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Annexure -XIV

[See rule 51(3)]

Form 1

Structural Design Basis Report

(1) This report to accompany the application for Building Developments

Part I	General Data		
S.No.	Description	Information	Notes
1.	Site Address	Town Survey No – B/6/1/5, Coonoor Town, Coonoor Taluk, The Nilgiris District.	
2	Name of Owner	ATULIT DEVELOPERS LLP	
3	Name of Registered Developer along with the Registration Number	ATULIT DEVELOPERS LLP	
4	Name of Registered Architect/Engineer along with the Registration Number	S.VINEETH KUMAR, M.Arch– CA/2019/113080	
5	Name of Registered Structural engineer along with the Registration Number	S. ARUN KUMAR Coimbatore LPA/SE/GR- 1/0662024	
6	Use of the building	Commercial Usage	
7	Number of stories above ground level (including storeys to be added later, if any)	Ground+1	
8	Number of basements below ground level	-	
9	Type of structure Load bearing walls R.C.C. frame R.C.C. frame and Shear Walls Steel frame	R.C.C Frame and Shear Walls.	
10	Soil data Type of soil Design safe bearing capacity	Silty Soil	IS:1893 C1.6.3.5.2 IS:1904 IS: 1892 IS:2131 IS:2720

ARCHITECT

S. VINEETH KUMAR, M.Arch
Regd. Architect (CA/2019/113080)
Golden Ratio Architects
352,/114, Malliga Nivas,
Missionary Hills, Ooty -643001
Mobile: 97900 06296

ATULIT DEVELOPERS LLP
DESIGNATED PARTNER

S. ARUN KUMAR, ME., (Struct.)
Coimbatore LPA/SE/GR-1/066/2024

METIS STRUCTURES

9,9-1,Lakshmi Garden, Sankara Collage Road,
Saravanampatti, Coimbatore - 641035.
Coimbatore - 641035.
Mobile: 97900 06296

No.9,9-1,Lakshmi Garden,Sankara College Road,Saravanampatti, Coimbatore - 641035.

11	Dead loads (unit weight adopted)	(kN/m ³)	IS: 875 Part 1
	• Earth	• 18	
	• Water	• 10	
	• Brick masonry	• 20	
	• Plain cement concrete	• 24	
	• Reinforced cement concrete	• 25	
	• Floor finish		
	• Other fill materials		
12	Imposed (live) loads		IS: 875 Part 2
	Floor loads	3 kN/m ²	
	Roof loads	1.5 kN/m ²	
13	Cyclone/Wind		IS: 875 Part 3
	• Speed		
	• Design pressure intensity		
14	Seismic zone		IS: 1893 (2002)
15	Importance factor		IS:1893(2002) Table 6
16	Seismic zone factor (Z)		IS:1893 Table 2
17	Response reduction factor		IS:1893 Table 7
18	Fundamental natural period – approx.		IS:1893 C1.7.6
19	Design horizontal acceleration spectrum value (Ah)		IS: 1893 C1.6.4.2
20	Expansion/Separation Joints		
21	Building is regular/irregular		IS 1893

Enclose detailed drawings drawn to scale for each floor

In case terrace garden is provided, indicate additional fill load and live load along with the detailed drawings drawn to scale

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9,9-1, Lakshmi Garden, Sankara College Road,
Saravanampatti, Coimbatore - 35.
98441 035.

No.9,9-1, Lakshmi Garden, Sankara College Road, Saravanampatti, Coimbatore - 35.

Part 2		Load bearing masonry buildings								
Sl.No.	Description	Information			Notes					
1	Building category	NA			IS: 4326 C1.7 Read with IS:1893					
					Zone		II	III	IV	V
					Bldg.					
					Ordinary		B	C	D	E
				Important		C	D	E	E	
2	Basement Provided	NA								
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)	NA								
4	Type of wall masonry	NA								
5	Type and mix of Mortar	NA			IS: 4326 C1.8.1.2					
6	Re: size and position of openings (See note No.[i]) - Minimum distance(b_5) - Ratio $(b_1+b_2+b_3)/l_1$ or $(b_6+b_7)/l_2$ - Minimum pier width between consequent opening (b_4) - Vertical distance(h_3) - Ratio of wall height to thickness₄ - Ratio of wall length between cross wall to thickness	NA			IS: 4326 Table 4, Fig.7					
7	Horizontal seismic band - at plinth level - at window sill level - at lintel level - at ceiling level - at eave level of sloping roof - at top of gable walls - at top of ridge walls	P	IP	NA	(see note No.2) IS:4326 C1 8.4.6 IS: 4326 C1 8.3 IS: 4326 C18.4.2 IS: 4326 C18.4.3 IS: 4326 C18.4.3 IS: 4326 C1 8.4.8. IS: 4326 C1 8.4.9					
		}	}	}						
		}	}	}						
		}	}	}						
			}	}						
				}						
8	Vertical reinforcing bar at corners and T junction of walls at jambs of doors and window openings	}	}	}	IS: 4326 C1 8.4.8. IS: 4326 C1 8.4.9					
		}	}	}						
9	Integration of prefab roofing/flooring elements through reinforced concrete screed.	}	}	}	IS:4326 C1 9.1.4					

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9,9-1,Lakshmi Garden, Sankara Collage Road,

Saravananpatti, Coimbatore-641 035.

GSTIN : 33AAXFM9597P1ZT

No.9,9-1,Lakshmi Garden,Sankara College Road,Saravananpatti, Coimbatore-641 035.

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10	Horizontal bracings in pitched truss in horizontal plane at the level of ties in the slopes of pitched roofs	} }	
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Notes: (i) Information in Item 6 should be given on separate A4 sheets for all walls with large number of openings

(ii) IP indicated "Information Provided"

IP indicates "Information to be provided" NA

indicates "Not Applicable"

Tick mark one box



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Part 3	Reinforced concrete framed buildings		
Sl. No.	Description	Information	Notes
1	Type of building - Regular frames - Regular frames with Shear Walls - Irregular frames - Irregular frames with Shear Walls - Soft storey	Regular frames with Shear Walls	IS: 1893 C1 7.1
2	Number of basements	-	
3	Number of floors including ground floor	G+1	
4	Horizontal floor system - Beams and slabs - Waffles - Ribbed floor - Flat slab with drops - Flat plate without drops	Beams and slabs	
5	Soil data - Type of soil - Recommended type of foundation -Independent footings -Raft -Piles - Recommended bearing capacity of soil - Recommended type, length, diameter and load capacity of piles - Depth of watertable - Chemical analysis of groundwater - Chemical analysis of soil	Silty Soil Piles 9m	IS: 1498
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles	9m Piles	
7	System of interconnecting foundations Plinth beams Foundation beams	Foundation Beams	IS: 1893 C1 7.12.1
8	Grades if concrete used in different parts of building	25 kN/m ²	
9	Method of analysis used OP	Frame Analysis	
10	Computer software used	STAAD Pro	
11	Torsion included		IS: 1893 C1 7.9

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12	Base shear a. Based on approximate fundamental period b. Based on dynamic analysis c. Ratio of a/b		IS: 1893 Cl. 7.5.3
13	Distribution of seismic forces along the height of the building.		IS:1893 Cl.7.7 (Provide sketch)
14	The Column of soft ground storey specially designed.		IS: 1893 Cl.7.10
15	Clear minimum cover provided in • Footing • Column • Beams • Slabs • Walls	• 50mm • 40mm • 25mm • 20mm • 25mm	IS: 456 Cl. 26.4
16	Ductile detailing of RC frame • Type of reinforcement used • Minimum dimension of beams • Minimum dimension of columns • Minimum percentage of reinforcement of beams at any cross section • Maximum percentage of reinforcement at any section of beam • Spacing of transverse reinforcement in 2-d length of beams near the ends • Ratio of capacity of beams in shear to capacity of beams in flexure • Maximum percentage of reinforcement in column		IS: 456 Cl. 5.6 IS: 13920 Cl.6.1 IS: 13920 Cl.7.1.2 IS: 456 Cl.26.5.1(a) IS: 13920 Cl.6.2.1 IS: 456 Cl.26.5.1.1(b) IS: 13920 Cl.6.2.2 IS: 13920 Cl.6.3.5 IS: 456 Cl.26.5.3.1 IS: 13920 Cl. 7.4
	• Confining stirrups near ends of columns and in beam-column joints Diameter Spacing • Ratio of shear capacity of columns to maximum seismic shear in the storey.		
17	Does the features require clearance by SDRP Example: High rise building Prefab building Building in hazard prone areas		

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Part 4	Buildings in structural steel		
1	Adopted method of design	- Simple - Semi-rigid - Rigid	IS:800 Cl.3.4.4 IS:800 Cl.3.4.5 IS:800 Cl.3.5.6
2	Design based on	- Elastic analysis - Plastic analysis	IS: 800 Section-9 SP;6 (6)
3	Floor construction	- Composite - Noncomposite - Boarded	
4	Roof construction	- Composite - Noncomposite - Metal - Any other	
5	Horizontal force resisting system adopted	Frames Braced frames Frames & shear walls	Note: Seismic force As per IS:1893 Would depend on system
6	Slenderness ratios maintained	Members defined in Table 3.1, IS:800	IS 800; Cl.3.7
7	Member deflection limited to	Beams, Rafters Crane Girders, Purlins Top of columns	IS:800 Cl.3.13
8	Structural members	- Encased in concrete - Not encased	IS: 800 Section-10
9	Proposed material	- General weld-able - High strength - Cold formed - Tubular	IS:2062 IS:8500 IS: 801, 811 IS: 806
10.	Minimum metal thickness Specified for corrosion protection	- Hot rolled sections - Cold formed sections - Tubes	IS: 800, Cl.3.8 Cl.3.8.1 to Cl.3.8.4 Cl.3.8.5
11	Structural connections	- Rivets - CT Bolts - S H F GBolts - Black Bolts - Welding field Shop (Specify welding type proposed)Composite	IS: 800, Section-8 IS: 1929, 2155, 1149 IS 6639,1367 IS 3757,4000 IS: 1363, 1367 IS: 816, 814,1395, 7280,3613, 6419, 6560, 813, 9595
12	Minimum Fire rating proposed, with method	- Rating.....hour s - Method proposed. -In tumescent painting -Spraying -Quilting -Fire retardant boarding	IS: 1641, 1642, 1643

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GSTIN: 33AAXFM9597P1ZT

Foundation

- i. In case raft foundation has been adopted, indicate K value used for analysis of the raft.
- ii. In case pile foundations have been used, give full particulars of the piles, type, dia, length, capacity
- iii. In case of high water table, indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

Idealization for Earthquake analysis

- i. In case of composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system
- ii. Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.
- iii. Submit framing plans of each floor
- iv. In case of basements, indicate the system used to contain earth pressures.

Part-5

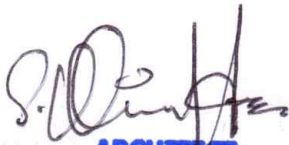
Any special weakness in the building making it vulnerable for stability related failure and the precaution to be taken during execution/completion and finishing to be indicated.

Part-6

Recommendations of structural Engineer with respect to special requirements needed with respect to structural safety and stability to be taken note of by competent authority feature like incorporation of swimming pool, heavy load on roof, prefabricated structure or any other hazardous features should be included.

Remarks

The **Structural Soundness and Safe** of the Building has been Verified by me and declare that the building **structurally sound and safe** to be used as commercial building.

**ARCHITECT**

S. VINEETH KUMAR, M.Arch
Regd. Architect (CA/2019/113080)
Golden Ratio Architects
352, /114, Malliga Nivas,
Missionary Hills, Ooty -643001
Mobile :9994392581

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STABILITY CERTIFICATE

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

It is certified that the proposed construction **Commercial Building for Atulit Developers LLP** located at Town Survey No - B/6/1/5 of Coonoor Town, Coonor Taluk, The Nilgiris District. is designed to resist earthquake. Check has been made and I hereby certify that.

1. The minimum grade of concrete is **M25**.
2. The design and analysis using the code of practice for plain and reinforced concrete as per IS 456, Design Loads as per **IS 875 PART I & II** and Design of Earthquake resistant Structure as per IS1893 - 2016 are carried out.

Remarks

The Structure is checked and it is found to be Safe and Sound for the commercial purpose for which it is designed to be used.

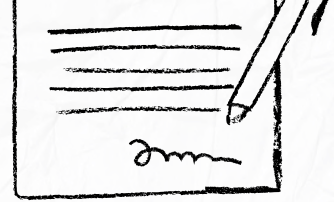


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ATULIT DEVELOPERS LLP
DESIGNATED PARTNER
Stamp and Signature

Encl.: Structural Design Calculation

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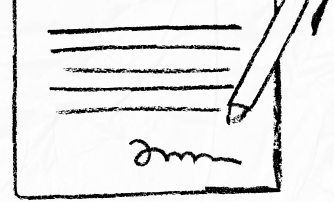
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