

**REPORT OF SOIL INVESTIGATIONS FOR  
THE PROPOSED BUILDINGS AT  
MALLAPUR (V), UPPAL (M), R. R. DISTRICT**

Prepared by

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## 1. INTRODUCTION

M/s B & C Estates, rep. by its Partner Sri Sudhir Mehta S/o Uttamlal Mehta, are proposing to construct two buildings (A & B) in Sy. Nos. 183, 184, 191 & 2/1/1, situated at Mallapur Village, Uppal Mandal, R. R. District.

Total area of the site is 3 acres 29 guntas.

The buildings comprise RCC framed structures with 2 cellars + G + 4 upper floors.

The aim of this Report is to evaluate the nature and depth of soils at the site, and to determine the safe bearing capacity of the foundations accordingly.

## 2. FIELD INVESTIGATIONS

One (1) trial pit was excavated at the site.

The generalized subsoil profile in the site consists of filling and loose soil in the top 1.5 m, followed by morum. No water is seen in the pits.

## 3. LABORATORY TESTING

The soil samples from the site were tested in the Soil Mechanics Laboratory at Hyderabad. The following tests were conducted:

Specific gravity	Bulk Density
Grain size distribution	Direct shear test

All the tests were conducted in accordance with IS: 2720 (Code of Practice for Testing of Soils).

## 4. RESULTS

Table 1 gives the results of physical and engineering tests on soil samples. At 2 m depth below ground level, the soil is morum. It is designated as silty gravel (GM) as per IS: 1498.

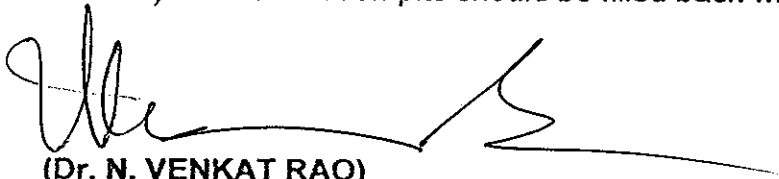
Isolated foundations are recommended. No correction is needed for water table.

Appendix gives the calculations for SBC.

## 5. RECOMMENDATIONS

Based on Field investigations, the following Recommendations are given:

- a) The subsoil profile in the site consists of filling and loose soil in the top 1.5 m, followed by morum.
- b) No Correction is applied for water table.
- c) Based on Field & Lab testing, SBC is tentatively recommended as 30 tonnes per sq m for foundations resting on hard morum. This is based on the assumption of isolated footings of width 2 m at 2 m depth below cellar floor level. The actual size would be based on the loads from the super structure.
- d) SBC will be finalized later after detailed investigations by drilling.
- e) All foundations should be carried to hard strata.
- f) All foundation pits should be filled back with well-compacted morum.



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TABLE 1

**SUMMARY OF SOIL PROPERTIES**

PROPOSED BUILDINGS AT MALLAPUR (V),  
UPPAL (M), R. R. DISTRICT

Property	Location
	TP 1
Specific gravity	2.61
Density, KN / cu m	18.0
<b>Grain size distribution</b>	
Gravel > 4.75 mm	20
Coarse sand, 4.75-2 mm	21
Medium sand, 2-0.425 mm	23
Fine sand, 0.425-0.075 mm	24
Silt, 0.075-0.002 mm	8
Clay, < 0.002 mm	4
<b>Shear Parameters</b>	
Cohesion	3
Angle of internal friction, deg	35



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## APPENDIX

### CALCULATION OF BEARING CAPACITY

PROPOSED BUILDINGS AT MALLAPUR (V),  
UPPAL (M), R. R. DISTRICT

#### a) Shear Criterion:

Assumed width of foundation... 2 m

Assumed depth of foundation... 2 m

Unit wt. = 18.0KN / cu m

Cohesion = 3 KN / sq m (Neglected)      Angle of internal friction = 35 deg.

No correction is needed for water table.

Using IS Code 6403 – 1981 formula:

$N_c = 33.53$      $N_q = 22.07$      $N_r = 29.58$

Net, Ult B.C. =  $1.3 c N_c + r D (N_q - 1) + 0.4 r B N_r$   
= 1184 KN per sq m

With a F.S. of 3.0, SBC = 394 KN per sq m

#### b) Settlement Criterion:

In frictional soils as these, settlement is a better criterion. Based on the results of Direct shear test, N is taken as 22. For a permissible settlement of 40 mm,

Allowable bearing capacity =  $12.3 N [(B + 0.3)/B] R_q R_d$   
= 311 KN per sq m

**Recommended Safe Bearing Capacity is 30 tonnes per sq m.**

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## Groundwater Feasibility Report

Client: M/s B & C Estates, rep. by Sri Sudhir Mehta S/o Uttamlal Mehta

Address: Sy. Nos. 183, 184, 191 & 2/1/1, situated at Mallapur Village, Uppal Mandal,  
Ranga Reddy District

Area: 3 acres 29 guntas

### 1. Geology:

- (a) Rock Type: Granite
- (b) Texture : Coarse to Medium grained
- (c) Soil Type: Silty gravel
- (d) Recharge Conditions: Moderate

### 2. Geophysical Data:

- (a) No. of Vertical Electrical Soundings (VES): 3
- (b) Configuration: Schlumberger
- (c) Generalised Sequence based on VES:

0 - 7 m ... Top soil  
5 - 18 m ... Weathered zone  
18 - 75 m ... Rock with intermittent fractures  
75 - 140 m ... Hard Rock with minor fractures  
Below 140 m ... Hard rock with no fractures

### 3. Recommendations:

- 1. The site has moderate potential for groundwater. One point is suggested for drilling in N-E Corner.
- 2. Type of well: Bore well
- 3. Size: 6 ½ "
- 4. Depth: 140 m
- 5. Casing: 15-20 m
- 6. Expected yield: Moderate (1 ½ " - 2 ")

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