GEO TECHNICAL INVESTIGATION REPORT

REPORT No.: **GT/Minor/2022-23/Sep/56/Crescentia**

PROJECT: **Proposed Buildings at Turkapally (V), Shamirpet (M), Medchal-Malkajgiri (Dist.), T.S.**

W.O. Ref.: **GT/Quo/Soil/2022-23/151, Dt. 7th September, 2022**

CLIENT: **Crescentia Labs Pvt. Ltd. Hyderabad**

AGENCY: **M/s. Modi Properties Pvt. Ltd.**

DURATION : **Sep 2022**

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1. INTRODUCTION

M/s. Crescentia Labs Pvt. Ltd. are proposing to construct Buildings at Turkapally (V), Shamirpet (M), Medchal-Malkajgiri (Dist.).

The aim of the report is to test the soil samples collected from the site during the inspection to recommend SBC of the foundations.

2. FIELD INVESTIGATIONS

Site was visited by our Geotechnical Engineer Sri A E Sham Sunder on 13-9-2022. Junior Engineer Sri Ansari and Project Manager Sri Subba Reddy were present at the site. Site was mass excavated to a depth of around 4.65 m below NGL and Five (5) soil samples collected form the locations as shown by the client.

3. LABORATORY TESTING

The samples were tested at the Soil Testing Laboratory of M/s GEO TECHNOLOGIES at Hyderabad.

The following tests were performed on the Soil samples:

- Natural Moisture Content
- Grain size analysis
- Specific gravity
- Shear test
- Bulk Density

All the tests were conducted in accordance with IS: 2720 (Methods of Tests for Soils). Results are given in Table 1.

4. RESULTS

Table 1 gives the results of tests on soil samples.

Appendix gives the calculations for SBC.

5. RECOMMENDATIONS

The following recommendations are made for the proposed construction of Buildings at Turkapally (V), Shamirpet (M), Medchal-Malkajgiri (Dist.).

These are based on five (5) soil samples collected from 0.5 – 1.65 m depth below CFL.

a) Water was seen at the foundation locations. A reservoir exists in close proximity to the site.

b) It is informed that the building is C+G+4 upper floors.

c) Soil at 0.5 – 1.65 m depth below CFL is Gravel at all the five locations.

d) SBC is recommended as 45 t / sq m for foundations resting in Gravel at 1.65 m below CFL.

e) All foundations should be backfilled with well compacted Gravel.

f) All concreting should be done in dry conditions.

For ***GEO TECHNOLOGIES***

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Proposed Construction of Buildings at Turkapally (V), Shamirpet (M), Medchal-Malkajgiri (Dist.).

TABLE – 1: RESULTS OF LAB TESTS ON SOIL SAMPLES

Sample ID	Sample Depth below CFL, m	Soil	Sp. Gr.	NMC	γ_B	Grain Size Distribution			Shear Parameters	
					kN/m^3	G	Sa	Si+C	C	Φ
				%		%	%	%	kN/m^2	deg
1	1.65	Gravel	2.69	2.6	19.6	87	13	0	0	39
2	1.65	Gravel	-	3.2	-	79	21	0	0	38
3	1.65	Gravel	-	2.2	-	81	19	0	0	38
4	1.20	Gravel	2.68	2.1	-	90	10	0	0	39
5	0.50	Gravel	-	1.7	-	65	35	0	0	38

NOTATION: Gr ... Gravel Sa ... Sand Si ... Silt Cl... Clay γ_b : bulk density
C: Cohesion kN/m^2; Φ: Angle of Internal Friction, degrees.

Proposed Construction of Buildings at Turkapally (V), Shamirpet (M), Medchal-Malkajgiri (Dist.).

APPENDIX: CALCULATION OF BEARING CAPACITY

As per IS: 6403: 1981

Based on sample: 3

Foundations resting in Gravel:

Assumed Depth of foundation D = 1.65 m below CFL

Assumed Width of foundation B = 2.0 m

Unit wt. r = 19.6 kN / cu m; Sub. Unit wt. r' = 9.8 kN / cu m;

Cohesion = 0 kN / sq m ; Φ = 38 degrees

Using IS Code 6403 -1981 formula for Isolated footings:

Nc' = 63.63 Nq' = 51.84 Nr' = 84.86

Net ult B.C. = 1.3 c Nc + r' D (Nq -1) + 0.4 r' B Nr = 1487 kN/ sq m

With a FS of 3, SBC = 495 kN / sq m

Recommended Safe Bearing capacity for foundations resting in Gravel at 1.65 m below CFL is 45 tonnes per sq m.