

DATED 28-01-2026

STABILITY CERTIFICATE

(To be furnished while filing application for registration of building)

The detailed engineering and structure design of the proposed building comprising of STILT FLOOR + 4 FLOORS + 5TH FLOOR (PART) floors at Plot No:37, S. No: 124/1B2 & 124/2B has been done by me/us based on the report of geotechnical investigation (soil test) done by T.J.ENGINEERS Report No.TJE/003513/2024 Dated: 24.10.2024 and considering the functional requirement of the building.

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

3. I/We further certify that:

(i) The minimum grade of concrete is M- 30

(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 Codes No 875-Part I to

V and Design of earthquake resistant structure as per IS Code No 1893-Part 1

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

Encl.: Structural Design Calculation


Stamp and Signature
N. VAIDEESWARAN, M.Tech (Struct)
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STRUCTURAL DESIGN BASIS REPORT

For
Mr. K.Balachandar
Chennai

PROJECT NAME

Plan Showing The Proposed Construction Of Stilt Floor + 4 Floors + 5th Floor (Part) (Height - 18.30m) Residential Building With 9 Dwelling Units Availing Premium Fsi At Plot Nos.37 (Approved Layout - 26/2001), River View Avenue And Enclave 5th Main Road, Manapakkam, Chennai Comprised In Old S.No.124/1b (Pt) & 124/2 (Document), S.No.124/1b2 & 124/2b (Patta) Of Manapakkam Village, Within The Limit Of Greater Chennai Corporation
Zone: 12 Division: 157

Structural Design Basis Report

Structural Consultants : M/s. V Cad Consulting Engineers

1. PREAMBLE

We have design for The Proposed Construction Of Stilt Floor + 4 Floors + 5th Floor (Part) (Height – 18.30m) Residential Building With 9 Dwelling Units Availing Premium Fsi At Plot Nos.37 (Approved Layout – 26/2001), River View Avenue And Enclave 5th Main Road, Manapakkam, Chennai Comprised In Old S.No.124/1b (Pt) & 124/2 (Document), S.No.124/1b2 & 124/2b (Patta) Of Manapakkam Village, Within The Limit Of Greater Chennai Corporation.

Greater Chennai Corporation. Division -157, Zone – 12.

This building is a RCC structure. The deflection as per the as built drawing is very much less than the approval drawing. Hence structurally safe and sound and fit for the occupation.

We hereby certify that

- The usage of the building is for Residential (stilt+5 floors) purpose.
- The superstructure is built on 9" thick brick wall and 4 1/2" brick wall
- The safe bearing capacity of soil is 24.00 ton/m², depth of foundation = 3.00m, below the existing ground level.

2. DESIGN LOADS

2.1 Super Imposed Dead Loads

The self-weight of the various elements are computed based on the built weight of materials as given below.

Materials	Unit Weight in KN/m ³
Brick wall	20.00
Steel	78.50
Plain	24.00
Reinforced Concrete	25.00
Soil	18.00

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Water	10.00
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The Super Imposed Loads that are envisaged to act permanently (wherever applicable) are as following.

Item	Intensity in KN/m ² of plan area
Floor finish	1.00
Weathering proof course on Terrace-150 thick brickbat coba with IPS finish	3.00
Sunk-Brick bat coba	2.5

2.2 Live Loads

The superimposed load or otherwise Live load is assessed on the basis of occupancy. classifications as per IS:875(part-2) - 1987 and are listed as below.

Type of Structure-Residential Building

Occupancy Classification	UDL(Kn/m ²
Living Rooms, Bed rooms and Dormitories	3.0
Store rooms	5.0
Baths and toilets	2.0
Corridors, Passages, Staircase including fire escapes, lobbies - as per the floor serviced excluding stores and the like but not less than	5.0
Balconies	4.0
Open terrace	1.5
Parking - for vehicles not exceeding 2.5 tones 3.125 weight. (including access ways & ramps).	3.125

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2.3 Wind Loads

The wind pressure is calculated on the basis of data furnished below and other provisions laid in IS 875 (Part-3)- 1987.

Basic Wind Speed	V_b	= 50m/sec
Risk Coefficient	K_1	= 1
	K_2	= As per height.
Terrain Category		= II
Structure Class		= B and C class as per Building dimensions
Design Wind speed (V_z)		= $V_b \times K_1 \times K_2 \times K_3$

Where,

- K_1 = Risk Co- efficient for different classes of Structures in different wind speed zones.
 K_2 = To obtain design wind speed variation with height in different terrains for different classes of buildings.
 K_3 = Topography factor.

Design Wind Pressure

$$P_z = 0.6VZ^2$$

2.4 Earthquake Load

The loading due to earthquake is assessed as per the provisions of IS:1893 (Part - 1):2002

Seismic Zone	= III
Soil Type	= I
Table - 2 Zone factor (Z)	= 0.16
Table-6 Importance Factor (1)	= 1.00
Table-7 Response Reduction factor(R)	= 3.0

Fundamental Natural time period (T_s) with INFILL WALLS for Taurus, Claudius A, Magnus, Cladius B, Atrium,

$$T_s = 0.09H/d^* \text{ from CL 7.6.2 - 181893 (part-1): 2002}$$

Fundamental natural time period (T_s) without INFILL WALLS for Block EWS (Augustus)

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$$T_s = 0.075 H^{0.75} \text{ from CL 7.6.1 -151893 (part -1) :2002}$$

S_a/g from FIG-2 IS 1893(part I): 2002.

Horizontal Seismic Co-Efficient

$$A_h = Z_x I S_a / 2 \times R_g / 2 \times R_g$$

3 CHECK FOR LATERAL SWAY AS PER IS -456-2000

The allowable lateral sway at top due to wind force should not exceed $H/500$, where H is total height of Building.

4 CHECK FOR LATERAL SWAY (STOREY DRIFT) AS PER IS-1893-2002

The allowable lateral sway (storey drift) due to earthquake force should not exceed $L/250$, where L is the storey height

5 BASIC LOADS AND LOAD COMBINATIONS

The various loads are combined in accordance with the stipulations in IS:875 (part 5)-1987. wherever imposed load is combined with earthquake load the appropriate part of the imposed load as specified in IS:1893-2002 is adopted both for evaluating earthquake effect and for combined load effects, used in such combination.

6 BASIC LOADS AND LOAD COMBINATIONS

The various loads are combined in accordance with the stipulations in IS:875 (part 5) -1987. Wherever imposed load is combined with earthquake load the appropriate part of the imposed load as specified in IS:1893-2002 is adopted both for evaluating earthquake effect and for combined load effects, used in such combination.

Type	Load Combinations
Primary	DEAD LOAD (DL)
Primary	WALL LOAD (WL)
Primary	SUPERIMPOSED DEAD LOAD (SDL)
Primary	LIVE LOAD(LL)
Primary	WIND LOAD X(+) WLX
Primary	WIND LOAD Z(+) WLZ
Primary	SEISMIC LOAD ALONG-X SLX
Primary	SEISMIC LOAD ALONG-Z SLZ
Primary	TEMPERATURE LOAD (TEMP)
Combination	DL+WAL+SDL
Combination	DL+WAL+SDL+LL


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Combination	DL+WAL+SDL+LL+WLX
Combination	DL+WAL+SDL+LL+WLZ
Combination	DL+WAL+SDL+LL-WLX
Combination	DL+WAL+SDL+LL-WLZ
Combination	DL+WAL+SDL+LL+SLZ
Combination	DL+WAL+SDL+LL+SLX
Combination	DL+WAL+SDL+LL-SLX
Combination	DL+WAL+SDL+LL-SLZ
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Combination	DL+WAL+SDL+SLZ
Combination	DL+WAL+SDL-SLX
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Combination	DL+WAL+SDL+LL+SLX-TEMP
Combination	DL+WAL+SDL+LL+SLZ-TEMP
Combination	DL+WAL+SDL+LL-SLX-TEMP
Combination	DL+WAL+SDL+LL-SLZ-TEMP
Combination	DL+WAL+SDL+WLX-TEMP


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Combination	DL+WAL+SDL+WLZ-TEMP
Combination	DL+WAL+SDL-WLX-TEMP
Combination	DL+WAL+SDL-WLZ-TEMP
Combination	DL+WAL+SDL+SLX-TEMP
Combination	DL+WAL+SDL+SLZ-TEMP
Combination	DL+WAL+SDL-SLX-TEMP
Combination	DL+WAL+SDL-SLZ-TEMP

7:LOAD FACTORS FOR DESIGN

Description of Load Combination	Load Factor for primary Load Cases				
	Dead Load	Live Load	Wind Load	Seismic Load	Temp Load
Dead load	1.5	0.0	0.0	0.0	0.0
Dead load + Live load	1.5	1.5	0.0	0.0	0.0
Dead load + Wind load	1.5	0.0	± 1.5	0.0	0.0
Dead load + Seismic load	1.5	0.0	0.0	± 1.5	0.0
Dead load + Live load + Wind load	1.2	1.2	± 1.2	0.0	0.0
Dead load + Live load + Seismic	1.2	1.2	0.0	± 1.2	0.0
Dead load + Wind Load	0.9	0.0	± 1.5	0.0	0.0
Dead Load + Seismic Load	0.9	0.0	0.0	± 1.5	0.0
Dead load + Temp	1.4	0.0	0.0	0.0	± 1.4
Dead load + Live load +Temp	1.05	1.28	0.0	0.0	± 1.05
Dead load +Wind load + Temp	1.05	0.0	± 1.28	0.0	± 1.05
Dead load + Seismic load + Temp	1.05	0.0	0.0	± 1.28	± 1.05
Dead load +Live load + Wind	1.05	1.28	± 1.28	0.0	± 1.05
Dead load + Live load + Seismic	1.05	1.28	0	± 1.28	± 1.05
Dead Load + Wind Load + Temp	0.9	0.0	± 1.28	0.0	± 1.05
Dead load + Seismic load + Temp	0.9	0.0	0.0	± 1.28	± 1.05

8.ANALYSIS METHOD

The modeling has been generated in E -TABS for analysis . The structure will be analyzed for static and Lateral Loads due to Earthquake/Wind loads and its combinations E-TABS Software used-In house interlinked package with E.TABS.

9. DESIGN METHODOLOGY

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All structural members will be designed according to the Limit State Method as specified in IS:456-2000. Appropriate loads and its combinations, as per relevant clauses in Code IS 456:2000 Code IS 875 (PART-5) 1987, for the most unfavorable effects are chosen for design.

10. MATERIAL

Reinforced cement concrete

Grade of concrete = M25 (Design mix)

Grade of steel = Fe 500

11. EXPOSURE CONDITION

Structural elements below ground level and Exterior External faces of walls are designed for Moderate exposure condition and internal faces of walls, floor beams and slabs are designed for Mild exposure conditions per Table 16 of IS 456-2000.

8. COVER TO REINFORCEMENT

As per Table 16A -IS:456-2000

Member	Clear Cover (mm)
Pile Foundations	75 mm
Footing or Raft Foundations	50 mm
Raft slab	30 mm
Column	40 mm
Shear Walls thickness	25 mm
Retaining Wall on earth facing side	40 mm
Retaining Wall on non-earth facing side	25 mm
Beams	30 mm
Slabs	20 mm
Water Tanks	25 mm

9. FOUNDATION SYSTEM

Isolated /Combined /Raft foundations /Pile foundation with are proposed based on the safe bearing capacities as per soil investigation report.

10. CODES AND STANDARDS

All the designs are conforming to the relevant Indian Standards , Some of the relevant Indian Standard Codes, which have been followed for the structural designs , are given below.

Code	Description
IS:875 (Part-1) - 1987	Code of Practice for Design Loads (Other

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IS:875 (Part-2) - 1987	than Earth quake) for Building and Structures - Unit Weights of Buildings Materials and Stored Material.
IS:875 (Part-3) - 1987	Code of Practice for Design Loads (Other than Earthquake) for Building and Structures - Imposed loads.
IS:875 (Part-5) - 1987	Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures - Wind Load.
IS:456-2000	Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures - Special Loads and Load Combinations
IS:1893 (Part -1) -2002	Code of Practice for Plain and Reinforced Concrete
IS:1893 (Part - 2) -2002	Indian Standard Criteria for Earthquake Resistant Design of structures
IS:1786 - 1985	Specification of Mild Steel and Medium Tensile Steel bars and Hard drawn Steel Wire for concrete reinforcement-Mild Steel and Medium Tensile Steel Bars
IS:13920 - 1993	Specification for High Strength Deformed Steel Bars and Wires for Concrete Reinforcement
IS:1904	Ductile Detailing of reinforced concrete structures subjected to seismic forces - code of practice
IS:1642 - 1989	Indian Standard Code of practice for Design & Construction foundations in Soil: General Requirements
IS:3370 - 2009	Indian Standard Code of practice for Fire Safety of Buildings (General): Details of Construction.
IS:1343 - 1980	Indian Standard Code of practice for Concrete Structures for Storage of Liquids
	Indian Standard Code of practice for Pre-stressed Concrete.

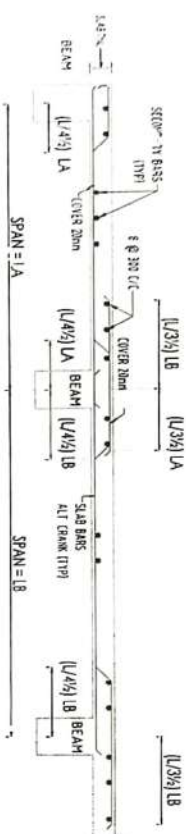

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Footing Schedule :

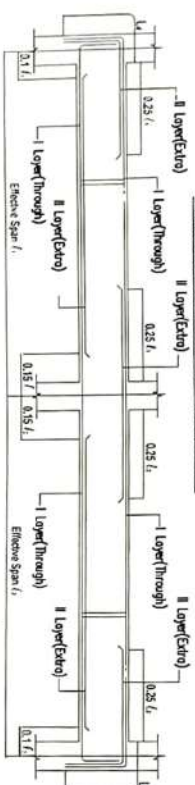
S.No	Footing Details	Excavation Size	Footing Size	Depth	Footing Reinforcements
1.	F1	2.10 X 2.10	2.00 X 2.00	0.60	Y12 @ 150 c/c Both ways
2.	F2	2.20 X 2.20	2.10 X 2.10	0.60	Y12 @ 125 c/c Both ways
3.	F3	2.50 X 2.50	2.40 X 2.40	0.60	Y12 @ 125 c/c Both ways
4.	F4	2.80 X 2.80	2.70 X 2.70	0.70	Y12 @ 100 c/c Both ways
5.	F5	3.00 X 3.00	2.90 X 2.90	0.70	Y12 @ 100 c/c Both ways
6.	F6	3.20 X 3.20	3.10 X 3.10	0.75	Y12 @ 100 c/c Both ways
7.	F7	7.40 X 4.36	7.30 X 4.26	0.60	REFER LIFT WELL DETAILS

Column Schedule :

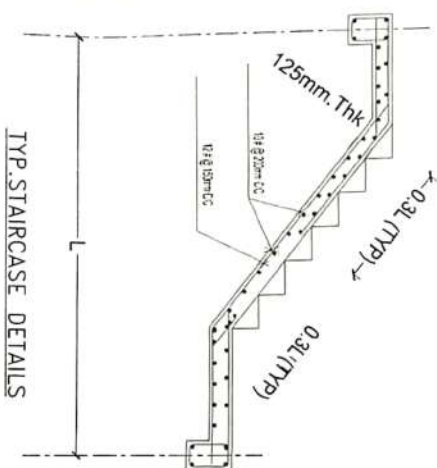
S.No	Column Details	Column Shape	Stirrups	S.No	Column Details	Column Shape	Stirrups
1	C1 230 x 375	6 Y 16	Y8 @ 200 c/c	4	C4 300 x 600	6 Y 20 6 Y 16	Y8 @ 125 c/c
2	C2 300 x 450	6 Y 16	Y8 @ 150 c/c	5	C5 300 x 600	10 Y 20	Y8 @ 125 c/c
3	C3 300 x 450	10 Y 16	Y8 @ 150 c/c	6	C6 300 x 600	4 Y 20 6 Y 20	Y8 @ 125 c/c



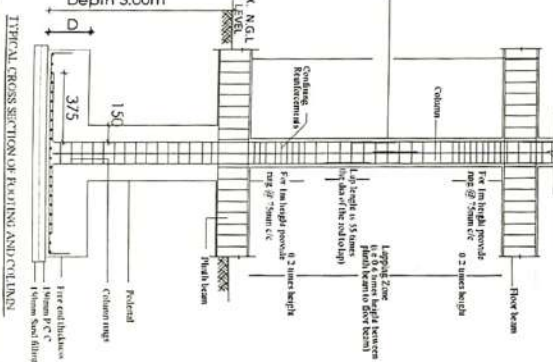
TYPICAL DETAILS OF SLAB CRANK POINT



FLOOR ROOF BEAM DETAILS

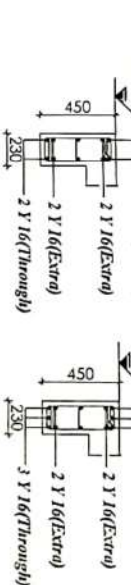


TYP. STAIRCASE DETAILS



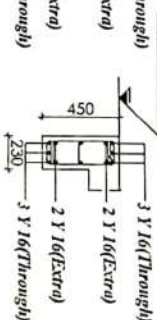
TYPICAL CROSS SECTION OF FOOTING AND COLUMN

(Refer The architect drawing)



TYP. C.S. OF ROOF BEAM - RB1

(Refer The architect drawing)



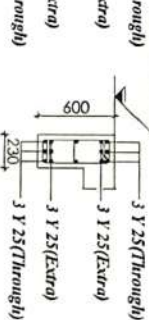
TYP. C.S. OF ROOF BEAM - RB2

(Refer The architect drawing)



TYP. C.S. OF ROOF BEAM - RB3

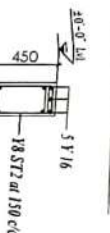
(Refer The architect drawing)



TYP. C.S. OF ROOF BEAM - RB4

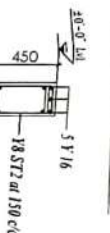
TYP. C.S. of Plinth Beam - PB1

TYP. C.S. of Plinth Beam - PB2



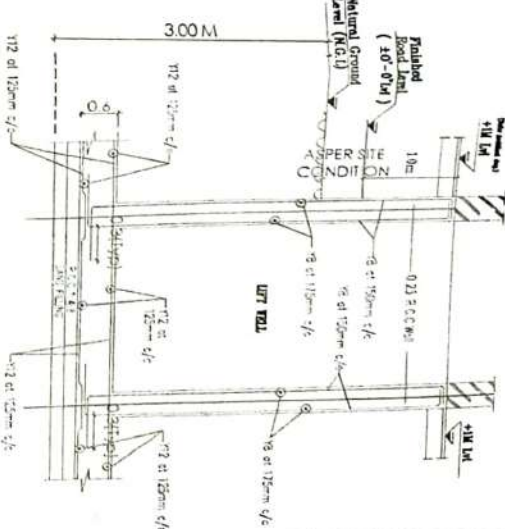
TYP. C.S. of Plinth Beam - PB1

TYP. C.S. of Plinth Beam - PB2



TYP. C.S. of Plinth Beam - PB1

TYP. C.S. of Plinth Beam - PB2



SECTION DETAIL FOR LIFT WELL

PROJECT :

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILL FLOOR + 4 FLOORS + 5TH FLOOR (PART) (HEIGHT 18.30M) RESIDENTIAL BUILDING WITH 9 DWELLING UNITS AVAILING PREMIUM FSI AT RIVER VIEW AVENUE AND ENCLAVE 5TH MAIN ROAD, MANAPAKKAM, CHENNAI COMPRESSED IN OLD S.NO 1241B (P7) & 1242 (DOCUMENT, S.NO 1241B & 1242B (PART) OF MANAPAKKAM VILLAGE, WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION ZONE: 12 DIVISION: 157

Title:

COLUMN, FOOTING, PLINTH BEAM, STAIRCASE, ROOF BEAM DETAILS

Date :

08-01-2025

Scale:

1" = 4'-0"

Design : N.Vaideswaran

STRUCTURAL CONSULTANTS

N.Vaideswaran

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CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
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Egmore, Chennai-600 008.

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that **Thiru. N. VAIDEESWARAN** has enrolled as **Registered Structural Engineer Grade-I (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.Tech., (Structural Engg.)** and experience in the relevant field for **5 years**.

He has been given the Registration No.**SE/GR-I/2023/03/365** on **15.03.2023**.
He shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part-V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(Ms) No.18 MAWS (MA1) Dept. dated 04.02.2019.

This Registration is valid upto **14.03.2028**.




(A. MEGANATHAN)
Superintendent