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Consulting Civil Engineer.

101, Basuvaraj Buildings,
Main Road, Thillainagar,
Trichy - 620 018.
✆ 0431 - 2741573
Cell : 94430 59910

Date : .....

Structural Design for Foundation and Column for the Proposed Residential Apartment Building (Affordable Housing) in T.S.No:27/28 , Block-6, Ward-I, at Subramaniya nagar, Pandamangalam Village, Zone - 5, Trichirappalli City Corporation.

The foundation and column shall be designed for the maximum span of 6.6m.

Number of floor	:	Stilt +4 Floor
Height of each floor	:	3.00 m
Using concrete mix	:	M20
RTS Bars	:	Fe 500

LOAD:

Live Load	:	300 kg/m^2
Dead Load	:	250 kg/m^2
Total load transfer to beam @	:	550 kg/m^2
Clear Spacing of Beams	:	3.5 m
Load transferred to beam /m	:	3.5 x 1 x 550 = 1925 kg/m
Load transferred to Column / floor	:	1925 x 7.8 = 15,015 floor(or)15000kg
Total load transferred to column	:	15000 x 5 =75,000 kg
Self weight of column as 10% of load		
Total load/ column	:	82,500 kg (or) 83T
Assuming Column Area	:	A cm^2
% of Longitudinal reinforcement	:	4 %

Using **Fe 500** steel and **M20** Concrete

Pu	= 0.4 x 200 x Ac + 0.67 x fy x Ast
82500	= 0.4 x 200 x (Ac-0.04 Ac) + 0.67 x 5000 x 0.04 Ac
Ac	= 391 cm^2
Required column Area	= 391 cm^2

Hence provide column to the size of 23 cm x 38 cm

Area of column 23 x 38 = 874 cm^2 > 391 cm^2

Hence Safe.

Ast required = 0.04 x 874 = 34.96 cm^2

Using 20mm ϕ bars

Number of vertical required = 34.96/3.14 = **12 Nos**

Hence provide 12 Numbers of 20 mm ϕ bars.

Ast provided = 12 x 3.14 = 37.68 cm^2 > 34.96 cm^2

Hence Safe.

Design of Lateral Reinforcement:

Provide 8 mm ϕ RTS bar as lateral reinforcement

Spacing of reinforcement is not least of the following.

1. Least lateral dimension of column i.e . 23 cm.
2. 16 times the diameter of longitudinal Reinforcement 16x 2cm i.e. 32 cm.
3. 30 cm i.e. 30 cm.

Hence provide lateral reinforcement @ 20 cm c/c.

Footing Design:

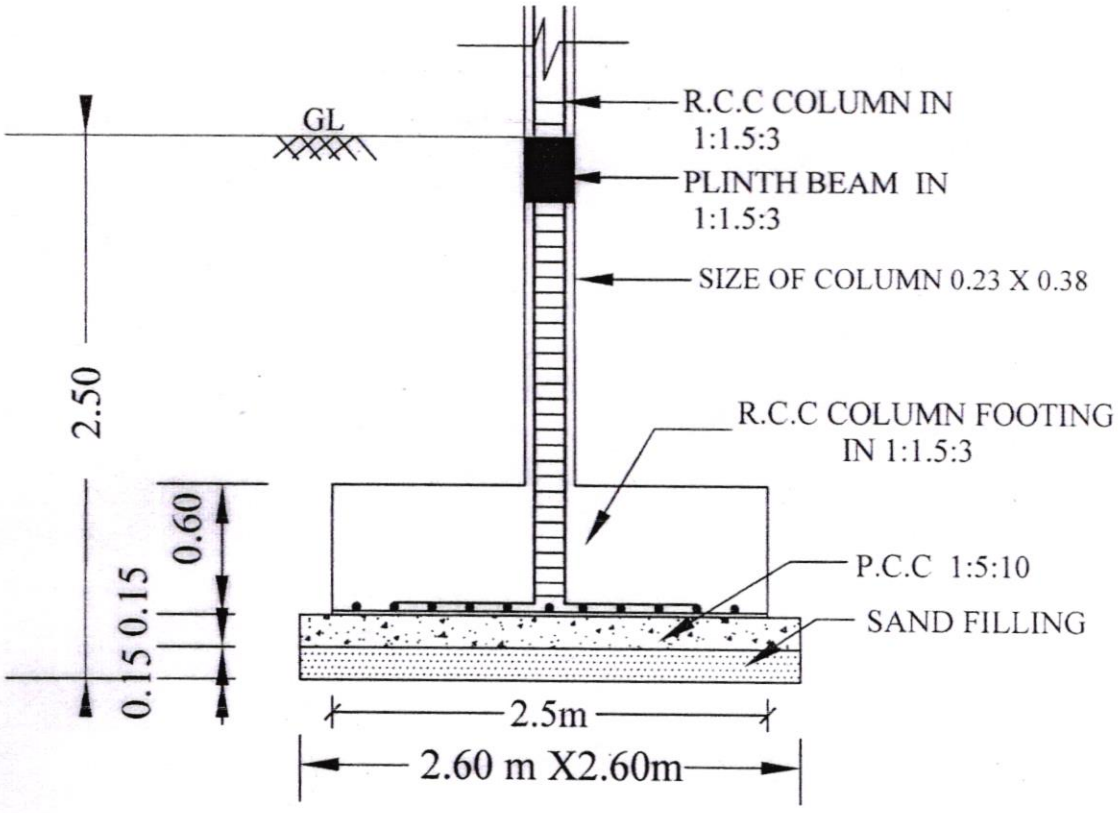
Total load transferred by a column = 82.5 Tones.

Safe Bearing capacity of soil = 15 T/ m^2
(as per soil report)

Area of footing = 82.5 T/15 T = 5.5 m^2

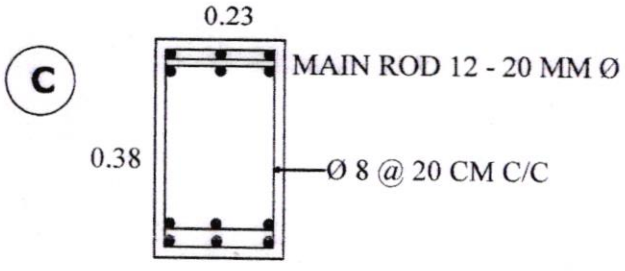
Hence provide footing size of 2.5 m x 2.5 m

COLUMN DESIGN FOR THE PROPOSED RESIDENTIAL APARTMENT BUILDING (AFFORDABLE HOUSING) IN T.S.NO:27/28 , BLOCK-6, WARD-I, AT SUBRAMANIYA NAGAR, PANDAMANGALAM VILLAGE, ZONE - 5, TRICHIRAPPALLI CITY CORPORATION.



CROSS SECTION OF COLUMN FOOTING

NOT TO SCALE



CROSS SECTION OF COLUMN

ENGINEER.

Er.K. MARIMUTHU B.E.,M.I.Struct.E.M.I.C.I.,
CONSULTING STRUCTURAL ENGINEER
Corporation BLS No: 086/LS/2021/00012
Registered Engineer
Reg. No: RE/Gr.I/TLPA/Apr2019/016 on 24.04.2019
Registered Structural Engineer
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✆ 0431 - 2741573
Cell : 94430 59910

Date : 16.8.2024

STRUCTURAL STABILTY CERTIFICATE

It is to certified that the proposed construction of stilt plus four floor (Height-15.50 m) Residential building with 40 dwelling units availing premium FSI for Meenatchi builders at Block -6, Ward –I at Subramaniya nagar, Trichirappalli 620102. Comprised in T.S.No. 27 /28 of Pandamangalam village within the Limit of Trichirappalli Corporation is designed to resist to earthquake .Check has been made and found safe and sound. I hereby certify that.

1. The minimum column width is 230 in stilt floor areas

2. The minimum grade of concrete is m 25

3. The design Analysis is using the code of practice for loading standards as per IS - 875 part I and III and seismic force as per code in IS 1893 is carried out.

The structure is safe and sound when used for the purpose for which it is designed.

Er.K. MARIMUTHU, B.E.,M.I.STRUCT.E.M.I.C.I.,
CONSULTING STRUCTURAL ENGINEER
Corporation BL.S No: 086/LS/2021/00012
Registered Engineer
Reg No: RE/GR-I/DTCP/TRICHY/JULY-2024/23 ON 05.07.2024
Registered Structural Engineer
Reg. No: SE.GR -II /DTCP/TRICHY /JULY-2024/24 ON. 05.07.2024
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Vastu & Property Management Tools

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