
ISOLATED	2.50 X 2.50	21.67
SQUARE	2.75 X 2.75	21.76
	3.00 X 3.00	22.27

Dr. Sulagno Banerjee BCE, MCE, PhD, C. Eng (I) Geo-Technical Engineer (I-14) Siliguri Municipal Corporation [Limited to Geotechnical Investigation Only]

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<u>At Depth of Foundation = 2m.</u>			
	TYPE OF FOOTING	NET ALLOWABLE BEARING CAPACITY OF SOIL [t/m <sup>2</sup> ]	
	RAFT	13.44	
	<u>At Dept</u>	<u>h of Foundation = 3m.</u>	
	TYPE OF FOOTING	NET ALLOWABLE BEARING CAPACITY OF SOIL [t/m <sup>2</sup> ]	
	RAFT	19.49	
	<u>At Depth</u>	of Foundation = 4.5m.	
TYPE OF FOOTING		NET ALLOWABLE BEARING CAPACITY OF SOIL [t/m <sup>2</sup> ]	
RAFT		28.56	

Dr. Sulagno Banerjee BCE, MCE, PhD, C. Eng (I) Geo-Technical Engineer (I-14)

Siliguri Municipal Corporation

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### **DISCUSSION & RECOMMENDATION**

- 1) All recommended strength parameters are derived from the samples from two nos. of boreholes in the entire site. If any discrepancy arises in any other locations, one may feel free to contact the undersigned for probable solution.
- 2) Construction in stages is advisable.
- 3) Linear interpolation may be done for intermediate size of foundation.
- 4) Overstressing of soil due to closely spaced footings or vicinity of adjacent structures is notconsidered in this Report.
- 5) If the various column loads is considerably high and local soil is different, it is suggested to adopttie beams at any suitable depth to counter act differential settlement.
- 6) Existence of nearby structure should also be given due consideration, in order to avoid excessive settlement.
- 7) The footing of greater width and depth should be avoided as far as practicable.

### FOR MARUTI SPECTRUM

### **REPORT PREPARED BY**

Er. GAUTAM DEB

Dr. Sulagno Banerjee BCE, MCE, PhD, C. Eng (I) Geo-Technical Engineer (I-14) Siliguri Municipal Corporation [Limited to Geotechnical Investigation Only]

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### **Certificate of Structural Stability**

I/We hereby certify that the foundation and superstructure of the buildingproposed for construction on **Plot No.: 53,55(R.S.)**, ZILA PARISHAD ROAD,JYOTINAGARA,SILIGURI., **Ward No.** 41 under the jurisdiction of Siliguri Municipal Corporation / Municipality/Notified Area Authority/Industrial Township Authority, have been personally inspected and so designed by me/us, will makesuch foundation and superstructure safe in all respect including the consideration of bearing capacity and settlement of soil and other conditions, if any, conforming to all stipulations of all relevant IS Code of Practice and National Building Code.

Signature of Structural Engineer

Dr. Sulagno Banerjee BCE, MCE, PhD, C. Eng (I) Geo-Technical Engineer (I-14) Siliguri Municipal Corporation

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Entpanelled Geo Tech Engineer I/II under Siliguri Municipal Corporation. ed & Valid Upto ..... NAME Soi Sulagno Banergee Renewed &Valid Upto ..... ADDRESS 46/5 New Ballygunge Road, kolkala - 700039 Renewed &Valid Upto ..... Mab - 92318 29649 EMPANELMETNINO. 14 Renewed & Valid Upto ..... CLASS Geo-Tech Class - I VALID UPTO. 31-03- 2022 50-Commissioner Siliguri Municipal Corporation Signature of Geo Toch. Engineer. pelled Renewed & Valid Upto . 31.03.2023 Siliguri Municipal Corporation Renewed & Valid Upto ..... Renewed & Valid Upto ..... Renewed &Valid Upto ..... THIS CARD IS TO BE PRODUCED DURING SUBMISSION OF PLANS AND IDENTIFICATION. Renewed & Valid Upto ..... Commission Siliguri Municipal Corporation Renewed & Valid Upto ..... Commissioner Siliguri Municipal Corporation (PP)

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No. 689 Form No 97 Receipt Voucher [Vide Rules 17 & 249 ] Date 25-04-2022 SILIGURI Municipal Corporation Received From SRI SULAGNO BANERJEE "মিরিস্তটি গ্লাস্টিক ন্যারিস্তাগন্ত প্রান্ত LICENCE NO: GEO TECH ENGINEER - I - 14 On Account of (Account Head) Amount Remarks(if any) 1401004 REGISTRATION OF PROFESSIONALS/ENLISTMENT 6500.00 RENEWAL FEES 0'2 6500.00 TOTAL LICENCE VALDI FOR THE FINANCIAL YEAR 2022 - 2023 The Sum of Rupees Six Thousand Five Hundred Only (in figures) Rs.\*\*\*\*\*6500.00 [Cash:\*\*\*\*6500.00 , Chq/DD:\*\*\*\*\*\*0.00] Vice Chairman/Auth.Signatory/E.O. Cashier CASH 25-04-22 02:03 PM

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SILIGURIMUNICIPALCORPORATIONP.O. SILIGURI, DIST.- DARJEELING, (W.B.), 2432804, 2435444, 2433277, 2433744

Dated :- 08/08/2022

Memo No. 96 /SMC/Bldg/2022-2023

From: Commissioner. Siliguri Municipal Corporation.



To, Maruti Spectrum. Rep.by. Sri. Sanjay Ghosh 26, Bamkin Chandra Street. Hakim Para, Ward No.15 Siliguri.

#### Sub :- Enlistment Certificate for conducting of Soil investigation / testing works within Siliguri Municipal Corporation.

This is to inform that : Maruti Spectrum rep. by. Sri. Sanjay Ghosh at 26, Bankim Chandra Street, Hakim Para, Ward No.15, Siliguri has been allowed and permitted to conduct the job of Soil investigation and construction material testing within Siliguri Municipal Corporation area with the terms & conditions and limits decided by the Corporation from time to time.

#### **Terms & Conditions :**

The enlistment will be generally guided by the following terms and conditions :

- 1) The renewal fees shall be paid within last working day of March in every financial year and after the month of March, failing which fees to be paid with a fine @Rs. 200.00(Rupees two hundred) only per month in addition to normal renewal fees, subject to revision from time to time.
- 2) That in case renewal fee for enlistment falls due for two consecutive years (up to last working day of the second year), enlistment shall be liable to be terminated.
- 3) The enlistment is not transferable.
- 4) The fitness certificates of machineries (Testing Apparatus) to be submitted in every two years.
- 5) The Corporation may at any time cancel the Enlistment during the validity of the enlistment, if the Authority is satisfied that:

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und mind, or is engaged in or committed to

- (b) For bad workmanship resulting of poor quality of work, failure to safe the Corporations property against theft and pilferage and any other work to be considered detrimental to the Corporations interest.
- (c) And any other activities or actions or behavior against the interest of the Corporation.
- 6) It shall be the discretion of the Corporation Authority to include of exclude any of its clause or clauses, rule or rules or amend any of its rule or rules from time to time as and when necessary.

Commissione Siliguri Municipal Corporation

Dated :- 08/08/2022

Memo No. 96 (6)/SMC/Bldg/2022-2023 Copy to:

Siliguri Municipal Corporation.

- 1) The Deputy Mayor. 2) The Secretary,
  - Siliguri Municipal Corporation.

any anti- social activities.

- 3) The Executive Engineer. 4) The Finance Officer.
  - Siliguri Municipal Corporation. Siliguri Municipal Corporation.
- 5) Sr. P.S to Mayor, SMC With a request to place in before the Hon'ble Mayor, Siliguri Municipal
- Corporation. 6) Guard File.

Commission Siliguri Municipal Corporation SPA

Page -2/2

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