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DIGITALLY VERIFIED RECORD

CONCRETE CURATIONS

CONCRETE CURATIONS PVT LTD

72, Co-operative Colony, Uppilipalayam, Coimbatore 641015, Tamil Nadu, India
Phone: +91-95009-79020 | Email: concrete.curations@gmail.com
Webpage: www.ConcreteCurations.com

Date:18-03-2026

STABILITY CERTIFICATE

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

1) The detailed engineering and structure design of the proposed building comprising of *Basement + Stilt cum Ground +5* floors at S.F.No:255/1A3A, *KANNAMPALAYAM VILLAGE & TOWN PANCHAYAT, SULUR TALUK, COIMBATORE DISTRICT*. Has been done by me/us based on the report of geotechnical investigation (soil test) done by *GEO DESIGN INDIA PRIVATE LIMITED, Coimbatore Ref: G-269-2025-2026,* date:05.03.2026- 08.03.206 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:
   a. The minimum grade of concrete is M25
   b. 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 875 and design of earthquake resistant structure as per IS 1893:2016
4) The building will be safe and sound when used for the purpose for which it is designed.

Signature & Stamp & Date

Encl.: Structural Design Calculation

DINESH KUMAR BHANDARI B.E.,M.S.,MIE
Chartered Engineer M-1586518 .
DTCP Reg: SE-I/001/2021
72,Cooperative Colony,Uppilipalayam,
Coimbatore - 641015.

1. INTRODUCTION:

1.1 GENERAL PROJECT INFORMATION:

PROJECT TITLE: TNCD-KANSAS CITY APARTMENT BUILDING

LOCATION OF THE PROJECT: COIMBATORE

1.2 DESCRIPTION OF THE PROJECT:

Type of Building: The structure comprises of Cast in-situ Foundation, Shear Wall, Beam, Column and slab at the Basement and Stilt level and Precast solid structural wall panel system (Shear Wall Concept), and precast beams and Solid slabs at the upper floors.

The description of current scope of work along with no. of floor:

S.No	Block	No. of Floors
1	-	B + STILT + 5

2. STRUCTURAL DESIGN:

The main considerations for the design of structure should be as follows: -
(a) Structure safety, serviceability and functionality.
(b) To meet the demands of aesthetics conceived by the architect.
(c) Availability of material, equipment and expertise.
(d) Constructability and ease of maintenance.
(e) Durability.

2.1 STRUCTURAL SYSTEM:

. The Solid slab of desired depth with 60mm composite structural topping on it, is used to make it act as a rigid diaphragm during earthquake loading condition (Zone III as per 1893-2016). The structure is analyzed, designed and detailed as per IS codal provisions (as mentioned in design criteria). The structural stiffness chosen such that drifts are within the limit of National Building Code and Bureau of Indian Standards Code of Practice for Concrete and Loading.

2.2 STRUCTURAL MODELING, STRUCTURAL ANALYSIS AND DESIGN:

A preliminary three-dimensional computer model will be formulated, incorporating all gravity, wind and seismic loads using Response Spectrum Method, to develop the concept framing for the building and ensure that the designed structural system provides satisfactory global building response. The model will be further developed during subsequent design stages to carry out detailed design. In general, the following software shall be utilized during the various stages of the design process.

SOFTWARE NAMES	DESCRIPTION
ETABS	Analysis and design of building structure
CONCISE BEAM	Design of Slabs & Beams

2.3 FOUNDATION SYSTEM:

- Foundations shall be designed based on the support reactions obtained from ETABS analysis for various load combinations.
- Strip footing shall be designed for shear walls and isolated footing for columns. The depth of the footing, SBC and water table in the soil shall be as per Soil investigation report.

2.4 SUPERSTRUCTURE:

- Precast Solid slabs are proposed and shall be analysed and designed for gravity load using ETABS & manual calculations. The structural topping on it acts as diaphragm connecting all the shear walls to act as one unit resisting lateral load.
- Walls and Columns shall be designed for gravity as well as lateral loads with the help of structural analysis and design software ETABS and In-house spread sheet. The walls are modelled as shell elements with doors and windows provided as openings in the shell elements.
- PIER and SPANDREL labelling is assigned and required reinforcement found out from software.
- Beams are designed by concise beam software and in house spreadsheets.

3. MATERIALS:

Grade of Concrete:

S.No	Item	28 days concrete cube strength
1	Foundation	30 MPa
2	Beams - Precast	40 MPa
3	Wall - Precast	40 MPa
4	Solid Slab - Precast	40 MPa
5	Column - CIS	30 MPa
6	Structural Topping & joint fillers	30 MPa
7	All Cast in-situ elements	30 MPa

3.1 MATERIALS DEAD LOADS:

All the permanent loads on the structure shall be applied as dead load. The dead load in a building shall comprise of self-weight of beams, columns, walls, partitions, floors, roofs and include the weight of all other permanent constructions in the building and shall conform to IS: 1911 Schedule of unit weights of buildings material. Unit weight of various materials considered on the structural members considered follows: -

S.No	Item	Density (kN/m^3)
1	**Concrete**	**25**
2	**Steel**	**78.5**

4. GRAVITY LOADS:

Gravity loads are taken as per IS 875-1987 (Part 1& 2).

4.1 DEAD LOADS (SDL):

- **Floor (Finishes)** = 1.5 kN/m^2

4.2 LIVE LOADS (LL):

DWELLING HOUSES

- **All Rooms and Kitchen** = 2.0 kN/m^2
- **Toilets and Bathrooms** = 2.0 kN/m^2
- **Balcony, Staircase & Corridors** = 3.0 kN/m^2
- **Car Parking** = 3.0 kN/m^2

5. EARTHQUAKE LOADING:

The structure is to be designed for the minimum static and seismic base shear set out by IS 1893 (Part 1) latest using the parameters shown in the table below:

Seismic Zone	ZONE III
Seismic Zone Factor, 'Z'	Z = 0.16 (IS: 1893-2016, Table 3)
Importance Factor I	I = 1.0 (IS: 1893-2016, Table 8)
Response Reduction Factor R	R = 4 (IS: 1893-2016, Table 9- Buildings with Ordinary RC structural walls with RC SMRFs)

Fundamental Natural Time period of Vibration shall be calculated as per IS: 1893-2016 Cl-7.6.2.

5.1 RESPONSE UNDER SEISMIC CONDITIONS:

Seismic analysis of structure shall be carried out by response spectrum method for the design of beam elements (Columns, Beams & Shear Walls) as required.

5.2 REGULAR AND IRREGULAR CONFIGURATION OF BUILDING:

Irregularities of buildings (Residential and Commercial) wherever applicable has to be treated according to clause :7.1 Table 5 & 6 IS 1893:2016

6. WIND LOAD:

The wind load shall be taken as per IS: 875 (Part-3) - 2015 and wind pressure calculation done as follows: -

Project Location – Coimbatore

Basic wind speed	$V_b = 39$ m/s
Risk Coefficient	$k_1 = 1.0$ (50 Years life Span)
Terrain roughness and height factor	$k_2 = 1.07$ (Terrain Category 2)
Topography factor	$k_3 = 1.0$
Importance Factor for cyclonic region	$k_4 = 1.3$
Design Wind Speed	$V_z = V_b * k_1 * k_2 * k_3 * k_4$
Wind Pressure	$P_z = 0.6 * V_z^2$ KN/sq.m
Design Wind Pressure	$P_d = K_d * K_a * K_c * P_z$

7. DESIGN LIMIT STATES:

The Limit state design method is used for the structural design of concrete member. For design of the individual members, loads are combined in accordance with the loading combinations specified in IS 875 to achieve the respective limit state. These are listed below:

S.No	DL	LL	Earthquake/Wind Load
1	1.5	1.5	--
2	1.2	1.2	1.2
3	1.5	--	1.5
4	0.9	--	1.5

8. LOAD COMBINATIONS:

- 1.5DL+1.5LL
- 1.2DL+1.2LL±1.2R_X
- 1.2DL+1.2LL±1.2R_Y
- 1.2DL+1.2LL±1.2WL_X
- 1.2DL+1.2LL±1.2WL_Y
- 1.5DL±1.5R_X
- 1.5DL±1.5R_Y
- 1.5DL±1.5WL_X
- 1.5DL±1.5WL_Y
- 0.9DL±1.5R_X
- 0.9DL±1.5R_Y
- 0.9DL±1.5WL_X
- 0.9DL±1.5WL_Y

Notations:

- DL Dead Load
- LL Live Load
- Rx Earthquake Force in X direction
- Ry Earthquake Force in Y direction
- WLx Wind Force in X direction
- WLy Wind Force in Y direction

9. REQUIREMENTS FOR DURABILITY AND FIRE:

- Design for durability as per IS: 456-2000.
- The following minimum concrete cover shall be provided for reinforcement, but shall not be less than required by Cl.26.4 of IS-456-2000:

Minimum cover:

(a) Foundations	50 mm
(b) Beams	30 mm
(c) Columns	40 mm
(d) Structural topping	25 mm
(e) Walls	30 mm
(f) Solid slab	30 mm

- Fire resistance Design for durability is followed as per IS: 456-2000/ IS 1642.
- Fire rating : 1.5 hours.

10. DEFLECTION LIMITS:

Based on IS: 456-2000, IS1893-2016 codes criteria the acceptance limits in service state are as follows
Concrete works (IS: 456-2000 Cl.23.2)

Item	Limit
The final Deflection due to all loads including the effects of temperature, creep and shrinkage and measured from the as-cast level of the support floors, roofs and all the other horizontal members	L/250
The deflection including the effects of temperature, creep and shrinkage occurring after erection of partitions and the application of finishes where ever applicable	L/350 or 20 mm whichever is less

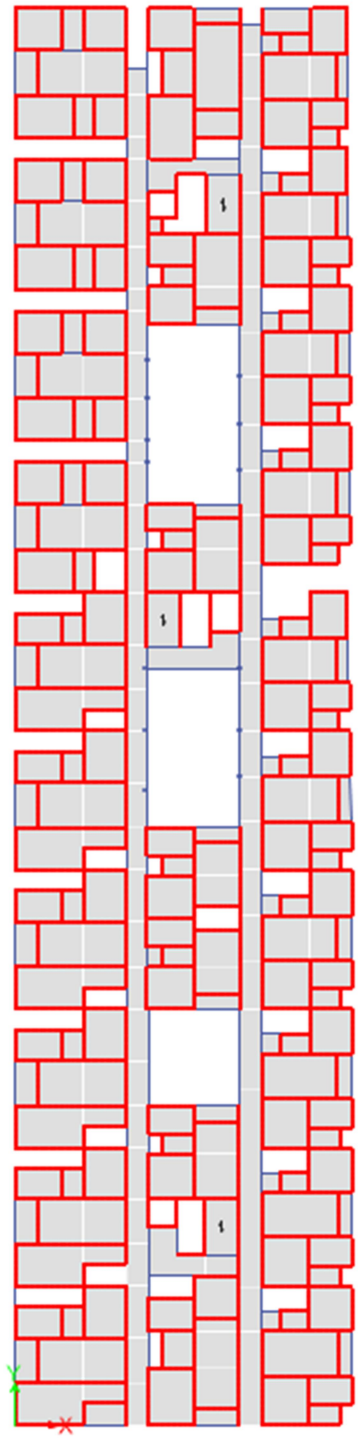
Horizontal deflections (IS: 1893-2016, Cl.7.11.1.1)

Item	Limit
Inter storey seismic drift	0.004 x Hs

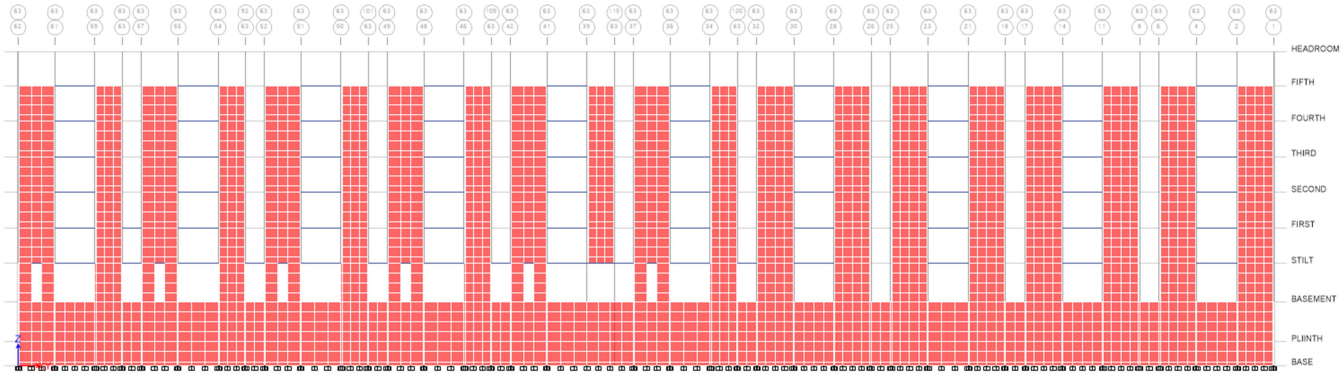
H_s is Storey Height

11. DESIGN CODES, STANDARDS AND REFERENCES DOCUMENTS:

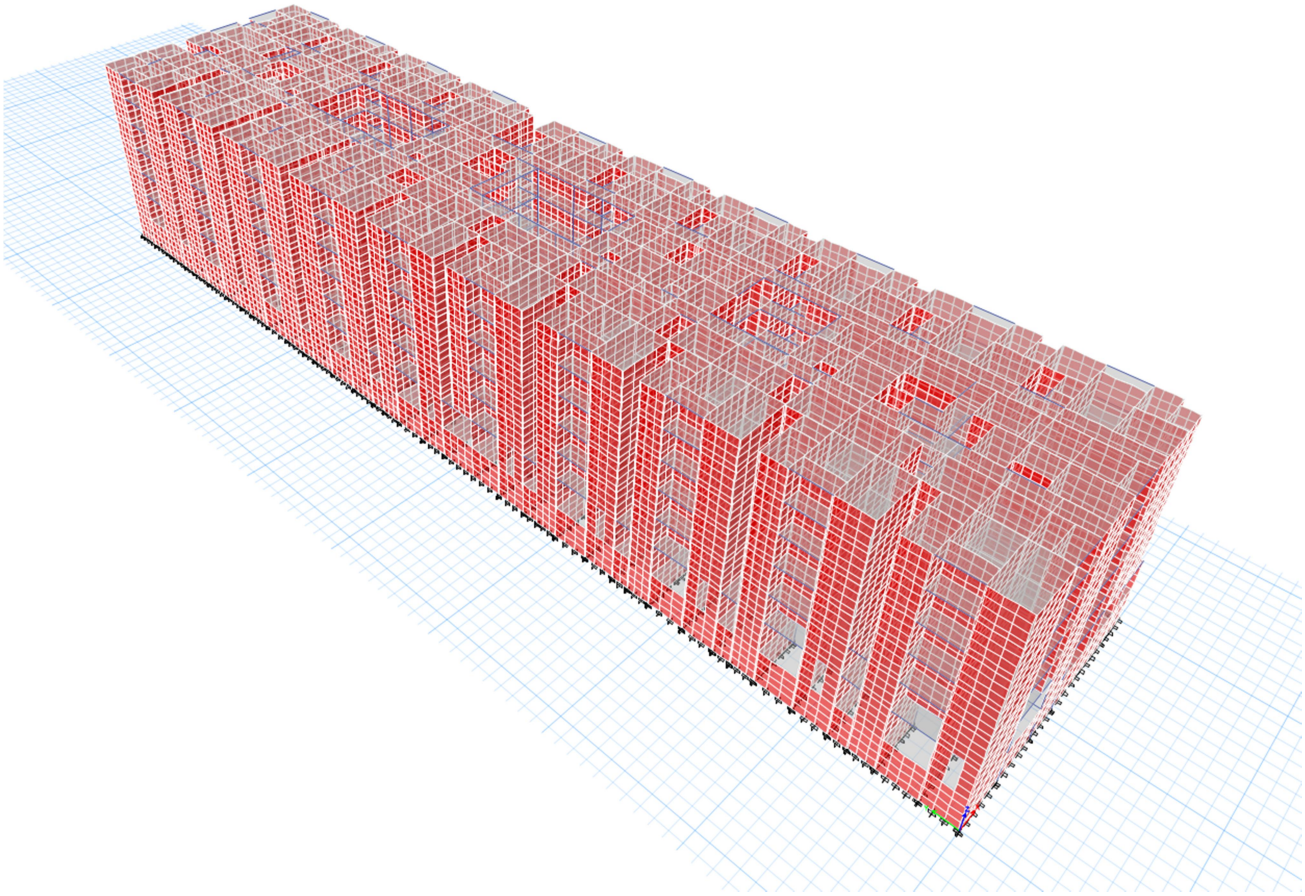
- **Indian Standard (IS: 875-(Part-1) - 1987)** Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures Part-1 -Dead Loads – Unit weights of Building Material and Stored Material.
- **Indian Standard (IS: 875-(Part-2) - 1987)** Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures Part-2 -Imposed Loads.
- **Indian Standard (IS: 875-(Part-3) - 2015)** Code of Practice for Design Loads (other than Earthquake) for Buildings and Structures Part-3 -WIND Loads.
- **Indian Standard (IS: 456-2000)** Plain and Reinforced Concrete - Code of Practice (Limit State Method).
- **Indian Standard (IS: 1893** (**Part -I)-2016** Criteria for Earthquake Resistant Design of Structures.
- **Indian Standard (IS: 15916-2010)** Code of practice for Building design and erection using prefabricated concrete.
- **Indian Standard (IS: 1343-2012)** Prestressed concrete - code of practice.
- **Indian Standard (IS: 13920-2016)** Ductile design and detailing of reinforced concrete structures subjected to seismic forces - code of practice.
- **Indian Standard (IS: 6403-1987)** Code of Practice for Determination of Breaking Capacity of Shallow Foundations.
- **Indian Standard (IS: 1904-1986)** Code of Practice for Design and Construction of Foundations in Soils.
- **Indian Standard (IS: 8009** (**Part -I) -1976)** Code of Practice for Calculation of Settlements of Foundations.
- **SP 16:1980 -** Design aids for reinforced concrete to IS: 456-1978.
- **SP 24:1983** - Explanatory handbook on Indian standard code of practice for plain and reinforced concrete.
- **SP 34:1987** - Explanatory handbook on concrete reinforcement and detailing.
- **SP 22:1982** - Explanatory handbook on concrete for earthquake engineering.
- **ACI 318-14** - Building code requirements for structural concrete and commentary.
- **ACI550R – 96** - Design Recommendations for precast concrete structures
- **PCI Design Handbook (MNL 120-04) – 6th Ed.**



ETABS MODEL – PLAN



ETABS MODEL – WEST ELEVATION



ETABS MODEL – 3D VIEW

CONCRETE CURATIONS PRIVATE LIMITED	CONCRETE CURATIONS PVT LTD	PROJECT :	KANSAS CITY	SHEET NO : 1
		CLIENT :	TNCD	JOB NO : -
MADE BY : DG	DATE : 31-07-2026	SUBJECT : WIND LOAD CALCULATION		
CHECKED BY :				

KANSAS CITY

Input

Length of building X-direction	L	=	25.4	m	
width of building Y-direction	B	=	106.3	m	
Height of building Z-direction	H	=	21	m	
General Data's					
Total Area		=	2700.02	m^2	

Input of wind

wind speed	Vb	=	39	m/sec	IS:875 -2015
life co-efficient	k1	=	1		
terrain factor	k2	=	1.06	terrain category 2	
topography	k3	=	1		
cyclone	k4	=	1.3		
wind direction factor	kd	=	0.9	(triangular,rectangular,square=0.9),(circular,near-circular=1)	
area avg factor	ka	=	0.8	area > 100m^2 =0.8	
combination factor	kc	=	1	IS:875 Pg.No-16	

IS:875 :Pg.No-8

terrain factor	
20	1.05
30	1.1
21	1.055

wind load		=	Cf.Ae.Pd		
Vb.k1.k2.k3.k4	Vz	=	53.49	m/sec	
$Pz=0.6Vz^2$	Pz	=	1.72	kN/m^2	
Design wind speed					
Pd=Pz.ka.kb.kc	Pd	=	1.24	kN/m^2	
condition Pd > 0.7Pz		=	1.20	kN/m^2	ok
Max design pressure	**Pd**	**=**	**1.00**	**kN/m^2**	

	X-Direction		Y-Direction	
	a/b	0.239	a/b	4.185
	h/b	0.198	h/b	0.827
See.Fig 4. IS:875 - 2015 Pg.no - 35	Cf =	1.2	Cf =	0.9
Final Force	**F =**	**1.20 kN/m^2**	**F =**	**0.90 kN/m^2**
Wind Ward co-efficient	**WLXP =**	**0.864**		**0.648**
Leeward co-efficient	**WLYP =**	**0.0002**		**0.0002**

Time Period Calculation

Zone factor (seismic zone)	Z	=	3	CBE	
Reduction factor	R	=	4		IS:1893 (Part-1):2016 table 9 Pg.No 20
Importance Factor	I	=	1		IS:1893 (Part-1):2016 table 8 Pg.No 19
Time Period Tx= 0.09h/√d	X	=	0.38		
Time Period Ty= 0.09h/√d	Y	=	0.18		
IG/2R	R	=	1226.25		

THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

Verified RealEstate™

Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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