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27th March 2025

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building comprising of Stilt + 5 Floors with 10 dwellings residential building at Plot No. 22, Door No. 42/2, 4th Street, Luz Avenue, Mylapore, Chennai – 600 004 and comprised in R.S.No. 3575 Part as per document and as per Patta New R.S.No. 3575/18 in Block 71 of Mylapore Village, Mylapore Taluk and within the limits of Greater Chennai Corporation Zone IX, Division 123 has been done by me/us based on the report of Geotechnical Investigation (Soil Test) done by GEO ENGINEERING CONSULTANT report No. GEC-JC-GT-4098/2022-2023 dated 01.02.2023 and considering the functional requirement of the building

It is Certified that among other factor, the proposed building has been designed to resist earthquake. I/We have checked various parameters and found that the proposed building would be safe.

I/We further certify that:

(i) The minimum grade of concrete is M25

(ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Code No. IS 875-2015 and design of earthquake resistant structure as per IS Code No. IS 13920-2016

The Building will be safe and sound when used for the purpose for which it is designed.

S. PADMANABHAN
Registered Structural Engineer
Grade - I (SE)
Regn. No. SE/GR-I/19/05/123
Signature of Structural Engineer

Encl: Structural Design Calculation

PLAN SHOWING THE PROPOSED STILT + 5 FLOORS, 10 DWELLINGS RESIDENTIAL BUILDING AT PLOT NO 22, DOOR NO. 42/2, 4TH CROSS, LUZ AVENUE, CHENNAI 600004. COMPRISED IN R.S.NO-3575, PART AS PER DOCUMENT AND AS PER PATTA NO. R.S. NO 3575/18, IN BLOCK NO 71 OF MYLAPORE VILLAGE, MYLAPORE TALUK AND WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION, DIVISION NO 123,

TYPICAL STRUCTURAL DESIGN CALCULATION

01. General

Proposed Residential Building S+5 upper floors for residential purpose. Stilt Floor is provided for car parking.

02. Design Basis :

Latest Design codes of BIS-456, 875 AND 1893 are followed with SP-16. Design Aid book. A Typical Frame was taken for analysis to arrive at the bending moment for column design, since the building is S+5 stories; wind force is taken in to account. Live Load reduction factor is applied in design. Pile foundation is proposed as per soil report. Fe-500 steel is used as main steel and 8 mm bars for distributors.

03. Earthquake consideration.

For better stability during earthquake, the columns are braced in both directions with beams, continuous lintels are specified for outer walls and column ties are closely spaced for better ductility. For Building on stilt, Minimum size is taken as 300 mm (12")

04. WIND LOAD

Vz = Vb x K1 x K2 X K3
Vb = 50m/sec in chennai
K1 = Probability Factor = 1
K2 = Terrain, Height Factor = 1.03
K3 = Topography Factor = 1
K4 = Cyclonic Factor = 1.15

Pz = 0.6 x Vz x Vz
= 0.6 x 50 x 50
= 1500 N / Sq.m

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FLOOR LOADS :

DEAD LOADS

Assuming 5''thk slab dead load	=	313 kg/sqm
Weight of floor finish, partitions etc.,	=	131 kg/sqm
Total dead load	=	444 kg/sqm

LIVE LOADS

Live load on typical floor	=	200 kg/sqm
Total load on typical floor	=	644 kg/sqm

ROOF LOADS

Assuming 5''thk slab dead load	=	313 kg/sqm
Weight of weathering course	=	273 kg/sqm
Total dead load	=	586 kg/sqm
Live load on roof with success assumed	=	150 kg/sqm
Total roof load	=	736 kg/sqm
Staircase loading liable to overcrowding	=	500 kg/sqm
Wind load considering height of building	=	200 kg/sqm

BRICK LOADS

Weight of brick per sqm	=	1890 kg/cum
Assuming beam size of 9''x24''	=	335 kg/rm
R.C.C Mix to be adopted	=	M25

LOAD ON TYPICAL COLUMN

Slab load of stilt floor	=	9.02 ton
Slab load for Four floors	=	36.08 ton
Roof load	=	10.31 ton
Beam load	=	12.57 ton
Brick work load	=	37.50 ton

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Self weight of column assuming (12''x18'')		=	5.07 ton
Total load on column		=	110.55 ton
	Say	=	111 ton

Provide 10-Y25

Safe capacity of above section = 148 ton

Hence safe

TYPICAL FOUNDATION

SBC of soil
As per soil report = 500 dia of 25.0mm long (capacityof 120mt)

No of Piles required = 1.23 nos

No of Piles provided = 2.0 nos

Hence safe

TYPICAL SLAB Ly/Lx = 4.0/3.5 =1.14

Hence two way slab

Provide 5''thk slab

Provide Y8 @ 4'' C/C (shorter direction)

Provide Y8 @ 7'' C/C (longer direction)

TYPICAL BEAM

Span	=	5.965m
Slab load	=	1805kg/m
Self weight	=	350 kg/m
Total load	=	2155kg/m

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Bending moment	=	8028.01kg-m
B.M due to conc 1	=	6545.3kg-m
B.M due to conc 2	=	3145.00kg-m
Total bending moment	=	17718.31kg-m

EARTHQUAKE ANALYSIS

Calculation of horizontal seismic coefficient
As per code I.S.1893/2016

Ah = ZI/2R x Sa/g

Zone factor (Chennai zone) z = 0.16

Importance factor I = 1.2

Response reduction factor R = 5.0

Natural period

Ta = 0.075h

= 0.075x 18.25

= 1.368 secs

H = (Ht of buildg)

Sa/g = 1.67/t

Sa/g = 1.67/1.368 = 1.22

$$Sa/g = \frac{0.16 \times 1.2}{2 \times 5.0} \times 1.22$$

= 0.233

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CALCULATION OF BASE SHEAR/SEISMIC FORCES

Floor	Wi	Hi	Wi x Hi^2	Qi
Terrace	87.108	18.25	29012.08	11.825
5	113.483	15.25	26391.89	11.825
4	113.483	12.25	20258.05	11.825
3	113.483	9.3	9501.08	1.8718
2	113.483	6.3	4504.14	0.887
1	113.483	3.45	1350.73	0.266
Stilt	14.691	0.6	5.288	$1.04*10^{-3}$
EWI	442.248		E 91023.258	

Base shear V = Ah EWI

= 0.035 x 91023.258= 8.29 ton

Seismic force per column = 8.29/4 =2.07

Seismic moment per column = 2.07x3/2 =1.39

Column provided is safe against the additional seismic moment of 1.39mt.

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Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

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real estate journey

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