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STABILITY CERTIFICATE

It is Certified that the Proposed Construction of High Rise–Building (South) Residential Building namely - AMARA AANYA consist of Block No.1 with extended Tripple B.Floor (Meant for parking) + Stilt floor part (Meant for parking) , Ground Floor part (For Gym) +1st Floor+17th Upper floors + Terrace floor with 34 dwelling units & Swimming Pool at Terrace Floor and Block No.2, Stilt Floor (Meant for parking & Association room) + 1st Floor +5th Upper Floors +Terrace floors with 5 dwelling units, totally 39 dwelling units, at old No.121 & 122 New Door No.187 & 191 St.Mary's Road, Alwarpet, Chennai 600 018, comprised in R.S.No.3925/5, 3925/22,3926/1 & 3926/4, Block No.86 of Mylapore Village, Mylapore Taulk, and within the limits of Greater Chennai Corporation, is designed to resist earth quake. Check has been made and found safe and I hereby certify that,

1. The minimum grade of concrete is M30/25.

2. The design and analysis using the code of practice for loading Standards as per IS-875 Part I to V and seismic force as per code IS 1893, is carried out.

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

The Proposed Construction of High Rise–Building (South) Residential Building namely - AMARA AANYA consist of Block No.1 with extended Tripple B.Floor (Meant for parking) + Stilt floor part (Meant for parking) , Ground Floor part (For Gym) +1st Floor+ 17th Upper floors+Terrace floor with 34 dwelling units & Swimming Pool at Terrace Floor and Block No.2, Stilt Floor (Meant for parking & Association room) + 1st Floor+5th upper Floors+Terrace floor with 5 dwelling units, totally 39 dwelling units, at old No.121 & 122 New Door No.187 & 191 St.Mary's Road, Alwarpet, Chennai 600 018, comprised in R.S.No.3925/5, 3925/22,3926/1 & 3926/4, Block No.86 of Mylapore Village, Mylapore Taulk, and within the limits of Greater Chennai Corporation,

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth
Registration No. SE / GR - I / 19 / 03 / 074
Registered Structural Engineer Grade - I (SE)

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GENERAL NOTE ON STRUCTURAL DESIGN

1.0 GENERAL

1.1 DESIGN BASIS

The design of the Building is carried out based on 3D analysis using Etabs

Block 1 - The Building is designed for 3 Basement +Stilt + 17 Upper Floors+ Terrace floor.

Block 2 - The Building is designed for Stilt + 5 Upper Floors+Terrace floor.

1.2 CODES AND STANDARDS

All structural design is carried out conforming to the provisions in National Building Code of India and other relevant Indian Codes and Standards.

1. I.S. 456
2. I.S. 875 - Part I to V
3. I.S.1893 2016
4. I.S.13920 2016
5. I.S.800

2.0 BASIC CIVIL DESIGN LOADS

2.1 DEAD LOADS & LIVE LOADS

Typical slab dead load is calculated as follows

Residential Building

Self-weight of slab	= 3.125kN/m²
Floor finish	=2.0kN/m²
Live load	=3.0 kN/m²

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth
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3.0 SOIL DETAILS

Based on Soil Test Report Pile foundation is adopted.

4.0 DESIGN METHODS

General design and detailing of concrete members/elements are done conforming to the provisions of I.S: 456 and other relevant I.S codes. Limit State method is followed for the design.

Seismic Zone III l-oad is taken into account for the analysis. The predominant direction of vibration is horizontal. Relevant combination of forces has been taken into account.

4.1

Load Combination	Ultimate Limit Load	Serviceability Limit State
DL+LL	1.5DL+1.5LL	DL+LL
DL+LL+WL	1.2DL+1.2LL+1.2WL	DL+LL+WL
Or	Or	Or
DL+LL+EL	1.2DL+1.2LL+1.2EL	DL+LL+EL

4.2.1 MINIMUM COVER

Slab 20 mm

Beam 25 mm

Columns 40 mm

Foundations 50 mm

Structure will be sound and stable when used for the purpose for which it is designed.

Signature of the Structural Engineer

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth
Registration No. SE / GR - I / 19 / 03 / 074
Registered Structural Engineer Grade - I (SE)

AMARA - AANYA @ ST. MARYS RD ALWARPET, CHENNAI

STRUCTURE DESIGN BRIEF REPORT

Client	:	**AMARA HOMES** Acropolis, 148, Dr Radha Krishnan Salai, Mylapore, Chennai-600004
SMEP Consultants	:	**DESIGN TREE SERVICE CONSULTANTS Pvt Ltd** #64/9, Kembathahalli main road, jp nagar 9th phase, Bengaluru-560083
Architects	:	**FHD INDIA CONSULTANTS** # 15,8-3-684/3-15,LIC Colony, Srinagar Colony Hyderabad-500073

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth

Registration No. SE / GR - I / 19 / 03 / 074

Registered Structural Engineer Grade - I (SE)

ISSUE RECORD

PROJECT : **AMARA AANYA at ST. Mary's Rd, Alwarpet, Chennai**

TITLE : **Preliminary Design Brief Report**

DOCUMENT NO : **DTSC**

1. STRUCTURAL

DATE	ISSUE	PREPARED	CHECKED	REMARKS / REVISION
16-07-2024	Prelim report	MANISH M	B.SRINIVASARAO	R0

1. STRUCTURE

CONTENTS

1- STRUCTURE

1.1 Project Brief/Introduction
1.2 Design standards
1.3 Design Data
1.4 Materials
1.5 Structural concept
1.6 Water Proofing
1.7 Design Philosophy

1.1 PROJECT BRIEF

The clients M/S Amara ST. Mary's Rd, Intends to develop residential building, at Chennai. Project is architectured by FHD India Consultants Hyderabad. Structures, Plumbing, Fire Protection, HVAC and Electrical Engineering Services are provided by M/S Design Tree Service Consultants Pvt. Ltd, Bangalore.
All service facilities like underground sump and pump are to be provided as per the requirements given by clients.

The proposed residential building having 2 Blocks

- Residential Block 1 is having 3 Basement + stilt+17 upper floors + Terrace floor

The height of the proposed Building is 70.20 mts. From Basement Level

- Residential Block 2 is having Stilt+5 upper floors + Terrace floor

The height of the proposed Building is 18.3 mts.

Building floor heights for BLOCK 1 as below

Cellar 3 to Cellar 2	-	3.3 m
Cellar 2 to Cellar 1	-	3.3 m
Cellar 1 to Stilt	-	3.6 m
Stilt to First Floor	-	3.65 m
First to Terrace Typical Floors	-	3.25 m

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth
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Registered Structural Engineer Grade - I (SE)

Statutory Requirements:

The design of structural and other building services will comply with the following requirements:

- National Building Code
- The Building Regulations
- The Environmental Protection Act in liaison with the Environmental Agency.
- Fire prevention and detection in compliance with the local Fire Regulation.

1.2 DESIGN STANDARDS:

Specific applicable codes and standards will be identified and adopted in the design philosophies as appropriate to the structural elements. The latest editions of the Codes and Standards will be used in designs. All design work shall be based on Indian Standards and Codes with latest revision, with amendments if any, as on date.

IS: 432(part 2) - 1982	: Specification for mild steel and medium tensile steel bars and hard-Drawn steel wire for concrete reinforcement
IS: 1786-2008	: Specification for high strength deformed steel bars and wires for Concrete Reinforcement.
IS: 13920-2016	: Ductile detailing of reinforced concrete structures subjected to seismic
IS: 12269	: Ordinary Portland cement 43 grade.

IS: 6313 (part II)	: Standards for anti-termite treatment.
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 Structure - imposed.
IS: 875 (part 3)-2015	: Code of practice for design loads (other than earthquake) for buildings and Structure - wind 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.
IS: 1343 - 2012	: Code of practice for pre stressed concrete.
IS: 14268 - 1995	: Uncoated stress relieved low relaxation seven-ply strand for pre stressed Concrete-Specification.
IS: 1893 part 1 - 2016	: Criteria for earthquake resistant design of structures (part-1 general Provisions and buildings)
IS: 4326 -1993	: Code of practice for earthquake resistant design and construction of buildings.
IS: 2751	: Code of practice for welding of mild steel bars used for reinforced Concrete construction.
IS: SP 34-1987	: Handbook on concrete reinforcement and detailing.
IS : 800-2007	: Code of practice in general construction in Steel.
IS: 1904 - 1986	: Code of practice for structural safety of building foundations.
IS: 16700 -2023	: Criteria for structural safety of tall buildings.
SP: 16 - 1980	: Design aid for reinforced concrete to IS 456.
IS-3370-2009(PART-1)	: Concrete structures for storage of liquids- General requirements.
IS-3370-2009(PART-2)	: Concrete structures for storage of liquids- Reinforced concrete structures.
ACI 318-19	: Building Code requirements for Structural Concrete

Wherever appropriate Indian Regulation does not exist for any particular item, appropriate EURO/ ACI Codes will be used.

IS Standards - Materials

IS: 269 - 1989	: Specification for Ordinary, rapid hardening and low heat Portland cement.
IS: 455 - 1989	: Specification for Portland blast furnace slag cement.
IS: 1489 - 1991	: Specification for Portland pozzolana cement
IS: 4031 - 1991	: Method of physical tests for Portland cement.
IS: 383 - 1970	: Specification for coarse and fine aggregates from natural sources for concrete.
IS: 516 -1959	: Method of test for strength of concrete.

IS: 1199 -1959	: Method of sampling and analysis of concrete.
IS: 432 -1982	: Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement.
IS: 1139	: Specification for hot rolled mild steel and Medium tensile steel deformed Bars for concrete reinforcement
IS: 1566 -1982	: Specification for plain hard drawn steel wire fabric for concrete reinforcement.
IS: 1786 -2008	: Specification for high tensile bars for concrete reinforcement.
IS: 4990 -1993	: Specification for plywood for concrete shuttering works.
IS: 2645 -1975	: Specification for integral cement water proofing compounds.
BS: 4449: 1997	: Specification for carbon steel bars for the reinforcement of concrete.

1.3 DESIGN DATA:

Loads:

1.3.1 Dead loads:

Dead load shall include weight of all structural and Architectural components. Self-weight of the materials shall be calculated on the basis of unit weights given in IS: 875.

• Floor finish of 75mm thick for Residential floors	:	180 kg/sq.m (1.8kN/sq.m).
• Floor finish of 75mm thick for Parking Areas	:	180 kg/sq.m (1.8kN/sq.m).
• False ceiling + ducting + Sprinklers(services)	:	40 kg/sq.m (0.4 kN/sq.m).
• Partitions	:	100 kg/sq.m (1.0kN/sq.m).
• Wall loads	:	As per actuals.
• Self-weight of Plain concrete	:	2400 kg/cu.m (24 kN/cu.m).
• Self-weight of RCC	:	2500 kg/cu.m (25 kN/cu.m).
• Solid block masonry	:	2000 kg/cu.m (20 kN/cu.m).
• Brick Wall	:	1900 kg/cu.m (19 kN/cu.m).
• Aerated block masonry	:	865 kg/cu.m (8.65 kN/cu.m).
• Soil (Dry)	:	1800 kg/cu.m (18 kN/cu.m).
• Soil (Saturated)	:	2000 kg/cu.m (20 kN/cu.m).
• Water	:	1000 kg/cu.m (10 kN/cu.m).
• Stainless steel	:	8000 kg/cu.m (80 kN/cu.m).
• Masonry with plastering	:	2200 kg/cu.m (22 kN/cu.m).
• Filling for sunken portion (Wherever filling is required).	:	1000 kg/cu.m (10 kN/cu.m)
• Waterproofing (membrane).	:	15kg/sq.m (0.15kN/sq.m).
• External finishes	:	As per actuals.
• Gardening/Landscape loads	:	As per actuals
• Equipment loads	:	As per Vendor details.

1.3.2 Live loads:

The superimposed loads shall be calculated in accordance with IS: 875(Part-2) based on Occupancy Classification. For multiple occupancies of use in the building shall be referred with the other appropriate comparable occupancy classification as per Table.1 of IS 875(Part-2)-1987.

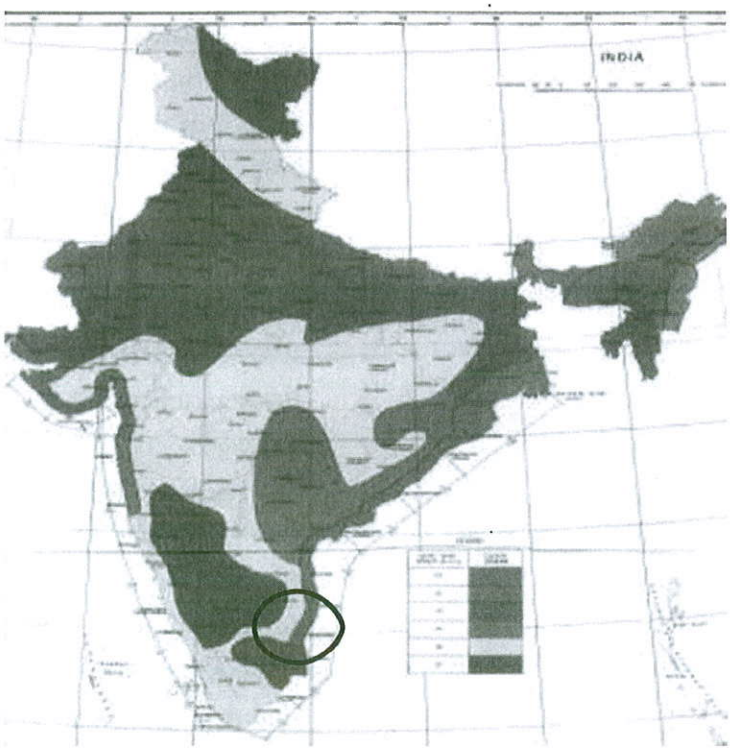
Following live loads are considered while designing the structural elements apart from the dead loads as per codes.

Living /Dining hall/ kitchens/Bed rooms	: 200 kg/sq.m (2.0 kN/sq.m)
Toilet and bathrooms	: 200 kg/sq.m (2.0 kN/sq.m)
Stairs	: 300 kg/sq.m (3.0 kN/sq.m)
Corridors / Balcony/utility	: 300 kg/sq.m (3.0 kN/sq.m)
Lift Machine room	:1000 kg/ sq.m or as per actuals.
Balconies	: 300 kg/ sq.m or as per actuals.
Parking Area	: 250 kg/ sq.m (2.5 kN/sq.m) + 25% Impact
Fire tender Loading	: 2000kg/sq.m (20.0 kN/sq.m).
Ramps (Without fire truck movement)	: 500kg/sq.m (5 kN/sq.m)+25% Impact
Communication Room /Meter Room	: 300 kg/sq.m (3.0 kN/sq.m)

1.3.3 Wind Loads

The Wind pressure shall be calculated in accordance with IS: 875 (Part-3).

Chennai, which is located in Tamil nadu, is having wind speed of 50m/sec.

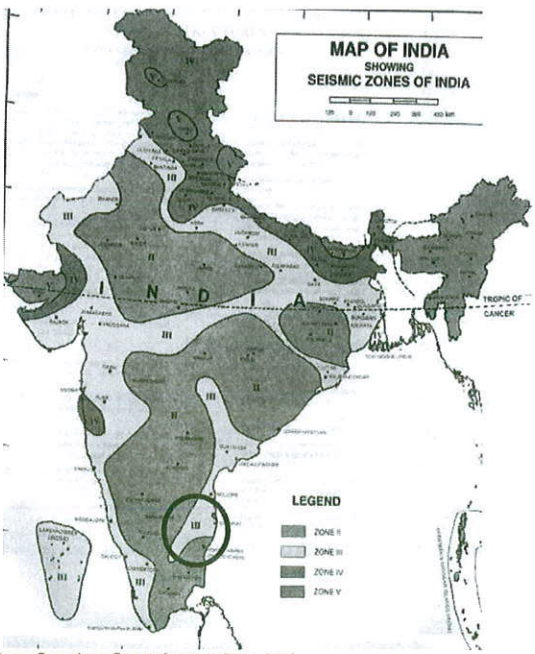


- Basic Wind Speed V_b : 50 m/sec

- Risk Coefficient k1 : 1.00 (k1 corresponds to 50 years Mean Probable Design Life of Structure)
- Terrain, height, structure size factor K2 : To suit the height of the structure for terrain Category 3 & Class C and also it varies with the height of the structure.
- Topography factor K3 : 1.00
- Importance factor for the cyclonic region K4 : 1.00
- The external and internal pressure co-efficient shall be as per respective clauses of IS: 875 (Part 3)
- Design wind speed V_z : V_b x k1 x k2 x k3 x k4
- Design wind pressure Pz : $0.6 \times Vz^2$

Height of the building (m)	K2	Vz = Vb x k1 x k2 x k3 xk4 (m/s)	Pz = 0.6 x Vz² (kN/m²)
10	0.91	45.5	1.242
20	1.01	50.5	1.53
30	1.06	53	1.68
40	1.09	54.5	1.78
50	1.12	56	1.88
60	1.136	56.8	1.94
70	1.152	57.6	1.99
80	1.168	58.4	2.05
100	1.2	60.0	2.16

Seismic Forces



1.3.4 Seismic Forces

Chennai falls under seismic zone III as per IS 1893-2016 (Part 1) (Fifth Revision) and has the following factors to be considered for designs. Ductile detailing is required. (Please refer attached map)

Seismic Zone : III
Seismic Zone factor, Z : 0.16 (As per Table 2, IS: 1893-2016)
Design horizontal seismic coefficient (A_h) : (Z/2)*(Sa/g)*(I/R)

I -Importance factor : 1.2 (Ref Table 6, IS: 1893-2016)
Response reduction Factor : 5 (SMRF)
R as per Table 9 of IS: 1893-2016 the building with ductile RC structural walls with RC SMRFs.
Sa/g - Average response acceleration coefficient for soil sites as per Fig.2 of IS: 1893-2016 and it is arrived based on appropriate natural periods as per clause 7.6.1 of IS: 1893-2016.

Time Period

Fundamental translational natural period of structure is calculated as per clause: 6.3.4 of IS: 16700 - 2023.

$$T_a = 0.0644\, H^{0.9} \text{ for concrete moment resisting frame systems; and}$$

H = Height of the building in meters as per clause: 6.3.4 of IS: 16700 - 2023

Design horizontal seismic coefficient (Ah) : (Z/2)*(Sa/g)*(I/R)
: (0.16/2)*(1.2/4) * (Sa/g)
Ah : 0.016 * (Sa/g)
Design seismic base shear, V_b : Ah * W where, W - seismic weight of building
Detailing as per IS-13920-2016 : Special moment resistant frame with ductile detailing

Table No : 02

Zone Factor, Z

(Clause 6.4.2)

Seismic Zone	II	III	IV	V
Seismic Intensity	Low	Moderate	Severe	Very Severe
Z	0.10	0.16	0.24	0.36

1.3.5 Environmental conditions, Corrosion and Fire protection for concrete and structural steel

- Environment : Moderate
- Exposure conditions : Concrete surfaces sheltered from severe rain or freezing Whilst wet Environment.
- Fire protection : Thickness of the structural elements as per table 15, 16 & 16A clause 26.4 of IS 456-2000.
- Minimum grade of concrete : Moderate exposure - M30
- Nominal cover to reinforcement : For Moderate Exposure Nominal cover should not be less than 30mm

- Nominal covers for 2 hr. fire resistance : As per IS 456:2000, Table 16A Clause 21.4 & 26.4.3 Two Hours fire rating is considered with minimum percentage of vertical reinforcement in walls is 0.25 % based on 500 deg centigrade Isotherms as per Euro code instead of 0.4% as per IS code.

Nominal Cover

Beams		Slabs		Ribs		Columns/Shear walls
Simply supported	Continuous	Simply supported	Continuous	Simply supported	Continuous	
mm	mm	mm	mm	mm	mm	mm
40	30	35	25	45	35	40

1.3.6 Temperature and shrinkage effect:

Horizontal floor displacement due to differential temperatures and shrinkage is of importance in long concrete buildings. It can be taken care of by either providing expansion joints at an appropriate spacing or designing structural members for the additional moments caused by the temperature and shrinkage effects. Pour strips at suitable locations shall also be considered where required.

1.3.7 Temperature Loads:

The effect of temperature will be considered wherever applicable in accordance with relevant Indian Codes. The coefficient for thermal expansion and contraction will be in accordance with IS: 456 and IS: 800 for concrete and steel respectively.

1.3.8 Exceptional Loads:

Loads due to the following catastrophe scenarios are not considered in the design.

- Exceptional loads due to terrorist attacks (Explosions)
- Accidental loads (Falling of aircraft on the building)
- Accidental hitting of vehicle on the façade
- Snow Load

1.4 MATERIALS:

Materials specified will conform to the latest edition of the relevant Indian Standard or other accepted standard. Specifications for materials will include sampling and testing as stipulated in the design standards. Detailed material specifications will be included in the Technical Specification.

1.4.1 Concrete:

- All structural concrete shall have cube crushing strength of M35 to M25 N/sq.mm at 28 days.
- Plain cement concrete shall have cube crushing strength of 10 N/sq.mm (M10) at 28 days.

Concrete Mix

Concrete item	Grade
Pile Caps / Retaining Walls	M30
Podium walls	M30
Podium Piles	M30
Slab, beams	M30
Ramps	M30

For Block 1

BUILDING FLOORS(WALLS & COLUMNS)	Grade
Foundation to 2nd Floor	M50
3rd Floor To 6th Floor	M45
7th Floor To 10th Floor	M40
11th Floor To 14th Floor	M35
15th Floor To Terrace Floor	M30

For Block 2

BUILDING FLOORS(WALLS & COLUMNS)	Grade
Foundation to Terrace Floor	M35

Reinforcement steel:

- All reinforcement shall confirm to IS: 1786 - 2008 having minimum yield strength of 415 N/sq.mm.
- All reinforcement shall confirm to IS: 1786 - 2008 having minimum yield strength of 550 N/sq.mm.

Structural Steel

All structural steel shall confirm to IS: 2062 with minimum yield strength of 250 N/sq.mm.

1.5 STRUCTURAL CONCEPT

- The Structural System comprises of beam slab and columns/RC walls system for basements and typical floor. Slabs and beams are considered to act as a rigid diaphragm to transfer the lateral forces to the RC walls and columns.

- The slabs for toilet areas are sunk as per PHE requirement. The cut outs in slab are based on the provisions given in Clause 31.8 of IS 456-2000. Predetermined sleeves shall be considered to accommodate utility services. Staircases are provided with mid-landing between the floors as per architectural layout.

For Block 1

	Description	Podium/ Tower
a)	Column grids	Varies
b)	Structural system	Flat Plate and Conventional slabs with SMRF Beams and RC column/RC walls
c)	Slab thickness	125/150/225/275/450/475 mm
d)	Column/RC Wall size	As per the design
g)	Peripheral beams	As per the design

For Block 2

	Description	Tower
a)	Column grids	Varies
b)	Structural system	Conventional slab, Beams and RC Walls/Columns with SMRF
c)	Slab thickness	125/150/250mm
d)	Column/RC Wall size	As per the design
g)	Peripheral beams	As per the design

Structural analysis and design:

General

- All R.C.C structures shall be designed according to the Limit State Method as specified in IS: 456 - 2000.
- The structure is idealized as 3D space frame and analyzed using **ETABS 2019** software package for both vertical and lateral loads.
- Forces and moments from the 3D analysis output for the worst combinations are used for the design of the structure.
- The structure is analyzed for specific loads like dead load, live load, and seismic loads and for the load combinations as given in the relevant codes.
- The slabs are analyzed as two-way and one way slabs.

Deflection Limits:

For Reinforced concrete works:

Limiting values of deflection (Short and Long term) as per clause 35.3 of IS: 456-2000 is followed in the design.

Limiting value for short term deflection is considered as span/250

As per IS1893 (Part1) :2016, Storey drift in any storey due to minimum specified design seismic lateral force shall not exceed 0.004 times the storey height design.

Cracking Limits:

Limiting values of crack width as per clause 35.3 of IS: 456-2000 is followed in the design.

In general for slabs and beams, the crack width is limited to 0.3mm.

For water retaining structures, crack width is limited to 0.2mm.

Load Combinations:

Load Combination	Limit State of Collapse			Limit State of Serviceability		
	DL	*LL*	*EL*	*DL*	*LL*	*EL*
DL + LL	1.5	1.5	–	1	1	–
DL + EL	1.5 or 0.9*	–	1.5	1	–	1
DL+LL+EL	1.2	1.2	1.2	1	0.8	0.8

The various loads are combined in accordance with the stipulations in IS: 875 (Part 5)-1987; whichever combination produces the most unfavorable effect in the building foundation or structural member concerned may be adopted.

***This value is to be considered when stability against overturning and stress reversal is critical where DL/LL/WL/EL denotes,**

DL - Dead Load; LL - Live Load; EL - Earthquake Load

Earthquake loads are considered for both x & y directions. Whenever imposed load is combined with earthquake load, the appropriate part of imposed load as specified in IS: 1893-2016 / Clause 7.3.1 of seismic code will be used both for evaluating earthquake effect and for combined load effects used in such combination.

Expansion joint/Separation joint:

Expansion / separation joint is not required in this building.

1.6 WATERPROOFING:

Toilets and Balconies:

Water proofing is done with Acrylic cementitious coating, made on all wall faces and one coat crystallization method with water is made on floor areas.

Terrace:

In the Terrace areas, water proofing is done with Acrylic cementitious coating as first layer & 100mm thick (Average thickness) screed concrete or brick coba as a topping layer shall be used.

1.7 DESIGN PHILOSOPHY:

Design Life

The design life of the building is assumed as 50 years. This requirement is applicable only for concrete works and not applicable to replaceable finishing materials, water proofing membrane and thermal insulations (if any). Hence periodic maintenance / refurbishment are required for all replaceable material for longer life.

Design Interface:

This structure has physical interface with almost all the disciplines like Geotechnical, MEP Services and Landscape etc. The Structure proposed is of cast in-situ concrete construction with columns suitably placed. The core walls around lifts, stairs are of cast in-situ concrete to resist lateral forces. The Structural design of the proposed project is based on Indian Standard Codes and is analyzed for Dead, Live, Wind and Seismic Load conditions taking into relevant load combinations recommended by the codes. The Vertical Loads including the dead and super imposed loads are transferred to the soil through columns, core walls and footings. Footings are sized with consideration to the safe bearing capacity of soil at the level of transfer of load recommended by specialist soil investigation consultants. The Lateral loads due to seismic forces are dissipated to soil through the proposed Reinforced Concrete Core Walls/columns. The type of footings proposed will be individual or Raft based on actual design

Foundation:

Foundations are designed depending upon Geo technical investigation report and will dissipate all the vertical and horizontal loads safely to the soil below. Pile foundations are envisaged depending on the soil report.

for DesignTree Service Consultants Pvt Ltd

for DesignTree Service Consultants Pvt Ltd

N. Arun Karanth

Registration No. SE / GR - I / 19 / 03 / 074

Registered Structural Engineer Grade - I (SE)



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Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

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