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Dated. 26/06/2024
F.No.

BELLIAPPA & ASSOCIATES
CONSULTING ENGINEERS & VALUERS

STRUCTURAL STABILITY CERTIFICATE

I hereby certify that the Proposed Residential Building at Plot no. 5, Old.No.46 & 46/1, New.No.89 & 89/1, Bazullah Road, T. Nagar, Chennai - 600 017

- ✓ The building is RCC framed structure. (Stilt + 5 Floors) – 15 Dwelling units Residential
- ✓ Design is based on limit state method of Design
- ✓ The building is found to be safe and sound.

LIST OF REFERENCE

1. Indian Standard Code of Practice for Design Loads (other than Earthquake) for buildings and structures **IS:875 (Part 1) 1987**. (Dead load)
2. Indian Standard Code of Practice for Design Loads (other than Earthquake) for buildings and structures **IS:875 (Part 2) 1987**. (Live load)
3. Indian Standard Code of Practice for Design Loads (other than Earthquake) for buildings and structures **IS:875 (Part 3) 2015**. (Wind load)
4. Indian Standard Criteria for Earthquake Resistant Concrete Code of Practice **IS:456:2000**
5. Indian Standard Criteria for Earthquake Resistant Design of Structure **IS:1893(Part 1):2016**
6. **SP-16-1980**, Design Aids for reinforced concrete to **IS:456-1978**
7. **SP:24-1983**. Explanatory Hand book on Indian Standard Code of Practice for Reinforced Concrete to **IS:456-1978**

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2.) FOUNDATION

The soil report is enclosed in this report as provided by the client. Based on the report provided by Geo Mines Engineets, PVT. LTD, Strip raft is recommended at 2.0m depth for Residential building. SBC is 12 T/m^3 at 2.0m depth from Existing Ground Level.

3.) MATERIAL & WORKMANSHIP

The proposed structure will consist of concrete with steel reinforcement as the main materials for construction of the structure.

Concrete shall be in grades designed as per IS 456 : 2000

Footing – M25

Pedestal – M25

Columns – M35

Slab and Beams –M25

Clear cover – As per SP:34 (S&T) – 1987 – Hand book on concrete reinforcement and detailing

Slab – 15mm (Clause 9.2.2)

Beam – 25mm (Clause 8.1)

Column – 40mm (Clause 4.1b)

Pedestal – 40mm

Pile – 75mm

Reinforcement

The grade of steel adopted is Fe 500 conforming to IS 1786-1985 (Clause 1.1.b)

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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	Plot NO. 5, Door NO. 89 & 89/1 Bazullata Road, T. Nagar, Ch-17. TS NO. 7991/11	
2	Name of Owner	GHATALA DEVELOPERS & PROPERTIES PVT LTD	
3	Name of Registered Developer along with the Registration Number		
4	Name of Registered Architect/Engineer along with the Registration Number		
5	Name of Registered Structural engineer along with the Registration Number	Bopayya SE/GR-I/19105/125 [CMDA] RSE 100552019 [Corp of Chennai]	
6	Use of the building		
7	Number of stories above ground level (including storeys to be added later, if any)	S+5	
8	Number of basements below ground level	N.A	
9	Type of structure Load bearing walls R.C.C. frame R.C.C. frame and Shear Walls Steel frame	R.C.C Frame	
10	Soil data Type of soil Design safe bearing capacity	Silty clay 12 t/m²	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	17.5 kn/m³ 10.0 kn/m³ 20.0 kN/m³ 24.0 kn/m³ 25.0 kN/m³ 20.0 kn/m³	IS: 875 Part 1
12	Imposed (live) loads Floor loads Roof loads	2.0 kn/m² 1.5 kN/m²	IS: 875 Part 2
13	Cyclone/Wind • Speed • Design pressure intensity	50 m/sec 1579 N/m²	IS: 875 Part 3

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14	Seismic zone	III	IS: 1893 (2002)
15	Importance factor	1	IS:1893(2002) Table 6
16	Seismic zone factor (Z)	0.16	IS:1893 Table 2
17	Response reduction factor	5	IS:1893 Table 7
18	Fundamental natural period – approx.	Tx = 0.508 Ty = 0.341	IS:1893 C1.7.6
19	Design horizontal acceleration spectrum value (A_h)	Ahx = 0.034 Ahy = 0.04	IS: 1893 C1.6.4.2
20	♥ Expansion/Separation Joints	Nil	
21	Building is regular/irregular	Regular	IS 1893

♥ Enclose detailed drawings drawn to scale for each floor — Enclosed each Floor drawing

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

Nill

Part 2	Load bearing masonry buildings N.A		
Sl.No.	**Description**	**Information**	**Notes**
1	Building category		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		
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)		
4	Type of wall masonry		
5	Type and mix of Mortar		IS: 4326 C1.8.1.2
6	Re: size and position of openings (See note No.[i]) • Minimum distance (b5) • 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 thickness 4 Ratio of wall length between cross wall to thickness		IS: 4326 Table 4, Fig.7
7	Horizontal seismic band • at plinth level • at window sill level • at lintel level • at ceiling level	P IP NA ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	(see note No.2) IS:4326 C1 8.4.6 IS: 4326 C1 8.3 IS: 4326 C1 8.4.2 IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.3

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	• at eave level of sloping roof • at top of gable walls • at top of ridge walls	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	IS: 4326 C1 8.4.3 IS: 4326 C1 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

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	IS: 1893 C1 7.1
2	Number of basements	Nill	
3	Number of floors including ground floor	S+5	
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	Strip Raft 12 t/m2.	IS: 1498

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	• Recommended type, length, diameter and load capacity of piles • Depth of water table • Chemical analysis of ground water • Chemical analysis of soil		
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles	Strip Raft	
7	System of interconnecting foundations Plinth beams Foundation beams	plinth Beams	IS: 1893 C1 7.12.1
8	Grades if concrete used in different parts of building	Column – M50 Remaining Nos – M25	
9	Method of analysis used	Dynamic Response Spectrum Analysis	
10	Computer software used	ETABS & Substitute frame Analysis	
11	Torsion included		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 Approximate Fundamental Period	IS: 1893 Cl. 7.5.3
13	Distribution of seismic forces along the height of the building.	V_b = 1748 KN	IS:1893 Cl.7.7 (Provide sketch)
14	The Column of soft ground storey specially designed.	No	IS: 1893 Cl.7.10
15	Clear minimum cover provided in • Footing • Column • Beams • Slabs • Walls	50 mm 40 mm 25 mm 15 mm 25 mm	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	Fe 500 230 mm 230 mm 0.2% 4% d/4, &d 8 times of longitudinal bars.	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

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	• 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.	8mm 100mm	
17	Does the features require clearance by SDRP Example: High rise building Prefab building Building in hazard prone areas	No	

Foundation

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

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** N.A		
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 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	Beams, Rafters	IS:800 Cl.3.13

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TNE10065E 2019

	limited to	Crane Girders, Purlins Top of columns	
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 o S H F G Bolts o Black Bolts o 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	o Rating.....hours o Method proposed. -In tumescent painting -Spraying -Quilting -Fire retardant boarding	IS: 1641, 1642, 1643

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.

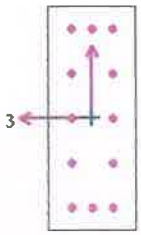
Part-6

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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ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Summary)



Column Element Details

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (mm)	LLRF	Type
1	C1	5	COL 230 X 600	UDConS21	0	3200	1	Non Sway Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
230	600	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
33541.02	45	1	500	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Axial Force and Biaxial Moment Design For P_u , M_{u2} , M_{u3}

Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Minimum M_2 kN-m	Minimum M_3 kN-m	Rebar Area mm²	Rebar % %
227	122.6229	-38.4312	4.5351	5.6122	4470	3.24

Axial Force and Biaxial Moment Factors

	K Factor Unitless	Length mm	Initial Moment kN-m	Additional Moment kN-m	Minimum Moment kN-m
Major Bend(M3)	0.689553	2375	-15.3725	0	5.6122
Minor Bend(M2)	0.825999	2375	49.0491	0	4.5351

Shear Design for V_{u2} , V_{u3}

	Shear V_u kN	Shear V_c kN	Shear V_s kN	Shear V_p kN	Rebar A_{sv} /s mm²/m
Major, V_{u2}	29	117	50	0	255
Minor, V_{u3}	92	103	41	0	665

Joint Shear Check/Design

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	Joint Shear Force kN	Shear V_{Top} kN	Shear $V_{u,Tot}$ kN	Shear V_c kN	Joint Area cm²	Shear Ratio Unitless
Major Shear, V_{u2}	N/N	N/N	N/N	N/N	N/N	N/N
Minor Shear, V_{u3}	N/N	N/N	N/N	N/N	N/N	N/N

(1.4) Beam/Column Capacity Ratio

Major Ratio	Minor Ratio
N/N	N/N

Additional Moment Reduction Factor k (IS 39.7.1.1)

A_g cm²	A_{sc} cm²	P_{uz} kN	P_b kN	P_u kN	k Unitless
1380	44.7	4471	1143	227	1

Additional Moment (IS 39.7.1)

	Consider M_a	Length Factor	Section Depth (mm)	KL/Depth Ratio	KL/Depth Limit	KL/Depth Exceeded	M_a Moment (kN-m)
Major Bending (M_3)	Yes	0.742	600	2.729	12	No	0
Minor Bending (M_2)	Yes	0.742	230	8.529	12	No	0

Notes:

N/A: Not Applicable

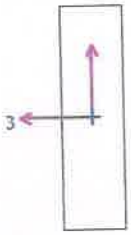
N/C: Not Calculated

N/N: Not Needed

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ETABS Concrete Frame Design

IS 456:2000 + IS 13920:2016 Beam Section Design (Summary)



Beam Element Details

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (mm)	LLRF	Type
1	B3	693	BEAM 230 X 825	UDConS20	375	4438	1	Ductile Frame

Section Properties

b (mm)	h (mm)	b_f (mm)	d_s (mm)	d_{ct} (mm)	d_{cb} (mm)
230	825	230	0	60	60

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
25000	25	1	500	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Factored Forces and Moments

Factored M_{u3} kN-m	Factored T_u kN-m	Factored V_{u2} kN	Factored P_u kN
-166.4299	0.0006	143	0

Design Moments, M_{u3} & M_t

Factored Moment kN-m	Factored M_t kN-m	Positive Moment kN-m	Negative Moment kN-m
-166.4299	0.0018	0	-166.4316

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Design Moment and Flexural Reinforcement for Moment, M_{u3} & T_u

	Design -Moment kN-m	Design +Moment kN-m	-Moment Rebar mm²	+Moment Rebar mm²	Minimum Rebar mm²	Required Rebar mm²
Top (+2 Axis)	-166.4316		533	0	533	422
Bottom (-2 Axis)		0	267	0	0	267

Shear Force and Reinforcement for Shear, V_{u2}& T_u

Shear V_e kN	Shear V_c kN	Shear V_s kN	Shear V_p kN	Rebar A_{sv} /s mm²/m
190	0	190	116	690

Torsion Force and Torsion Reinforcement for Torsion, T_u& V_{U2}

T_u kN-m	V_u kN	Core b_1 mm	Core d_1 mm	Rebar A_{svt} /s mm²/m
0.0006	143	130	725	0

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CONCRETE GRADE : 25 N/mm^2 | **DESIGN OF ONE WAY SLAB** | PAGE NO : 1

STEEL GRADE : 500 N/mm^2 | Over Ground Floor | DONE BY : SAM

S --> SIMPLY SUPPORTED | JOB NO : 6453

C --> CONTINUOUS | PROJECT : GATALA - BAZULLAH RD

SLAB NAME	Lx m	Lx^2 m^2	W kg/m^2	WLx^2 kg-m	1.5WLx^2 kg-m	D cm	COND S (OR) C	1.5WLx^2 / 8 kg-m	1.5WLx^2 / 10 kg-m	1.5WLx^2 / 12 kg-m
S2	1.915	3.67	1550	5684.2	8526.3	12.5	S	10.66	0.00	0.00
				"D" based on l/d =		9.58		2.82	0.00	0.00
				C/C SPACING IN CMS OF DIA		8	mm	17.50	ERR	ERR

RESULT | D = 12.5 cm | Y8 @ 7 inch

Load Transfer On Beam Along Lx Direction

In Shoter Direction 1484.125

	0.00		0	0	12.5	S	0.00	0.00	0.00
			"D" based on l/d =		0.00		0.00	0.00	0.00
			C/C SPACING IN CMS OF DIA		8	mm	ERR	ERR	ERR

RESULT | D = ERR | ERR @ ERR

Load Transfer On Beam Along Lx Direction

In Shoter Direction ERR

	0.00		0	0	15.0	S	0.00	0.00	0.00
			"D" based on l/d =		0.00		0.00	0.00	0.00
			C/C SPACING IN CMS OF DIA		10	mm	ERR	ERR	ERR

RESULT | D = ERR | ERR @ ERR

Load Transfer On Beam Along Lx Direction

In Shoter Direction ERR

	0.00		0	0	15.0	S	0.00	0.00	0.00
			"D" based on l/d =		0.00		0.00	0.00	0.00
			C/C SPACING IN CMS OF DIA		8	mm	ERR	ERR	ERR

RESULT | D = ERR | ERR @ ERR

Load Transfer On Beam Along Lx Direction

In Shoter Direction ERR

	0.00		0	0	12.5	S	0.00	0.00	0.00
			"D" based on l/d =		0.00		0.00	0.00	0.00
			C/C SPACING IN CMS OF DIA		12	mm	ERR	ERR	ERR

RESULT | D = ERR | ERR @ ERR

Load Transfer On Beam Along Lx Direction

In Shoter Direction ERR

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SE/GR-I/19/05/125
RSE190552019
CGLRGN/SE/Gr-I/2019/11/048.

JOB NO : 6453

TWO WAY SLAB DESIGN (AS PER IS 456)

PROJECT NAME : GATALA - BAZULLAH RD

CONCRETE MIX : 25 n / m^2 | STEEL GRADE : 500 n / m^2

NAME	Lx	Ly	Lx^2	W	1.5WLx^2	Ly/Lx	Cond	D	Mx	(kn-m)	My	(kn-m)
Units	m	m	m^2	kg / m^2	kg-m	-	-	cm	-&x	+&x	-&y	+&y
S1	3.90	4.95	15.2	1000	22756.538	1.27	9	12.5	0	0.079	0	0.056
			Ly/Lx	ROUND	TO === =	1.3			0.00	17.98	0.00	12.74
						Lx/35	= ======	11.1	0.00	4.75	0.00	3.37
			C/C Spacing in CMS Diameter ----------					8	ERR	10	ERR	12.5

RESULT : D = 12.50 cm | Y 8 @ 4 inch | Y 8 @ 5 inch

Load Transfer On Beam Along Lx & Ly Direction

In Longer Direction 1545 In Shoter Direction 1298

			0.0	800	0	#DIV/0!	9	12.5	#DIV/0!	#DIV/0!	0	0.056
			Ly/Lx	ROUND	TO === =	#DIV/0!			#DIV/0!	#DIV/0!	0.00	0.00
						Lx/35	= ======	0	#DIV/0!	#DIV/0!	0.00	0.00
			C/C Spacing in CMS Diameter ----------					8	#DIV/0!	#DIV/0!	ERR	#DIV/0!

RESULT : D = 12.50 cm | Y 8 @ #DIV/0! | Y 8 @ #DIV/0!

Load Transfer On Beam Along Lx & Ly Direction

In Longer Direction #DIV/0! In Shoter Direction 0

			0.0	850	0	#DIV/0!	9	15	#DIV/0!	#DIV/0!	0	0.056
			Ly/Lx	ROUND	TO === =	#DIV/0!			#DIV/0!	#DIV/0!	0.00	0.00
						Lx/35	= ======	0	#DIV/0!	#DIV/0!	0.00	0.00
			C/C Spacing in CMS Diameter ----------					10	#DIV/0!	#DIV/0!	ERR	#DIV/0!

RESULT : D = 15.00 cm | Y 10 @ #DIV/0! | Y 10 @ #DIV/0!

Load Transfer On Beam Along Lx & Ly Direction

In Longer Direction #DIV/0! In Shoter Direction 0

			0.0	910	0	#DIV/0!	4	12.5	#DIV/0!	#DIV/0!	-0.047	0.035
			Ly/Lx	ROUND	TO === =	#DIV/0!			#DIV/0!	#DIV/0!	0.00	0.00
						Lx/35	= ======	0	#DIV/0!	#DIV/0!	0.00	0.00
			C/C Spacing in CMS Diameter ----------					8	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

RESULT : D = 12.50 cm | Y 8 @ #DIV/0! | Y 8 @ #DIV/0!

Load Transfer On Beam Along Lx & Ly Direction

In Longer Direction #DIV/0! In Shoter Direction 0

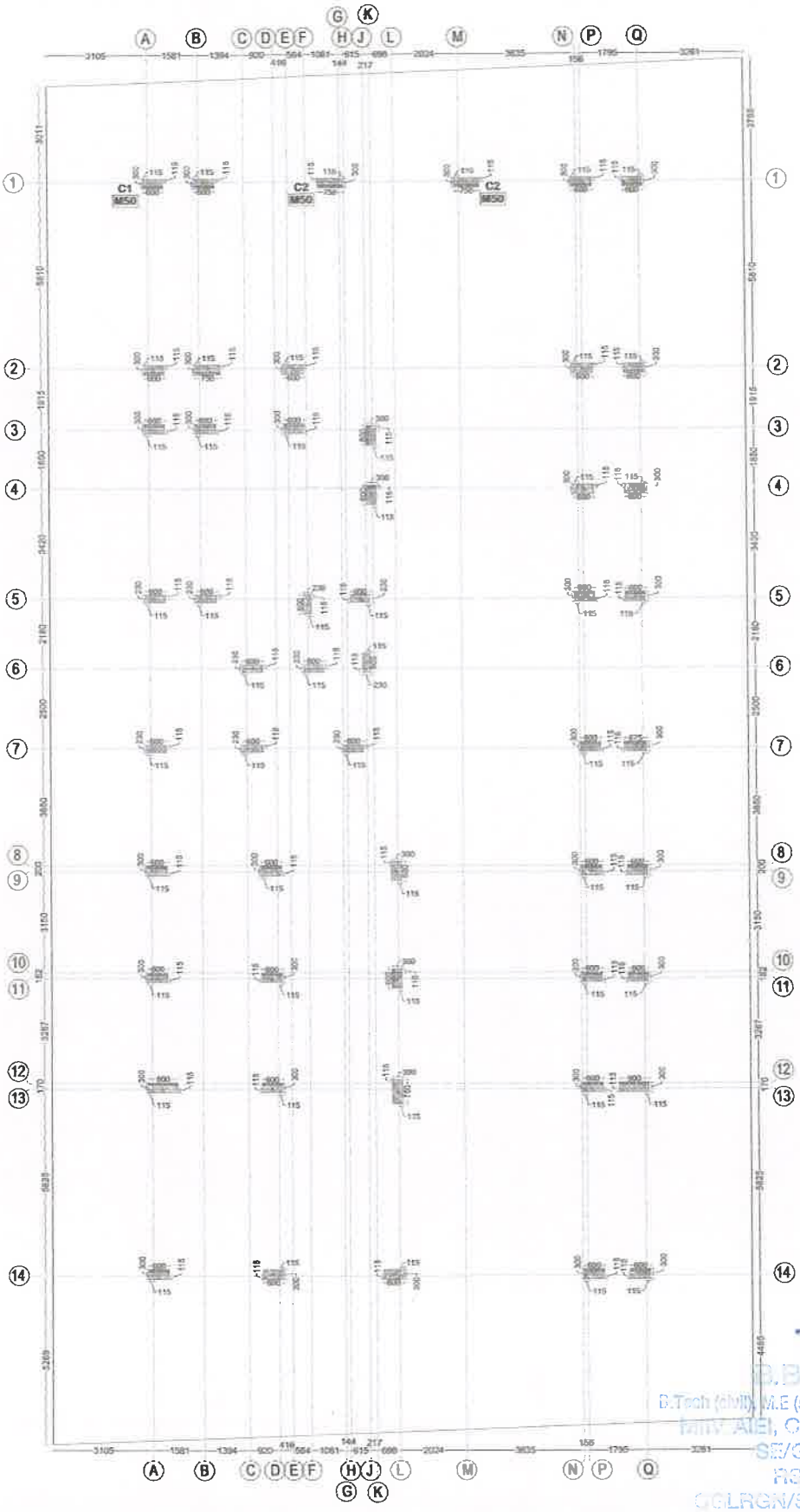
			0.0	910	0	#DIV/0!	9	12.5	#DIV/0!	#DIV/0!	0	0.056
			Ly/Lx	ROUND	TO === =	#DIV/0!			#DIV/0!	#DIV/0!	0.00	0.00
						Lx/35	= ======	0	#DIV/0!	#DIV/0!	0.00	0.00
			C/C Spacing in CMS Diameter ----------					8	#DIV/0!	#DIV/0!	ERR	#DIV/0!

RESULT : D = 12.50 cm | Y 8 @ #DIV/0! | Y 8 @ #DIV/0!

Load Transfer On Beam Along Lx & Ly Direction

In Longer Direction #DIV/0! In Shoter Direction 0

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PGE100552019
GGLRGN/SE/Gr-I/2019/11/045.

REV	DESCRIPTION	DATE	BY	CHK

PROJECT: PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI

CLIENT : GATALA CONSTRUCTIONS

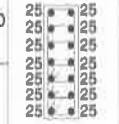
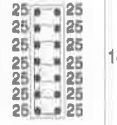
CODE : ORG

DRAWING TITLE: COLUMN MARKING

DRAWN		SCALE: 1
CHECK-2		SCALE: 1:75
CHECK-1		
DRAWING NO	1	R0

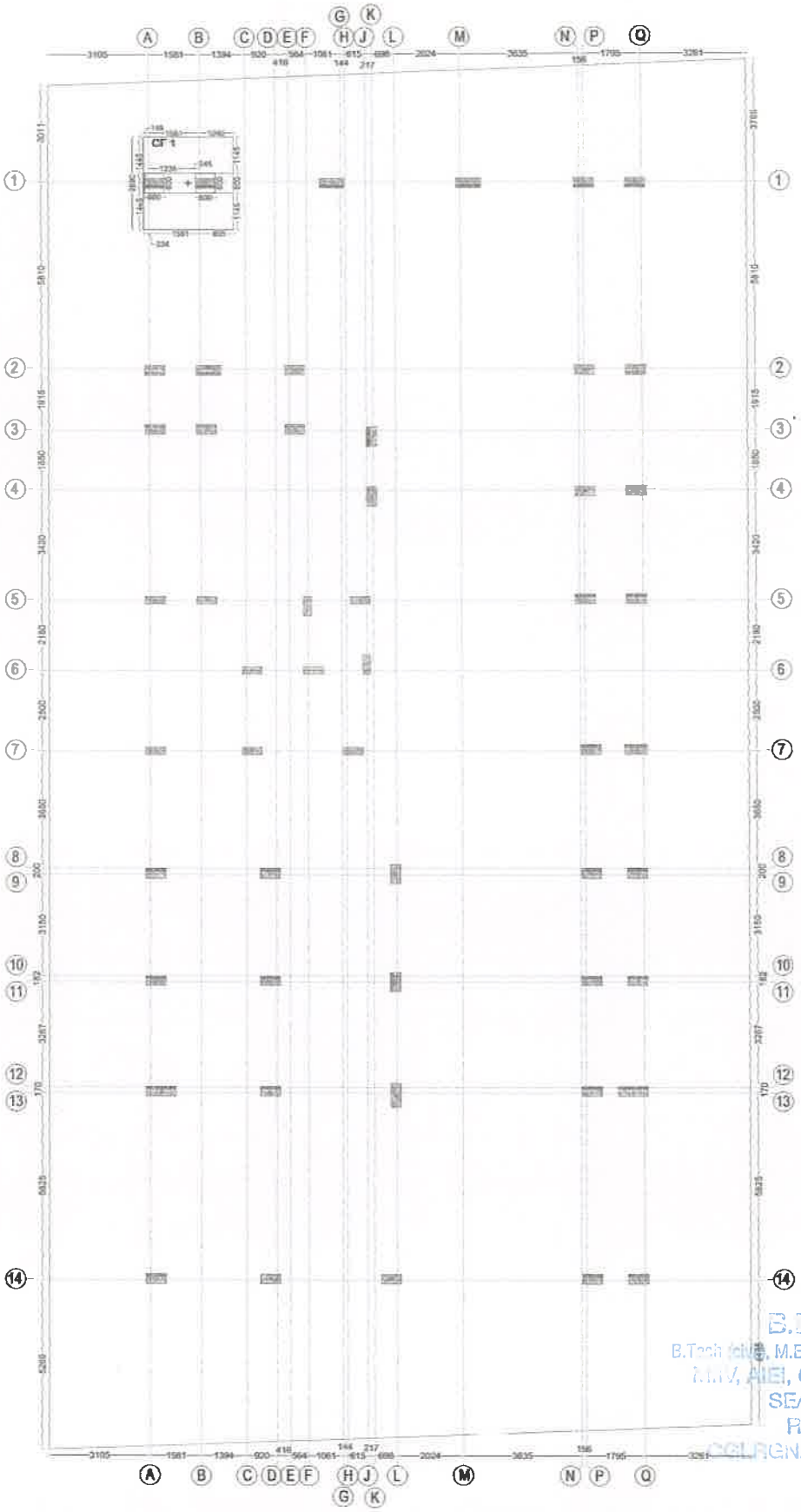
Belliappa & Associates
Consulting Engineers
No. 65 Halls Road Egmore Chennai - 10.
✆ 28 45 07 45, 28 44 16 35.

ISSUED FOR: PRELIMINARY / APPROVAL / TENDER / CONSTRUCTION

COLUMN NAME	SIZE	STILT FLOOR			SIZE	FIRST FLOOR			SIZE	TYPICAL FLOORS - 2,3 & 4			SIZE	FIFTH FLOOR & ABOVE			COLUMN TIES	
NO OF COLUMN	MIX	SHAPE	STEEL	TIES SHAPE	MIX	SHAPE	STEEL	TIES SHAPE	MIX	SHAPE	STEEL	TIES SHAPE	MIX	SHAPE	STEEL	TIES SHAPE	NORMAL PORTION	LAPPING PORTION
C1	300 x 600		8 - Y 25 + 2 - Y 20 + 3 - Y 12		230 x 600		8 - Y 25 + 2 - Y20											
1	M50				M50												Y8 @ 150 c/c	Y8 @ 75 c/c
C2	300 x 750		14 - Y 25 + 3 - Y 12		230 x 750		14 - Y 25		230 x 750		14 - Y 25		230 x 750		14 - Y 25		Y8 @ 150 c/c	Y8 @ 75 c/c
2	M50				M50				M50				M50					

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IGBC0065/2019
COLRSNISE/GR-I/2019/11/048.

				PROJECT:	DRAWING TITLE:				
				PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI	COLUMN SCHEDULE	ISSUE DATE	10 01-2024	SHEET : 1	Belliappa & Associates Consulting Engineers
						CHECK-3	BBB	SCALE :	66 Halls Road Kilpauk Chennai - 10.
						CHECK-2		JOB NO : 6448	✆ 26 45 07 45, 26 44 16 35.
				CLIENT : GATALA CONSTRUCTIONS		CHECK-1	SAM	DATE : 6-01-2024	
						Design/Draw	SAM	SHEET SIZE : A3	
DESCRIPTION	DATE	BY	CHD.		CODE : ORG	DRAWING NO:	02	R0	ISSUED FOR ☐ PRELIMINARY ☐ APPROVAL ☐ TENDER ☐ CONSTRUCTION



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SE/GR-I/19/05/125
RSE100552019
DGLR/GN/SE/Gr-I/2019/11/048.

REV	DESCRIPTION	DATE	BY	CHK

PROJECT: PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI

CLIENT : GATALA CONSTRUCTIONS

SCALE : 6MM

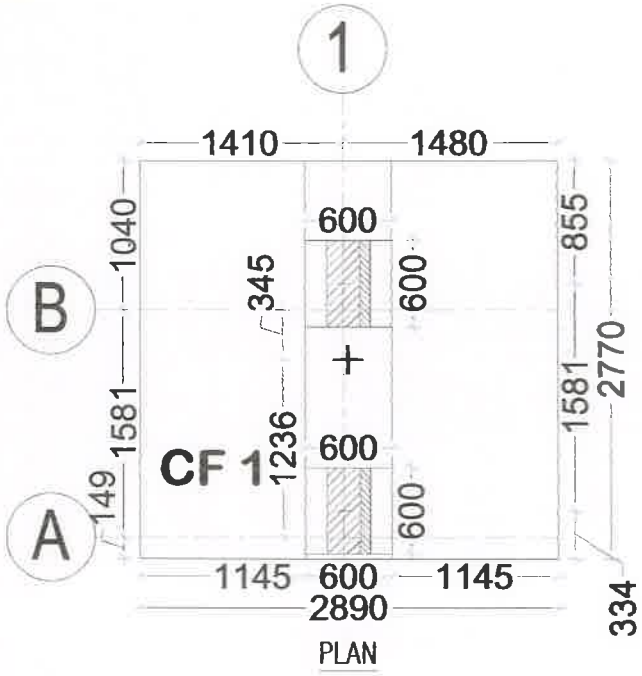
DRAWING TITLE: FOOTING LAYOUT

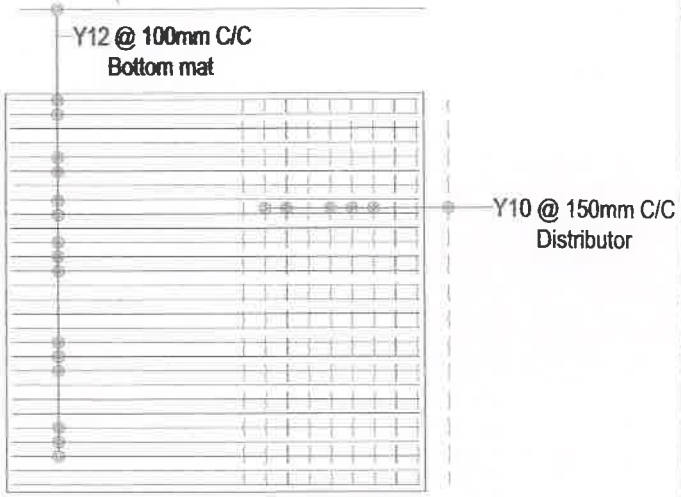
DRAWING NO: 3

R0

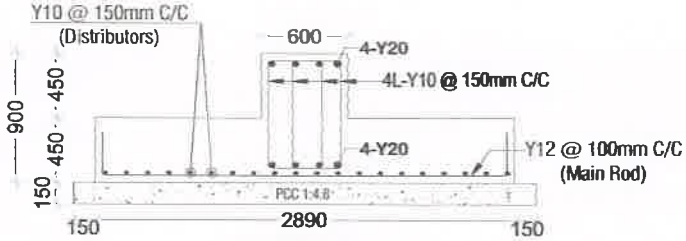
Bellappa & Associates
Consulting Engineers
69 Habibullah Road, T.Nagar, Chennai - 17.
Ph: 28 15 07 45, 28 14 19 35.

ISSUED FOR: PRELIMINARY / APPROVAL / TENDER / CONSTRUCTION

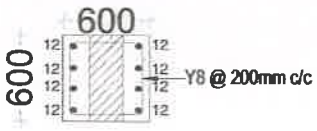




BOTTOM STEEL MAT ARRANGEMENT



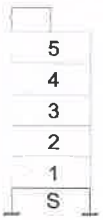
SECTION X-X



PEDESTAL STEEL ARRANGEMENT

FOUNDATION NOTES : -

1. FOUNDATION IS DESIGNED FOR S + 5
2. FLOOR TO FLOOR HEIGHT 3.2m
3. BASEMENT HEIGHT TAKEN 750mm FROM EXISTING GROUND LEVEL.
4. EXCAVATION DEPTH IS 2.2m AS PER SOIL REPORT.
5. SBC OF SOIL 12 T/ m² at 2.2m AS PER SOIL REPORT
6. ALL DESIGN AS PER IS 456 - 2000 ONLY.
7. MIX FOR FOOTING & PEDESTAL M30.
8. MIX FOR COLUMN M50.
9. USE FOR STEEL FY500 N/mm².
10. DON'T USE RE-ROLLED STEEL.
11. USE ONLY VIZAG STEEL, TATA, SAIL
12. USE WATER TIGHT PLYWOOD FOR SHUTTERING.
13. USE 20% OF ADDITIONAL CEMENT FOR COLUMN STARTER
14. CLEAR COVER FOOTING 50 mm AND COLUMN IS 40 mm
15. COVER BLOCKS SHOULD BE PROVIDED 2'-6" INTERVALS.

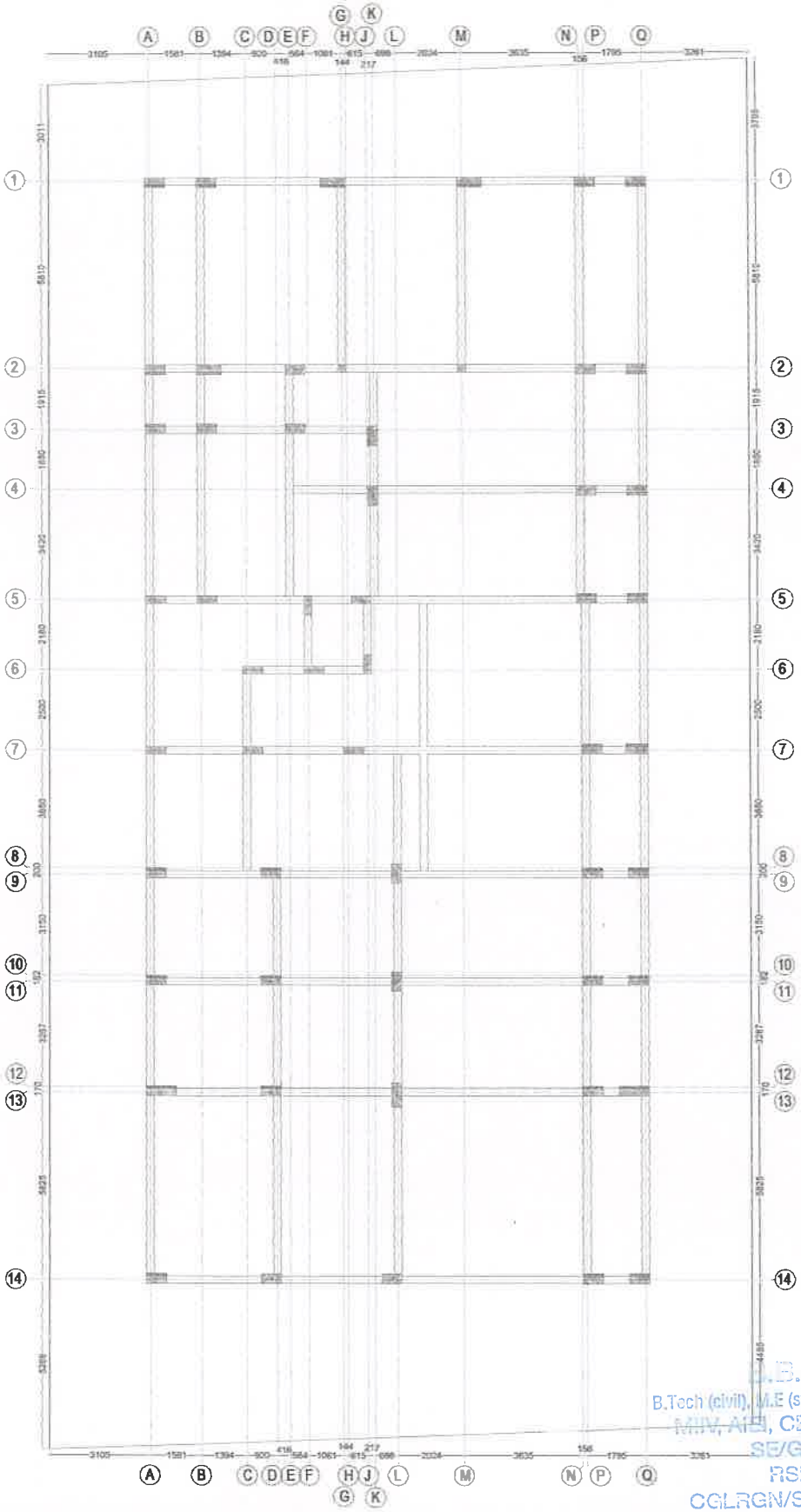


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RSE100552019

PROJECT: PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI	CODE : ORIG	DRAWING TITLE: COMBINED FOOTING 1 - CF 1			
CLIENT : GATALA CONSTRUCTIONS			DRAWING NO: 4		R0

Belliappa & Associates
Consulting Engineers
86 Halls Road Kilpauk Chennai - 10.
✆ 26 45 07 45, 26 44 16 35.

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REV	DESCRIPTION	DATE	BY	CHK

PROJECT — CODE : GH6

PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI

CLIENT : GATALA CONSTRUCTIONS

DRAWING TITLE

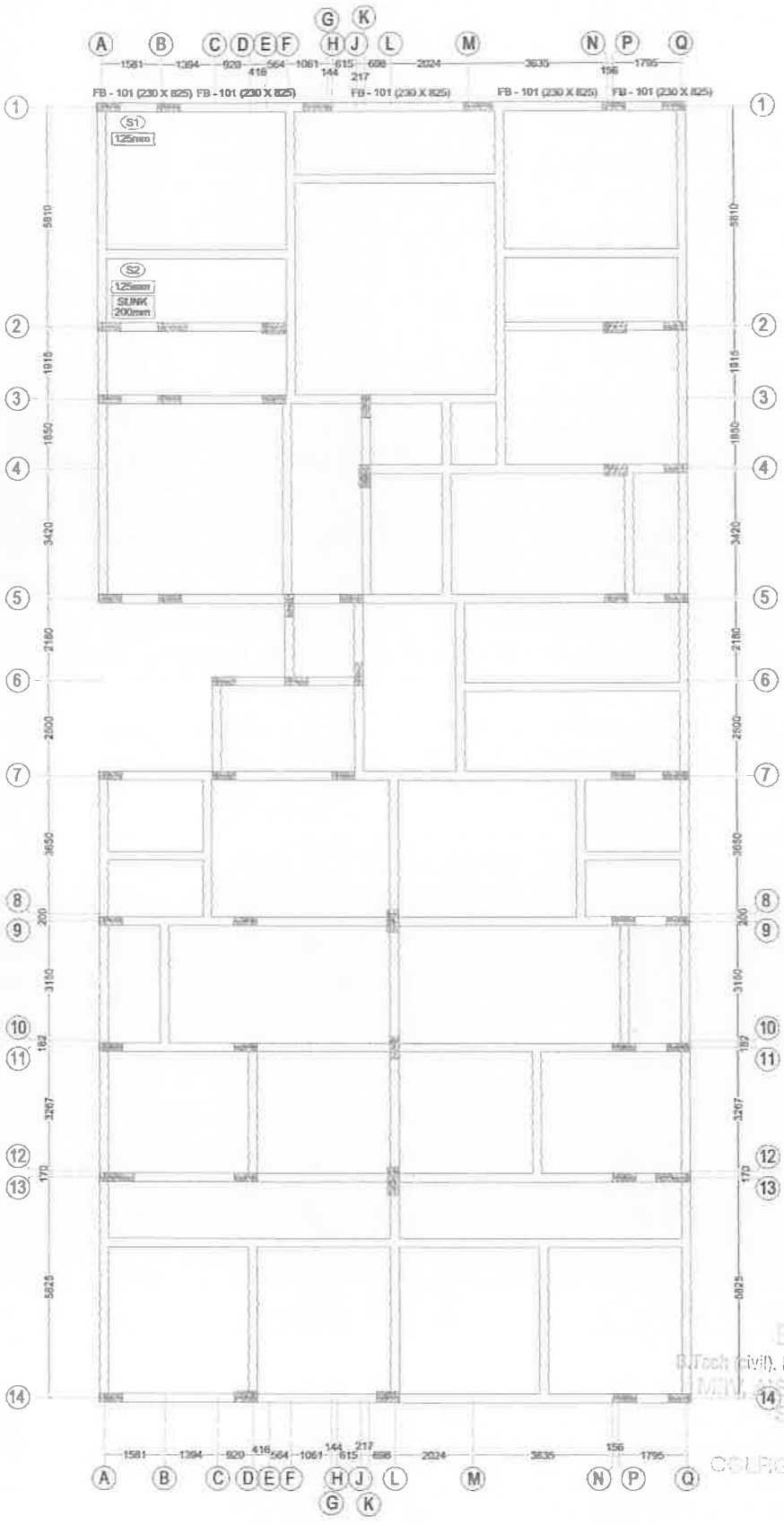
PLINTH BEAM LAYOUT

SCALE : 1/75		
DRAWING NO	5	R0

Belliappa & Associates
· Consulting Engineers
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26 45 07 45, 28 44 15 35.

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MIV, AIE, CE(I), MACCE, AIET(UK)
SE/GR-I/19/05/125
RSE100552019
CGLRGN/SE/Gr-I/2019/11/048.



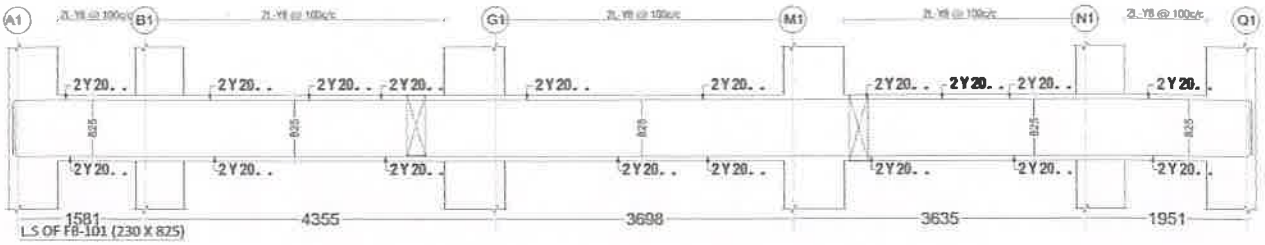
B.B. BOPAYYA
B.Tech (Civil), M.E (struct), BITS-Pilani, AMIA StructE.
MIE, AISI, CE(I), MASCE, AIET(UK)
SE/GP-V/19/05/125
PEN/00552/19
COA/PEN/SE/GP-V/2019/11/043.

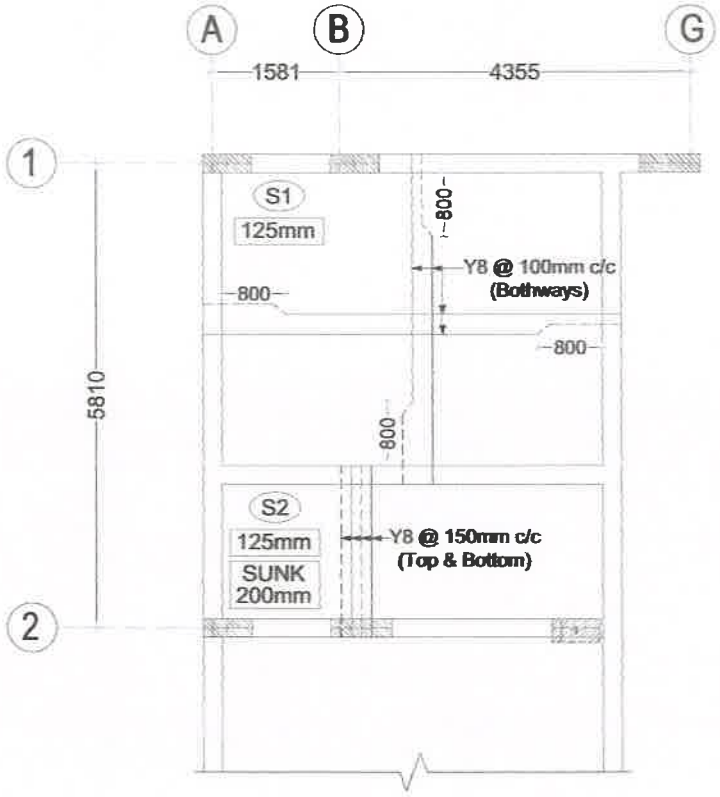
REV	DESCRIPTION	DATE	BY	CHK	PROJECT	CODE : ORG	DRAWING TITLE		
					PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI		BEAM & SLAB NUMERATION 19 & 20 LVL		
					CLIENT : GATALA CONSTRUCTIONS				

ISSUE DATE	18.01.2024	SHEET : 1	
DESIGN-3	BBB	SCALE : AS S	
CHECK-2		AS IN SIZE	
DRAW-1	SAM	SHEET SIZE : A3	
Bentley Cube	7.7.0.0		
DRAWING NO	7	R0	

Belliappa & Associates
Consulting Engineers
Velle Road Kilpauk Chennai - 10.
28 45 57 45, 28 44 16 35.

ISSUED FOR: PRELIMINARY, APPROVAL, TENDER, CONSTRUCTION





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MIIV, AIEI, CE(I), MACCE, AIE (UK)
SE/GR-I/19/05/125
RSE100552019
CGLRGN/SE/Gr-I/2019/11/048.

REV	DESCRIPTION	DATE	BY	CHK

PROJECT: CODE : CRG

PROPOSED RESIDENTIAL BUILDING AT BAZULLAH ROAD, CHENNAI

CLIENT : GATALA CONSTRUCTIONS

DRAWING TITLE:

BEAM & SLAB REC. DETAIL

CHECK-2		SCALE : NTS
CHECK-1	SRM	
Design/Draw	TMM	SHEET SIZE : A3
DRAWING NO.	8	R0

Belliappa & Associates
Consulting Engineers
69 Haile Road Nungambakkam Chennai - 10.
✆ 28 45 07 45, 28 44 16 35

ISSUED FOR: ☐ PRELIMINARY ☑ APPROVAL ☐ TENDER ☐ CONSTRUCTION

GREATER CHENNAI CORPORATION
WORKS DEPARTMENT

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that **Thiru. Bopayya B B** has been enrolled as **Registered Structual Engineer Grade- I (RSE)** in Greater Chennai Corporation (GCC) who has the qualification of **M.E.,(Structural Engg.,)** with minimum of **5 years** experience in the relevant field.

The Registration No. is **RSE100552019** dated **16.12.2019.** It is informed herewith to comply with the scope of work, duties and responsibilities as prescribed by the Government of Tamil Nadu in Part – V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O. (Ms) No.18 MAWS (MA1) Dept. dated 04.02.2019.

This Registration is valid upto **15.12.2024.**



நாள் 16/12/19

16/12/19

Superintending Engineer (Works)
Greater Chennai Corporation.

RGN No: RSE100552019
Dated: 16.12.2019

16/12/19

16/12/19

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B.Tech (civil), M.E (struct), BITS,Pilani, AMIA Stru
MIV, AIEI, CE(I), MACCE, AIEY(UK)
SE/GR-I/19/05/125
RSE100552019
CGLRGN/SE/Gr-I/2019/11/048.

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CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
Thalamuthu Natarajan Building, No.1, Gandhi Irwin Road, Egmore,
Chennai - 600 008
Phone : 28414855 Fax: 91-044-28548416
E-mail: mscmda@tn.gov.in
Web site: www.cmdachennai.gov.in.

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the Thiru / Tmt. / M/s. **B. B. BOPAYYA**has enrolled as **Registered Structural Engineer Grade-I (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E Structures** and experience in the relevant field for **14** years.

He/She has been given the Registration No. **SE/I/2024/6/0125** on **26-Jun-2024** He/She shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(ms) No.18 MAWS (MA1) Dept. Dated. 04.02.2019.

This Registration is valid upto **25-Jun-2029**.

Signature Not Verified
Name :A Meganathan
Designation :Superintendent
Date :06/26/2024 3:13:32 PM



A Meganathan

Superintendent



our services doesn't just end there

Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.

Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.

Property Development & Approvals

Building plan approvals, construction, layout and sub-division approvals, zone conversion, and occupancy certification.

NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management

Compliance & Special Services

Demolition, Vaasthu checks, regularization of unauthorized buildings, and office space solutions.



empowering your real estate decisions with smart tools

Property Valuation & Cost Estimation

Guideline Value, Apartment Composite Value, Stamp Duty & Registration Fees Calculator, Building Value Calculator, Capital Gains Calculator, Area Unit Converter, Length Unit Converter

Ownership, Compliance & Legal Verification

Encumbrance Certificate (EC) Search, Find Your SRO, Temple Property Check, WAQF Property Check, View Patta/Chitta, View FMB, Patta Analyzer, EC Analyzer

Zoning & Land Use Analysis

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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