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DESIGN BASIS REPORT

FOR

RESIDENTIAL APPARTMENT (STILT+3 FLOORS)

THE WHITE HOUSE – TOWER A

PLOT NO 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11, IN THE LAYOUT NAMED MP VILLA VISTA, S.NO. 26/2A1, KOLAPAKKAM VILLAGE, KUNDRATHUR PANCHAYAT UNION LIMIT, KUNDRATHUR TALUK, KANCHIPURAM DISTRICT, CHENNAI – 600 125.

MP DEVELOPERS

APRIL –2025

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1. DESIGN ASSUMPTION

STRUCTURAL SYSTEM

The structural system for the "PROPOSED **RESIDENTIAL APPARTMENT at Plot No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11, in the layout named MP Villa Vista, S.NO. 26/2A1, KOLAPAKKAM VILLAGE, KUNDRATHUR PANCHAYAT UNION LIMIT, KUNDRATHUR TALUK, KANCHIPURAM DISTRICT, Chennai – 600 125,** consists of Stilt + 3 upper floors and OHT. The total height of the building is about 13.05 meters from Stilt floor level. The building designed for AAC blocks. The structure is supported on Pile foundation below basement level as per the soil test report recommendation.

2. DESIGN LOADS

a) Dead Load:

Dead Load considered on slab: Self Weight + 1.5 kN/m^2 for Floor Finish.

Wall load	= 7 kN/m (230mm thick) (AAC Block)
Wall load	= 4 kN/m (100mm thick) (AAC Block)
Wall load (Parapet)	= 4 kN/m (115mm thick) (Red Brick)
Staircase load	= 15 kN/m (RCC staircase) (LL+DL)
Sunken load	= 4 kN/m^2
Water Tank	= 10 kN/m^2 (1500 mm height)
Floor finish	= 2 kN/m^2 (Terrace)

b) Roof Live Load:

The super imposed load or otherwise live load is assessed based on the occupancy classifications as per IS

Slab load	= 2 kN/m^2
Slab	= 3 kN/m^2 (Lobby & Staircase)
Slab	= 1.5 kN/m^2 (Terrace)

c) Temperature Load:

As per Indian Standard code, IS-456:2000, buildings longer than 45m shall be analyzed for the thermal stresses and appropriate measures shall be taken during fixing the structural system. However, IS 1875 part-5 to follow in such kind of designs as well as on load factors to be considered in design combination of temperature load with gravity loads.

Minimum Temperature	=15 ^{0} C (Figure 1, IS875 PART V)
Minimum Temperature	=45 ^{0} C (Figure 1, IS875 PART V)

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d) EARTHQUAKE LOAD

The loading due to earthquake is assessed based on the provisions of IS:

1893(Part-1):2016 Seismic Zone	= III.
Table-2 Zone factor (Z)	= 0.16
Table-6 Importance Factor (I)	= 1
Table-7 Response Reduction Factor (R)	= 5

Building frame system (SMRF) as per table 7 clause 6.4.2 of IS 1893 2016

Height of building (H) =13.05m

Base dimension of part of the building along the considered direction of lateral force (D)

Fundamental Natural time period

T_s = 0.09H/√d from CL - 7.6.2 - IS 1893 (Part-I) 2016

S_a/g = from FIG-2 IS 1893 (part-I) 2016

The respective natural time period can be referred from the respective model.

Horizontal Seismic Co-efficient

A_h = (Z/2) x (I/R) x (S_a/g)

Seismic Base Shear

V_b = A_h x W

Structure with ductile detailing is considered as per IS: 13920-2016
As per IS: 1893 – 2016, percentage of imposed loads to be considered for

Seismic weight calculation is mentioned below:

Imposed Uniformity Distributed Floor Load Loads (kN/ m2)	Percentage of Imposed
Up to & including 3.0	25
Above 3.0	50

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3. LOAD COMBINATIONS

Strength combinations:

- 1.5DL + 1.5 LL + TEMP. LOAD
- 1.5DL (+/-) 1.5 WL/EQ Load + TEMP. LOAD
- 1.2DL +1.2LL (+/-) 1.5 WL/EQ Load + TEMP. LOAD
- 0.9DL (+/-) 1.5 WL/EQ Load + TEMP. LOAD

Serviceability combinations:

- DL + LL+ TEMP. LOAD
- DL +0.8 LL (+/-) 0.8 WL/EQ Load + TEMP. LOAD
- DL (+/-) WL/EQ Load + TEMP. LOAD

4. ANALYSIS METHOD

The structure is analyzed by static for gravity due to Earthquake loads and its combinations.

5. DESIGN METHODOLOGY

All structures have been designed according to the Limit State Method as specified in IS: 456-2000 & IS 1893 - 2016. Appropriate loads and its combinations, as per relevant clauses in IS 456:2000 code, for the most unfavorable effects are chosen for design.

6. MATERIALS

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

Materials	Unit weight in kN/m^3
Steel	78.5
Plain concrete	24
Reinforced concrete	25
Soil	18
AAC Blocks	6.5

I. CONCRETE

All the concrete items for the construction have the following

characteristics Grade of Concrete = M25

Aggregate = 20mm and down size, mechanically crushed Aggregate.

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II. STEEL

Steel reinforcement shall be of Grade Fe500 & Fe550 conforming to IS: 1786-2008.

III. COVER TO REINFORCEMENT

The clear cover to main reinforcement shall be as follows.

Foundation	= PILE: 50mm, PILE CAP: 75mm
Slab	= 20mm
Columns	= 40mm
Beams	= 25m

7. FOUNDATION SYSTEM

Foundation systems are based on recommendations given as per soil investigation report by GLOBE GEO-TECH.

8. CODES & STANDARDS

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

	Description
IS:875 (Part-1)-1987	Code of Practice for Design Loads (Other than Earthquake) for Building and Structures-Unit Weights of Buildings Materials and Stored Material.
IS:875 (Part-2)-1987	Code of Practice for Design Loads (Other than Earthquake) for Building and Structures-Imposed loads
IS:875 (Part-3)-2015	Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures –Wind Load.
IS:875 (Part-5)-1987	Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures –Temperature Load.
IS:456 (Part-1)-2000	Code of Practice for Plain and Reinforced Concrete

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IS:1893 (Part-1)-2016	Indian Standard Criteria for Earthquake Resistant Design of Structures.
IS:432 (Part-2)-1982	Specification of Mild Steel and Medium Tensile Steel bars and Hard Drawn Steel Wire for concrete reinforcement – Hard drawn Steel Wire.
IS:1786-2008	Specification for High Strength Deformed Steel Bars and Wires for Concrete Reinforcement
IS:1904	Indian Standard Code of practice for Design & Construction Foundations in Soil: General Requirements.
IS:1642-1989	Indian Standard Code of practice for Fire Safety Of Buildings (General): Details Of Construction.

IS: 1786-2008 Specification for High Strength Deformed Steel Bars and Wires for Concrete Reinforcement. IS: 1904 Indian Standard Code of practice for Design & Construction foundations in Soil: General Requirements IS: 1642-1989 Indian Standard Code of practice for Fire Safety of buildings (General): Details of Construction.

9. STRUCTURAL ANALYSIS

The Building structures are analyzed using STAAD for various load combination as per Indian Codes.

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Land Use Zone Finder, CRZ Zone Check, Aquifer Zone Check, CBA Check, EWS Check, Road Width Check, Proposed Road Widening Check, FSI Calculator

Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

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