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BURO ENGINEERS (I) PRIVATE LTD.,
Civil & Structural Consultants
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e-mail : buroindia@buroengineers.in, admin@buroengineers.in
CIN : U45201TN2005PTC055334

STABILITY CERTIFICATE

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

It is certified that the proposed construction of high rise residential building consists of 2 Towers with combined Basement & Stilt; Tower-1: stilt floor +13 upper floors with 182 dwelling units; Tower-2: Stilt floor+13 upper floors with 195 dwelling units and combined with club house :stilt floor+ 4 upper floors with gym,indoor games, spa & swimming pool on the first floor level. totally 377 dwelling units, comprised in T.S.nos.12/2, 13/2 & 15/1. OLD survey nos.226 (pt), 227 (pt) & 228 (pt)) in block no.1, ward-aq, south zone, kumarapalayam village, perur taluk, coimbatore district is designed to resist earthquake. Check has been made and found safe and I hereby certify that:

1. The minimum grade of concrete is M30.

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 - V and Design of Earthquake resistant structure as per IS 1893, is carried out.

The building will be safe and sound when used for the purpose for which it is designated.

Date : 26.10.2024
Place : Chennai

Signature of the Certified Engineer

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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

Part1	General Data		
S.No.	Description	Information	Notes
1.	Site Address	T.S.nos.12/2, 13/2 & 15/1 corresponding to its old survey nos.226 (pt), 227 (pt) & 228 (pt)) in block no.1, ward-AQ, situated in perur main road of kumarapalayam village, perur taluk, coimbatore district.	
2.	Name of Owner/Represented By	M/s Radiance Realty Developers	
3.	Name of Registered Developer along with the Registration Number	RD/004/2022	
4.	Name of Registered Architect/Engineer along with the Registration Number	Mr.S.MURALIDHARAN CGLRGN/RA/GR-1/2019/11/043	
5.	Name of Registered Structural engineer along with the Registration Number	Mr. P. JEGATHEESAN – CGLRGN/SE/GR-1/2019/07/020	
6.	Use of the building	Residential Use	

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8.	Number of basements below Ground level	1	
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	 Hard 35 tons/m^2	IS:1893 C1.6.3.5.2 IS: 1904 IS: 1892 IS: 2131 IS: 2720
11.	Dead loads (unit weight adopted) Earth Water Brick masonry Plain cement concrete Reinforced cement concrete Floor finish Other fill materials	 18kN/m^3 10kN/m^3 20kN/m^3 24kN/m^3 25kN/m^3 1.20kN/sq.m (50mmx24) Filling Depthx12 kN/m^3	IS: 875 Part 1
12.	Imposed (live) loads Floor loads Roof loads	 2 kN/m^2 3 kN/m^2	IS: 875 Part 2
13.	Cyclone/Wind Speed Design pressure intensity	 39 910 N/m^2	IS: 875 Part 3

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14.	Seismic zone	III		IS: 1893 (2002)
15.	Importance factor	1.2		IS:1893(2002) Table 6
16.	Seismic zone factor (Z)	0.16		IS:1893 Table 2
17.	Response reduction factor	4		IS:1893 Table 7
18.	Fundamental natural period – approx.	Block 1 Tax- 0.58 Tay- 0.675	Block 2 Tax-0.586 Tay-0.594	IS:1893 C1.7.6
19.	Design horizontal acceleration spectrum value, (Ah)	Block 1 Ahx =0.04 Ahy =0.036	Block 2 Ahx =0.041 Ahy =0.04	IS: 1893 C1.6.4.2
20.	Expansion/Separation Joints	Yes		
21.	Building is regular/Irregular	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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Part 2	Load bearing masonry buildings		
Sl.No.	**Description**	**Information**	**Notes**
1.	Building category	NA	IS: 4326 C1.7 Read with IS:1893 Zone / Bldg. — II, III, IV, V 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 (b5) Ratio (b1+b2+b3)/11 or (b6+b7)/12 Minimum pier width between consequent opening (b4) Vertical distance (h3) Ratio of wall height to thickness 4Ratio of wall length between cross wall to thickness	NA	IS: 4326 Table 4, Fig.7
7.	Horizontal seismic band	P / IP / NA	(see note No.2) IS:4326 C1
	at plinth level	☐ ☐	8.4.6
	at window sill level	☐ ☐ ☑	
	at lintel level	☐ ☐ ☑	IS: 4326 C1 8.3
	at ceiling level	☐ ☐ ☑	
	at eave level of sloping roof	☐ ☐ ☑	IS: 4326 C1 8.4.2

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	at top of gable walls at top of ridge walls	☐ ☐	☐ ☐	☑ ☑	IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.3 IS: 4326 Cl 8.4.4
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
10	Horizontal bracings in pitched truss in horizontal plane at the level of ties in the slopes of pitched roofs	☐ ☐	☐ ☐	☑ ☑	

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	1	
3.	Number of floors including ground floor	B1+G+13+Roof	
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 water table Chemical analysis of ground water	Hard Independent footings (600 - 1000mm depth) Raft (D=900mm) 35 tons/m^2	IS: 1498

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	Chemical analysis of soil		
6.	Foundations Depth below ground level Type Independent Interconnected Raft Piles	 Independent Raft	
7.	System of interconnecting foundations Plinth beams Foundation beams	Raft	IS: 1893 C1 7.12.1
8.	Grades if concrete used in different parts of building	M30 and M40	
9.	Method of analysis used	3D Analysis	
10	Computer software used	ETABS	
11.	Torsion included	Building doesn't have torsion	IS: 1893 C1 7.9
12.	Base shear a. Based on approximate fundamental period b. Based on dynamic analysis c. Ratio of a/b	Based on Wall area Method	IS: 1893 Cl. 7.5.3
13.	Distribution of seismic forces along the height of the building Ground- 1st- 2nd- 3rd- 4th- 5th-	Block A X-DIR(kN) / Y-DIR(kN) 25189 / 21153 12449 / 10697 7958 / 8296 7414 / 7669 6737 / 6900 5928 / 6318	

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	6th- 7th- 8th- 9th- 10th- 11th- 12th- 13thv- Roof-	5186 4694 4478 4410 4309 4045 3544 2777 1734	5980 5689 5304 4886 4594 4449 4234 3645 2468	
		Block B		
		X-DIR(kN)	Z-DIR(kN)	
	Ground- 1st- 2nd- 3rd- 4th- 5th- 6th- 7th- 8th- 9th- 10th- 11th- 12th- 13thv- Roof-	27303 14084 11021 10322 9670 8778 7819 7057 6619 6393 6235 5957 5377 4359 2821	29387 13941 9336 8467 8064 7408 6580 5873 5458 5235 5043 4712 4129 3234 2004	
14.	The Column of soft ground storey specially designed.	No Soft Story		IS: 1893 Cl.7.10
15.	Clear minimum cover provided in Footing Column Beams Slabs	 50mm 40mm SS Beam 40mm Cont Beam 30mm 25mm		IS: 456 Cl. 26.4

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	Walls	30mm	
16.	Ductile detailing of RC frame		IS: 456 Cl. 5.6
	Type of reinforcement used	High Strength Deformed Steel Bars	IS: 13920 Cl.6.1
	Minimum dimension of Beams	200x300mm	IS: 13920 Cl.7.1.2 IS: 456 Cl.26.5.1(a)
	Minimum dimension of Columns	300x600mm	IS: 13920 Cl.6.2.1 IS:456 Cl.26.5.1.1(b)
	Minimum percentage of reinforcement of beams at any cross section	0.2% Min.	IS: 13920 Cl.6.2.2 IS: 13920 Cl.6.3.5
	Maximum percentage of reinforcement at any section of beam	4% Max.	IS: 456 Cl.26.5.3.1 IS: 13920 Cl. 7.4
	Spacing of transverse reinforcement in 2-d length of beams near the ends	100mm	
	Ratio of capacity of beams in shear to capacity of beams in flexure	1.2	
	Maximum percentage of reinforcement in column	4%	
	Confining stirrups near ends of columns and in beam-column Joints Diameter Spacing	T10-100	
	Ratio of shear capacity of columns to maximum seismic Shear in the storey.	1.2	

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17.	Does the features require clearance by SDRP Example: High rise building Prefab building Building in hazard prone areas	NA	

Foundation

i. In case raft foundation has been adopted, indicate K value used for analysis of the raft.

We adopted K value based on the value suggested by the soil consultant

ii. Incase 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 4	Buildings in structural steel		
Sl. No.	Description	Information	Notes
1.	Adopted method of design	o Simple o Semi-rigid o Rigid	IS:800 Cl 3.4.4 IS:800 Cl.3.4.5 IS:800 Cl.3.5.6
2.	Design based on	o Elastic analysis o Plastic analysis	IS: 800 Section-9 SP;6 (6)
3.	Floor construction	o Composite o Non composite	

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		o Boarded	
4.	Roof construction	o Composite o Non composite o Metal o 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	o Encased in concrete Not encased	IS: 800 Section-10
9.	Proposed material	o General weld-able o High strength o Cold formed o Tubular	IS: 2062 IS: 8500 IS: 801, 811 IS: 806
10.	Minimum metal thickness Specified for corrosion protection	o Hot rolled sections o Cold formed sections o Tubes	IS: 800, Cl.3.8 Cl.3.8.1 to Cl.3.8.4 Cl.3.8.5
11.	Structural connections	o Rivets o CT Bolts	IS: 800, Section-8 IS: 1929, 2155, 1149

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		o S H F G Bolts o Black Bolts o Welding field Shop (Specify welding type proposed) Composite	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... hours Method proposed. -In tumescent painting -Spraying -Quilting -Fire retardant boarding	

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.

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