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07-07-23

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the structural design for the proposed apartment building ANAND LAKEFRONT APARTMENTS at Survey No 245/1B, New TS No: 35/1, Ward: B, Block: 39, Village: Hosur, Taluk: Hosur, Corporation: Hosur, District: Krishnagiri has been done by the undersigned.

The building consists of Ground and Five upper floors.

The structural design for the foundation and super structure confirms to all relevant Indian Standards. The Structure is Safe and Sound

Certified that the design is done for the dead and live loads as well as for wind load as per IS:875 and seismic loads (Zone II) as per IS:1893.



M.Sreekumar
(Structural Consultant
& Chartered Engineer)

SREEKUMAR M.
Chartered Engineer
Regn. # M-1743273

July 07, 2023

TO WHOMSOEVER IT MAY CONCERN

Please find enclosed the Design Brief Report for the proposed Anand Lake Front Residential Apartments at Thally Road, Hosur located on survey number 245/1B, New TS No.35/1, Ward B, Block 39, Village: Hosur, Corporation: Hosur, District: Krishnagiri. These are the design parameters considered.

The structure is modelled in ETABS and the detailing is done based on the output interference.

Thanks
Sincerely



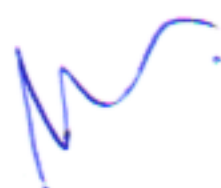
M Sreekumar

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ANAND LAKE
FRONT
RESIDENTIAL
APARTMENT
AT THALLY
ROAD, HOSUR

07 July 2023

STRUCTURAL DESIGN BASIS REPORT


SREEKUMAR M.
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STRUCTURAL DESIGN BASIS REPORT FOR ANAND LAKE FRONT RESIDENTIAL APARTMENT AT THALLY ROAD, HOSUR

1.0 Introduction

The proposed Anand lake front residential apartment project at Thally road Hosur, comprises of Ground+5 Upper floors only.

The structural system for the project includes RCC framed structure. This report outlines the structural design basis for the proposed project.

The basic aim of structural design of the buildings is to ensure the achievement of satisfactory behaviour during the intended design life. With appropriate degree of safety, they should sustain all the loads coming during construction and in use.

1.1 Member Sizes

Reinforced concrete framed structure with RC columns 8" wide, beams 8" wide x 18" deep will be provided to support 4"/5"/6" thick slabs. This conventional system of construction is ideally suited for a medium to high rise development. However the beam depths are kept so least possible dimension to maximize the head room but still satisfy the serviceability and strength criteria set out in IS 456.

1.2 Durability

Durability is achieved by integration of all aspects of design material and construction. The environmental effect to which the concrete or steel is exposed to will be taken into account during the design by providing adequate cover to reinforcement and use of protective coatings to structural steel works.

The nominal cover provided to reinforcement as per Table 16 A of IS: 456.Would be:

STRUCTURAL ELEMENT	COVER
Footing	50mm
Column	40mm
Beams	25mm
Slabs	20mm
Staircase waist slab	25mm


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2.0 Codes and standards

The relevant Indian Standard codes below shall be followed.

CODE	DESCRIPTION
IS 875(Part 1) 1987	Code of practice for Design Loads(other than Earthquake) For buildings 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 buildings and structures-Imposed loads.
IS 875(Part 3)1987	Code of practice for Design Loads(other than Earthquake)For buildings and structures-Wind loads
IS 875(Part 4)1987	Code of practice for Design Loads(other than Earthquake)For buildings and structures-Snow loads.
IS 875(Part 5)1987	Code of practice for Design Loads(other than Earthquake)For buildings and structures-Special loads and load combinations.
IS 456-2000	Code of practice for plain and reinforced Concrete.
IS1893-2000	Criteria for earthquake resistant design of Structure.
SP16:1980	Design aids reinforced concrete to IS:456-1978
IS 2974	Code of practice for design & construction of Machine foundation.
IS 1786-1985	Specification for High Strength Deformed bars And Wires for concrete reinforcement.
IS 432(Part 2)1982	Specification for Mild Steel and Medium Tensile Steel Bars and Hard Drawn Steel Wire for concrete Reinforcement-Hard Drawn Steel Wire.
IS 3370(Part 1,2 &4)	Code of practice for concrete structures for the Storage of liquids.
IS13920-1993	Ductile detailing of reinforced concrete structures Subjected to seismic forces-code of practice.


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3. Design loads

The design loads adopted are as follows:-

3.1 Dead load

<u>TYPE OF LOAD</u>	<u>DENSITY (KN/m³)</u>
Concrete	24.00
RCC	25.00
6" solid block masonry of density 20 KN/cum &	
4" solid block masonry of density 20 KN/cum considered as wall loads	
Floor Finish loads = 1.5 KN/ cum	

3.2 Imposed load

<u>LOADING AREA</u>	<u>LOAD INTENSITY (KN/m²)</u>
Typical Floors	2.0
Balcony Veranda Lobby	3.0
Terrace (access provided)	2.0
LMR slab	10.0


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3.3 Wind load

Wind loads for design of structures shall be based on the design wind speeds arrived at based on IS:875-1987 Part III.

The parameters for calculation of design wind speed as IS: 875-1987 Part III as follows:

Basic wind speed, V_b	:	33m/sec (Bangalore)
Risk Coefficient, K_1	:	1.0
Terrain, Height, Structure Size factor, K_2	:	To suit the height of the Structure for Terrain category-3 and class B Or appropriate.
Topography factor, K_3	:	1.0

The external and internal pressure co-efficient shall be as per respective clauses of IS: 875 (please refer attached map)



APPENDIX A

(Clause 5.2)

BASIC WIND SPEED AT 10 m HEIGHT FOR SOME IMPORTANT CITIES/TOWNS

<i>City/Town</i>	<i>Basic Wind Speed (m/s)</i>	<i>City/Town</i>	<i>Basic Wind Speed (m/s)</i>
Agra	47	Jhansi	47
Ahmadabad	39	Jodhpur	47
Ajmer	47	Kanpur	47
Almora	47	Kohima	44
Amritsar	47	Kurnool	39
Asansol	47	Lakshadweep	39
Aurangabad	39	Lucknow	47
Bahraich	47	Ludhiana	47
Bangalore	33	Madras	50
Barauni	47	Madurai	39
Barilly	47	Mandi	39
Bhatinda	47	Mangalore	39
Bhilai	39	Moradabad	47
Bhopal	39	Mysore	39
Bhubaneswar	50	Nagpur	44
Bhub	50	Nainital	47
Bikaner	47	Nasik	39
Bokaro	47	Neelore	50
Bombay	44	Panjim	39
Calcutta	50	Patna	47
Calicut	39	Pondicherry	50
Chandigarh	47	Port Blair	44
Coimbatore	39	Pune	39
Cuttack	50	Raipur	39
Darbhanga	55	Rajkot	39
Darjeeling	47	Ranchi	39
Dehra Dun	47	Roorkee	39
Delhi	47	Rourkela	39
Durgapur	47	Simla	39
Gangtok	47	Srinagar	39
Gauhati	50	Surat	44
Gaya	39	Tiruchchirappalli	47
Gorakhpur	47	Trivandrum	39
Hyderabad	44	Udaipur	47
Imphal	47	Vadodara	44
Jabalpur	47	Varanasi	47
Jaipur	47	Vijaywada	50
Jamshedpur	47	Visakhapatnam	50


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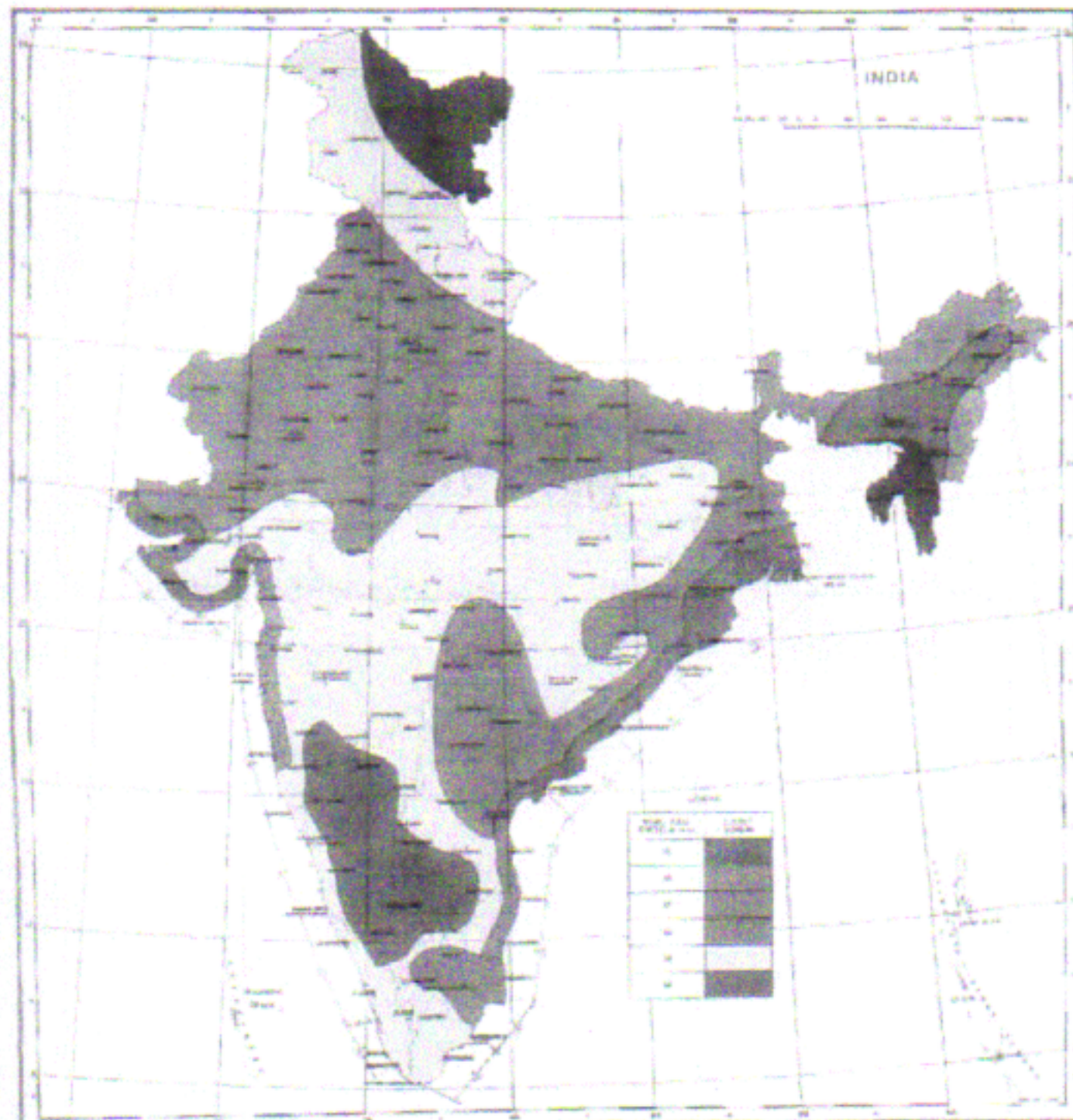


FIG. 1. Basic Wind Zones in India (Source: IS: 875 Part 3, 1987)

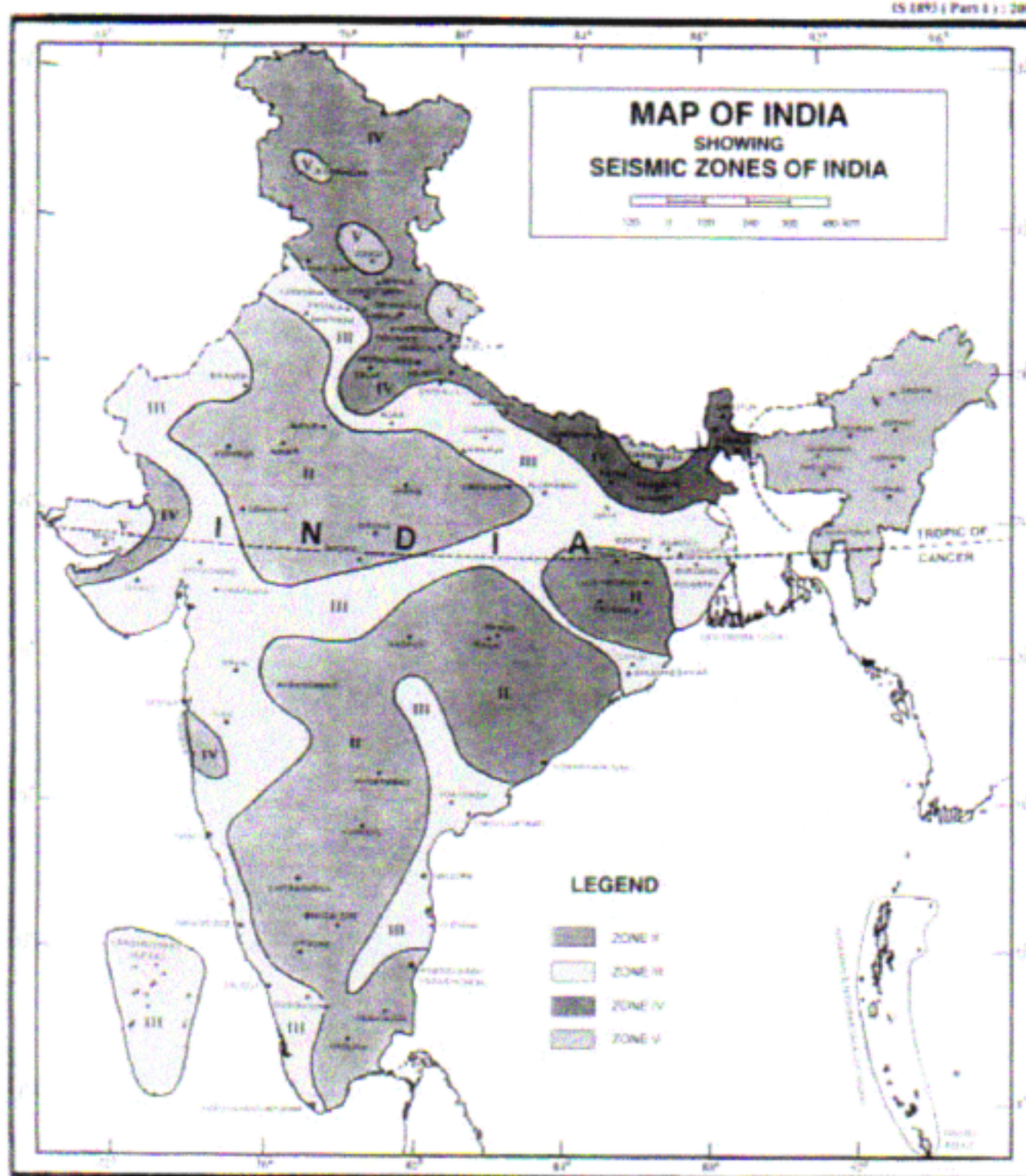
INDIA MAP SHOWING BASIC WIND ZONES

3.4. Seismic load

A seismic load for design of structures shall be based on IS: 1893-2002.

Seismic Zone	=	II
Table-2 Zone factor (Z)	=	0.10
Table-6 Importance Factor (I)	=	1.20
Table-7 Response Reduction Factor(R)	=	5.0
Maximum Height of building above ground (H)	=	as per actuals
Damping Co-efficient for concrete	=	5%
Soil type	=	Hard soil

INDIA MAP SHOWING BASIC SEISMIC ZONES



NOTE: Towns falling at the boundary of zones demarcation line between two zones shall be considered in High Zone

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- Based upon Survey of India map with the permission of the Surveyor General of India.
- The responsibility for the correctness of internal details rests with the publisher.
- The territorial waters of India extend into the sea to distance of twelve nautical miles measured from the appropriate base line.
- The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.
- The interstate boundaries between Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the North-Eastern Areas (Reorganization) Act, 1971, but have yet to be verified.
- The external boundaries and coastlines of India agree with the Record/Master Copy certified by Survey of India.

FIG. 1

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4.0 Materials

Concrete

Concrete Mix

OPC 43/53 grade cement of reputed make conforming to relevant codes will be used for all Concrete work and the certificate of manufacturer will be furnished with each batch. Cement used shall be ordinary Portland cement.

Minimum cement content shall be governed by the requirement of IS 456/other relevant appropriate code for normal concrete structure, maximum water cement ratio and minimum grade of concrete shall be considered as per IS: 456 for moderate exposure condition.

Concrete mix/Grade	Type of structure
1:5:10	Fill concrete
1:4:8	Blinding layer below foundations, trenches and under ground
M25	All RCC structures, foundations, super structure, grade beams, roof slabs foundations and all underground RCC structures etc.
M25	Columns
M25	Water retaining structures below ground level

Reinforcement steel

All reinforcement shall conform to IS 1786-1985 having minimum yield strength of 500N/mm².


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5 Subsoil condition & foundation system

Isolated and combined footing Foundation adopted & the bottom of the footing seated on the hard soil strata.

5.1 Water proofing

Water Proofing will be decided as per site conditions and soil report.

5.2 Pavement design

Pavement design will decided as per site conditions and soil report.



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