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STRUCTURAL DESIGN BASIS

AND

CALCULATION REPORT

PROJECT	:	**RESIDENTIAL APARTMENT (Slit+5) AT NO. 10/31, SRINIVASA ROAD, MYLAPORE, CHENNAI-600004**
CLIENT	:	**HERALD CONSTRUCTION PVT LTD**
DATE	:	**28-03-2024**

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DESIGN BASIS

1.0 INTRODUCTION

Plan showing the Proposed Construction of Residential Building with (Stilt+ 05) at No. 10/31, Srinivaşa Road, Mylapore, Chennai-600004, the building proposed with toilets, Living room, Bedroom, Kitchen, lift, staircase, sump, septic tank and an overhead tank.

1.1 Structural System

Sub Structure: The proposed residential building with Stilt+5 floor had been recommended to **Isolated footing with 2m depth** from existing Ground level and designed for critical un-factored load combinations as per soil report.

Super Structure: The Proposed residential building with stilt+5 floor had been designed and considered as RCC framed structure (i.e. beam, column and slab). The structure is **analysed** for specific loads (dead, live and seismic/wind loads and for the load combination given in relevant IS code. The super structure members are designed for actual flexure, shear and other forces.

1.2 Soil Parameters:

Isolated footing will be considered for the entire area based on the soil criteria. The Net Safe Bearing Capacity of soil 160 kN/m^2 at 2.0m below natural ground level. This is confirmed with the Geotechnical consultant report. (Report No- 657). The specified SBC can be increased by 25% for transient loading conditions such as wind as per the soil report. When seismic forces are considered SBC can be increased as specified by IS 1893.

1.3 Analysis Software:

The analysis of the structures shall be carried out using STAAD–PRO Software.

2.0 DESIGN LOADS:

Following Loads shall be considered for design

- Dead load (DL)
- Super Imposed Dead load (SIDL)

- Imposed load (IL)
- Earthquake load (EQL)
- Wind Load (WL)

2.1 Dead Loads(DL):

In general, dead loads for the materials used in the construction will be evaluated as per IS: 875-1987(Part-1) "Weight of building materials" or as per the manufacturer's literature. The following unit weight shall be used for the materials listed.

Material	Unit weight	Unit
Structural Steel	78.50	kN/m^3
Plain Cement Concrete / Screed	24.00	kN/m^3
Reinforced Cement Concrete	25.00	kN/m^3
Soil / Sandy soil	18.00	kN/m^3
Water	10.00	kN/m^3
Brickwork / Solid Block work / Cement mortar	20.00	kN/m^3
Glass	25.00	kN/m^3
Brick Jelly Cement Concrete	18.00	kN/m^3

2.2 Super imposed Dead Loads(SIDL):

Superimposed Dead Loads are loads that act permanently (wherever applicable) over the structure which consists of following

Items	Magnitude (in plane area)	unit
Weatherproof course over roof of substation block	Depends on the thickness, slope and kind of material to be used for weatherproofing.	kN/m^2

All Structural elements	Layout and size of elements shall be followed as per structural requirements	kN/m^2

2.3 Imposed Loads(IL)

The imposed load or live load is assessed based on the occupancy type and use of floor as per IS: 875 (Part-II) and as below,

For Residential space	-	2	kN/m^2
Terrace (Accessible)	-	1.5	kN/m^2
Terrace (Not accessible)	-	0.75	kN/m^2

2.4 Earthquake Loads (EQL)

Seismic loading shall be used in the design of structures only when they are greater than the computed wind loads. The following parameters are considered as per IS: 1893-2016(Part-1) & IS: 1893-2015(Part-4).

Seismic zone	-	III	
Seismic zone factor, Z	-	0.16	(Table 2 – Clause 6.4.2)
Structure importance factor I	-	1	(Table 6 – Clause 6.4.2)
Response Reduction Factor, R	-	5	(Table 7 – Clause 6.4.2)
Damping	-	5% for building with RCC	

Fundamental period of vibration in seconds, T shall be estimated by Eigen value analysis using analysis model.

2.5 Wind Loads (WL)

Wind loads shall be calculated in accordance with IS: 875-2015 (Part-3) with the following data **(for Tamil Nadu-Chennai).**

Basic wind speed	-	50 m/s
Risk factor, K_1	-	1.0 (all other general building- Clause -6.3.1)
Terrain Category, K_2	-	1.01 (Clause 6.3.2.2-Terrain category 3 -up to 20m)
Topography factor, K_3	-	1.0 (Clause 6.3.3)
Important factor K_4	-	1.0 (Clause 6.3.4)
Upwind Slope	-	Less than 3 degree
Wind pressure, p_z	-	$0.6Vz^2$
Area averaging factor, K_a	-	0.8 (Clause 7.2.2)
Wind directional factor, K_d	-	1.0 (Clause 7.2.1)
Reduction factor, K_c	-	0.9 (Clause 7.3.3.13)
Design wind pressure, p_d	-	Ka*Kd*Kc*pz
Individual member forces, F	-	(Cpe – Cpi).A.pd

2.6 Load Combinations

Various loads shall be combined in accordance with IS1893:2016 and IS456:2000 and with the following assumptions.

- Whenever imposed load is combined with Earthquake load, the appropriate part of imposed load as per IS1893:2016(Part-1) is adopted, both for evaluating earthquake effect and for combined load effects, used in such combination
- Wind and Seismic forces are not acting simultaneously
- Half of the live load at roof are considered during seismic condition.

Load Combination list for Strength

The Load Combination is taken from IS 800:2007 & IS 1893 (part1):2016

1) 1.5 [DL+LL]
2) 1.5[DL±EQ X]
3) 1.5[DL±EQZ]
4) 1.5 [DL ± WL_X]
5) 1.5 [DL ± WL_Z]
6) 1.2 [DL + IL ± WL_X]
7) 1.2 [DL + IL ± WL_Z]
8) 1.2 [DL + IL ± EQ_X]
9) 1.2 [DL + IL ± EQ_Z]
10) 0.9 DL ± 1.5 WL_X
11) 0.9 DL ± 1.5 WL_Z
12) 0.9 DL ± 1.5 EQ_X
13) 0.9 DL ± 1.5 EQ_Z

Load Combination list for Serviceability

The Load Combination is taken from IS 800:2007 & IS 1893 (part1):2016

1) 1.0 [DL + IL]
2) 1.0 DL + 0.8 [IL ± EL_X]
3) 1.0 DL + 0.8 [IL ± EL_Z]
4) 1.0 [DL ± WL_X]
5) 1.0 [DL ± WL_Z]
6) 1.0 DL + 0.8 [IL ± WL_X]
7) 1.0 DL + 0.8 [IL ± WL_Z]

RCC ELEMENTS

For Foundation proportioning and check against bearing capacity, un-factored loads and combination shall be considered. While performing seismic analysis, increase the allowable bearing pressure by 50% in accordance with IS 1893-2016 PART-1.

3.0 ANALYSIS METHOD:

The analysis shall consider the linear static analysis due to static load for gravity loads.

4.0 DESIGN METHODOLOGY:

RCC structural elements are designed according to the Limit state method as specified in the IS: 456-2000 and detailed as per IS: 13920-1993.

Individual members shall be designed for combination of forces such as bending moment, axial force, shear force, torsion, etc.

5.0 MATERIALS

5.1 Concrete

Item	Max. size of Aggregate(mm)	Min. Concrete grade
Footing	20	M25
Column	20	M25
Beams & Slabs	20	M25

Normal weight of aggregates shall be considered for arriving at self-weight of all concrete works. The above value indicates characteristic compressive strength of concrete cubes in N/mm^2 at the age of 28 days, determined in 150 mm cubes.

5.2 Reinforcement

Steel reinforcement shall be of grade Fe550 (Thermo Mechanically Treated) conforming to IS 1786-2008 shall also be used, wherever necessary.

6.0 DURABILITY & FIRE RATING REQUIREMENTS FOR RCC ELEMENTS

6.1 RCC Elements

Fire Resistance of concrete elements shall be considered as 1 hour.

Environmental exposure condition from Durability consideration is assumed as Moderate for elements below Ground level and Mild for elements above Ground level. Nominal cover to reinforcement considering Durability & Fire resistance requirements shall be as follows:

Footing	-	50mm
Pedestal/Column	-	40mm
Beams	-	25mm
Slab	-	20mm
RC Walls	-	20mm

For any other elements not specified above, cover shall be as stipulated in Clause 26.4 of IS: 456-200

6.2 Serviceability requirements

Deflection limitations shall be as per IS 456:2000 for RCC elements

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DESIGN CALCULATION

7.0 Slab load

Roof finishes with Tile work	=	1.5	KN/m^2
S/W of slab 150 mm thick	=	0.15x 25	
	=	3.75	kN/m^2
Dead load	=	1.5+ 3.75	
	=	5.75	kN/m^2
Live load	=	2	KN/m^2
Service Load	=	1	KN/m^2
Total load	=	5.25+ 2+ 1=8.25	kN/m^2

7.1 Two Way Slab Design

Grade of Concrete	=	M25	N/Sqmm
Grade of Steel	=	Fe550	N/Sqmm
Clear Cover	=	20	mm
Long Span, L_y	=	7.353	m
Short Span, L_x	=	5.105	m
Imposed Load	=	1.5	kN/Sqm
Live load	=	2	kN/ Sqm
Service load	=	1	kN/ Sqm
Slab Thickness	=	150	mm
Effective Depth Along Lx, D_{effx}	=	126	mm
Effective Depth Along Ly, D_{effy}	=	118	mm
Self - Weight	=	3.75	kN/Sqm
Total Load. TL	=	8.25	kN/ Sqm
Span	=	2- Way	
Panel Type	=	One short edge discontinuous	

Design Moments:

Short Span Negative Moment at Continuous Support

Moment Coefficient	=	0.056	
BM	=	12.54	kNm

Mu= 1.5x BM	=	18.81	kNm
Area of Steel Required	=	335	Sqmm/ m
Steel Provided	=	T8 @ 125	mm c/c
	=	201	Sqmm/m

Short Span Positive Moment at Midspan

Moment Coefficient	=	0.042	
BM	=	9.45	kNm
Mu= 1.5x BM	=	14.175	kNm
Area of Steel Required	=	249	Sqmm/ m
Steel Provided	=	T8 @ 150	mm c/c
	=	335	Sqmm/m

Long Span Negative Moment at Continuous Support

Moment Coefficient	=	0.037	
BM	=	8.35	kNm
Mu= 1.5x BM	=	12.525	kNm
Area of Steel Required	=	235	Sqmm/ m
Steel Provided	=	T8 @ 150	mm c/c
	=	335	Sqmm/m

Long Span Positive Moment at Midspan

Moment Coefficient	=	0.028	
BM	=	6.32	kNm
Mu= 1.5x BM	=	9.48	kNm
Area of Steel Required	=	175	Sqmm/ m
Steel Provided	=	T8 @ 150	mm c/c
	=	335	Sqmm/m

Distribution steel @ 0.12%

Area of steel required	=	180	Sqmm
Steel Provided	=	T8 @ 200	mm c/c

	=	251	Sqmm/m

Shear Check:

Along Short Span

Shear Coefficient (Lx), SF1	=	0.454	
V	=	19.26	kN
V_u	=	28.89	kN
Shear Stress, τ_v	=	0.22	N/Sqmm
Nominal Shear Stress, τ_c	=	0.36	N/ Sqmm
Modification Factor 'K'	=	1.3	
K x τ_c	=	0.468> 0.22 **Slab is Safe in Shear**	

Along Long Span

Shear Coefficient (L_y), SF2	=	0.36	
V	=	15.27	kN
Vu	=	22.9	kN
Shear Stress, τ_v	=	0.19	N/Sqmm
Nominal Shear Stress, τ_c	=	0.36	N/ Sqmm
Modification Factor 'K'	=	1.3	
K x τ_c	=	0.486> 0.19 **Slab is Safe in Shear**	

Deflection Check:

Basic Span to Depth Ratio	=	40 x 0.8 = 32		
Modification Factor	=	1.5		
Allowable Span to Depth Ratio	=	40x 0.8x 1.5	=	48
Actual Span to Depth	=	5143/150	=	34.29 < 48

Slab is Safe in Deflection

7.2 Beam Design

Breadth	=	230	mm
Depth	=	750	mm
d'	=	40	mm
d	=	750- 80 = 670	mm
d'/d	=	40/670= 0.06	

f_{ck}	=	25	N/mm^2
f_y	=	550	N/mm^2
Max Moment, M_u	=	421	kNm
Shear force, V_u	=	241	kN
Torsion moment	=	3.955	kNm
Additional torsional shear, V_t	=	V_u +1.6 (Tu/b)	
	=	268.5	kN
Additional torsion moment, M_t	=	Tu ((1+D/b)/1.7)	
	=	9.91	kNm
Overall moment, M_u	=	430.91	kNm
Therefore, M_u/ bd^2	=	4.16	
Pt for tension reinforcement	=	1.167 (As per SP 16, Table 54)	
Required area of tension reinforcement, A_{st}	=	1768	mm^2
Provided A_{st}	=	1771	mm^2 **(Hence Safe)**

Therefore, use tension reinforcement of 5 nos. of 20mm φ rod and 1 nos. of 16 mm φ rod at bottom.

Check for Shear

Nominal shear stress, τ_{ve}	$= \left(\frac{Vu}{bd}\right) = 1.56 < 3.1$ kN/m² **(Hence OK)**
A_{sv}	$= \frac{\pi}{4} \times 8^2 \times 2 = 100$ mm²
Spacing of shear reinforcement, S_v	$= \left(\frac{0.87 \times fy \times Asv \times d}{Vu}\right) = 150$ mm c/c

Therefore, use 2 leg of 8mm φ @ 150mm c/c spacing.

7.3 Column Design

Grade of Concrete	=	M25	N/Sqmm
Grade of Steel	=	Fe550	N/ Sqmm
Column B	=	300	mm
Column D	=	750	mm
Clear Cover	=	40	mm
Clear Floor Height @ B	=	1550	mm

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Clear Floor Height @ D	=	1550	mm
Column Type	=	Unbraced	
Minimum eccentricity check	=	Simultaneously (Both Axis)	

Load Data

P_u	=	3558.06	kN
M_{ux}	=	297.44	kNm
M_{uy}	=	1.55	kNm
V_{ux}	=	4.31	kN
V_{uy}	=	110.48	kN

Slenderness Check

Max. Slenderness Ratio (L/B)	=	5.17	
	<	60	(Hence Ok)

Column Is Unbraced Along D

Slenderness Check Along D:

Effective length Factor	=	0.87
Slenderness Ratio	=	Effective Length/D
	=	2, Column not Slender Along D

Column is Unbraced Along B

Slenderness Check Along B:

Effective Length Factor	=	0.87
Slenderness Ratio	=	Effective Length/B
	=	5,Column not Slender Along B

Minimum Eccentricity Check

Since Axial Force is compressive, minimum eccentricity check to be performed

Minimum Eccentricity Along D:

Minimum Eccentricity	=	(Unsupported Length/500) + (D/30)	
	=	27.7	mm

Minimum Eccentricity Along B:

Minimum Eccentricity	=	(Unsupported Length/500) + (B/30)	
	=	12.7	mm

Mmin x	=	P_u x Minimum eccentricity along D	
	=	98.55	kNm
Mmin y	=	P_u x Minimum eccentricity along B	
	=	71.16	kNm

Calculation of Design Moment

Direction	Manalysis (kNm)	Mmin (kNm)	Mdesign-final (kNm)
Major Axis- M_{ux}	297.44	98.55	297.44
Major Axis- M_{uy}	1.55	71.16	71.16

Final Critical Design Forces

Critical Case- Axial Load and Biaxial Bending

P_u	=	3558.06	kN
M_{ux}	=	297.44	kNm
M_{uy}	=	71.16	kNm

Biaxial Bending Check

Pt Calculated	=	2.68	
Steel Provided	=	8- T16 bars + 2- T12+6T-20 bars	
M_{ux1}	=	385.75	kNm
M_{uy1}	=	157.84	kNm
P_{uz}	=	0.45 x fck x Ag+(0.75fy- 0.45fck) x Asc	
	=	4957.05	kN
P_u/P_{uz}	=	0.72	
Alpha (α)	=	1.86	
Interaction Ratio	=	(Mux / Mux1)^α + (Muy / Muy1)^α	
	=	0.84 < 1	

Design of Shear

Design for shear along D

Design shear force, Vuy	=	130.05	kN
P_u	=	2017.93	kN

Design Shear Stress, τ_{vy}	=	Vuy / (B x Deff)	
	=	0.6215	N/ Sqmm
Design Shear Strength, τ_c	=	0.7139	N/ Sqmm
Shear Strength Enhancement Factor	=	$1 + [3 \times P_u / (B \times D \times f_{ck})]$	
	=	2.0762	
Shear Strength Enhancement Factor (max)	=	1.5	
Shear Strength Enhancement Factor	=	1.5	
Enhanced shear strength, τ_{ce}	=	1.0708	N/ Sqmm
Design Shear Check	=	$\tau_{vy} < \tau_c$ x Enhancement factor	

Link for Shear Design along D are not required

Design for shear along B

Design shear force, V_{ux}	=	59.6	kN
P_u	=	3059.64	kN
Design Shear Stress, τ_{vx}	=	$V_{ux} / (B_{eff} \times D)$	
	=	0.3211	N/ Sqmm
Design Shear Strength, τ_c	=	0.7139	N/Sqmm
Shear Strength Enhancement Factor	=	$1 + [3 \times P_u / (B \times D \times f_{ck})]$	
	=	2.63	
Shear Strength Enhancement Factor (max)	=	1.5	
Shear Strength Enhancement Factor	=	1.5	
Enhanced shear strength, τ_{ce}	=	1.0708	N/ Sqmm
Design Shear Check	=	$\tau_{vx} < \tau_c$ x Enhancement factor	

Link for Shear Design along B are not required

Design of Links

Links in the zone where special confining links are not required

Normal Links

Diameter of link	=	8	mm

> Max. of {longitudinal bar/ 4 and 6 mm}

Criterion for spacing of normal links

Shall not be more than			
Least lateral dimension of column	=	300	mm
16 x Smallest Diameter of Longitudinal Bar	=	192	mm
Provided spacing	=	175	mm

7.4 Footing Design

Longer dimension of column L	**=**	**750**	**mm**
Shorter dimension of column B	**=**	**300**	**mm**
Unfactored axial load P	**=**	**2403**	**KN**
Unfactored moment in longer direction M1	=	0.5	kN- m
Unfactored moment in shorter direction M2	=	0.5	kN- m
Net soil bearing capacity	**=**	**160**	**kN/ m^2**
Gross safe bearing capacity	=	196	kN/ m^2
Height of footing below NGL	**=**	**2**	**m**
Unit weight of soil	**=**	**18**	**kN/ m^3**
Total load on footing	=	3067	kN

Gross pressures and check for tension

P1	195	Ok	
P2	195	Ok	No Tension
P3	195	Ok	
P4	195	Ok	

Required area	**=**	**15.6**	**m^2**
Provided area	**=**	**15.69**	**m^2**
Longer dimension of footing L1	**=**	**3.96**	**m**
Shorter dimension of footing B1	**=**	**3.96**	**m**
Overall depth of footing D	**=**	**900**	**mm**
Effective depth of footing d	=	850	mm
Edge depth of footing	**=**	**900**	**mm**
Cover to the main reinforcement	=	50	mm
Grade of concrete fck	=	25	N/mm^2

Grade of steel f_y	**=**	**550**	**N/mm^2**
Diameter of bars	**=**	**12**	**mm**
LONGER MOMENTS			
Maximum pressure P_{max}	=	153	kN/m^2
Minimum Pressure P_{min}	=	153	kN/ m^2
Cantilever Length	=	1.83	m
Average Pressure	=	153	kN/ m^2
Moment M11	=	1017	kNm
Effective width for moment	=	1.15	m
Mu/bd^2	=	1.83	kN/m^2
Required percentage of steel	=	0.42	%
Minimum steel area	=	4276.8	mm^2
Provided steel area A_{st}	=	4136	mm^2
Spacing of reinforcement	**=**	**100**	**mm**
SHORTER MOMENTS			
Maximum pressure P_{max}	=	153	kN/m^2
Minimum Pressure P_{min}	=	153	kN/ m^2
Cantilever Length	=	1.61	m
Average Pressure	=	153	kN/ m^2
Moment M22	=	782	kNm
Effective width for moment	=	0.76	mm
Required percentage of steel	=	0.52	%
Minimum steel area	=	4279	mm^2
Provided steel area A_{st}	=	3304	mm^2
Spacing of reinforcement	=	**100**	**mm**
CHECK FOR ONE WAY SHEAR			
Longitudinal Direction			
Effective width at the section	=	2450	mm
Effective depth at the section	=	850	mm
Shear Area at the section	=	33660000	mm^2

Pressure at distance d from the face	=	153.1	kN/m^2
Shear force at the section	=	595	kN
Shear stress at the section T_v	=	0.265	N/mm^2
Pt for shear stress	=	0.127	%
Allowable shear stress T_c	**=**	**0.270**	**ok**
Revised pt from shear requirement	=	0.120	%
Revised area of steel Ast	=	40.9	mm^2
Spacing of reinforcement	=	110	mm
Transverse Direction			
Effective width at the section	=	1976	mm
Effective depth at the section	=	838	mm
Shear Area at the section	=	3320329	mm^2
Pressure at distance d from the face	=	153	kN/m^2
Shear force at the section	=	451	kN
Shear stress at the section T_v	=	0.204	N/mm^2
Pt for shear stress	=	0.129	%
Allowable shear stress Tc	**=**	**0.272**	**ok**
Revised pt from shear requirement	=	0.120	%
Revised area of steel Ast	=	3984	mm^2
Spacing of reinforcement	=	110	mm

CHECK FOR PUNCHING SHEAR

Average pressure	=	153	kN/m^2
Punching shear force	=	2121	kN
Perimeter at distance d/2	=	5476	mm
Effective depth at distance d/2	=	844	mm
Shear area	=	4621744	mm^2
Shear stress at the section T_V	=	0.46	N/mm^2
Allowable shear stress Tc	**=**	**1.25**	**ok**

TRANSFER OF LOAD AT BASE

Supporting area for bearing (A1)	=	15355000	mm^2
Loaded area at column base (A2)	=	225000	mm^2
Sqrt (A1/A2)	=	2	
Actual bearing stress	=	16.02	N/mm^2
Allowable bearing stress	=	**22.5**	**ok**

[Hence the design is safe]

9. CONCLUSION

The Overall Structure has been designed according to the provisions mentioned in Indian Standards. It meets all the requirements and is safe. It is clear that the actual stress of members is less than its allowable stress and that are within the building code, we can conclude that our design is safe.

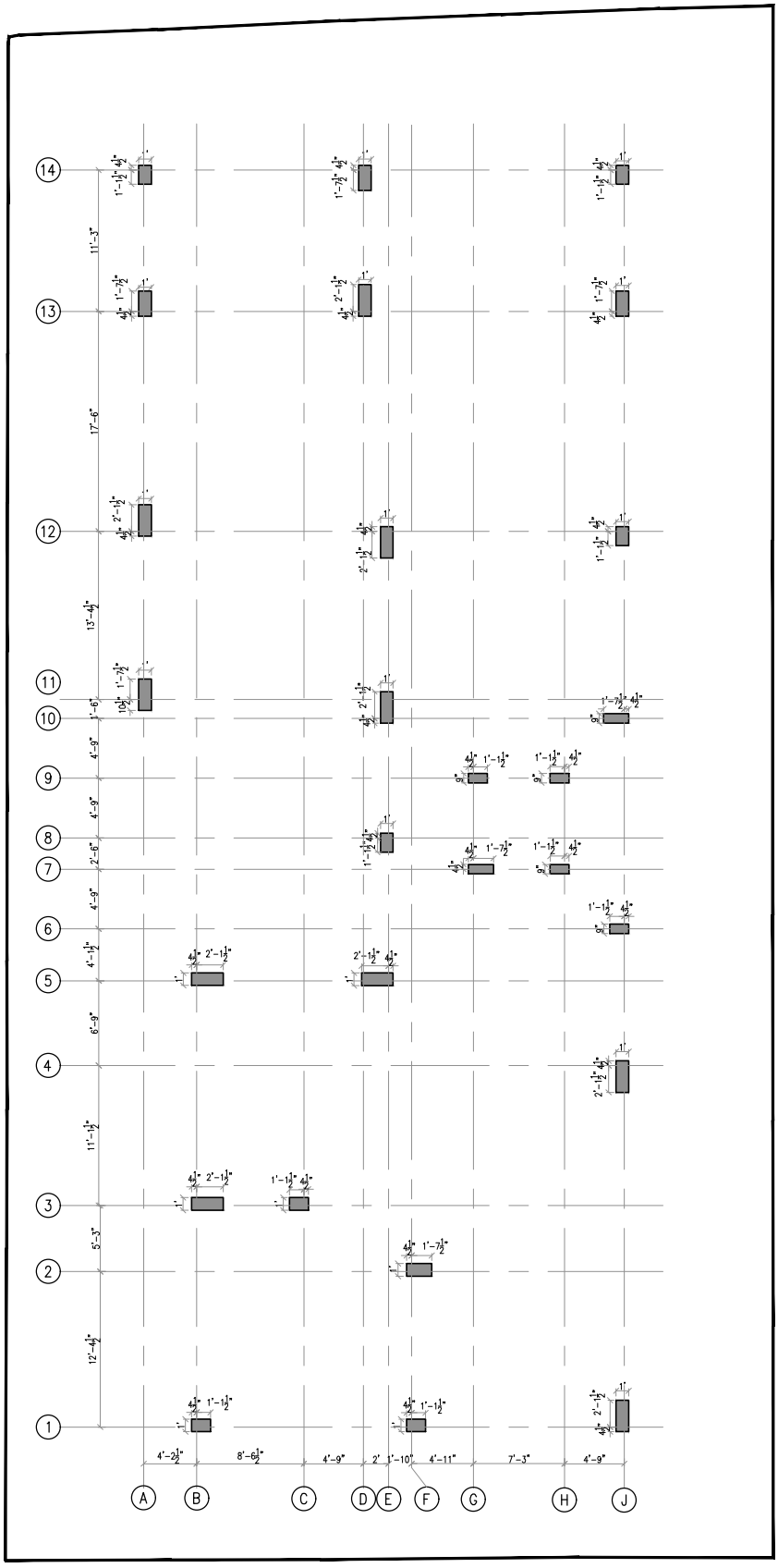
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DESIGN STANDARDS

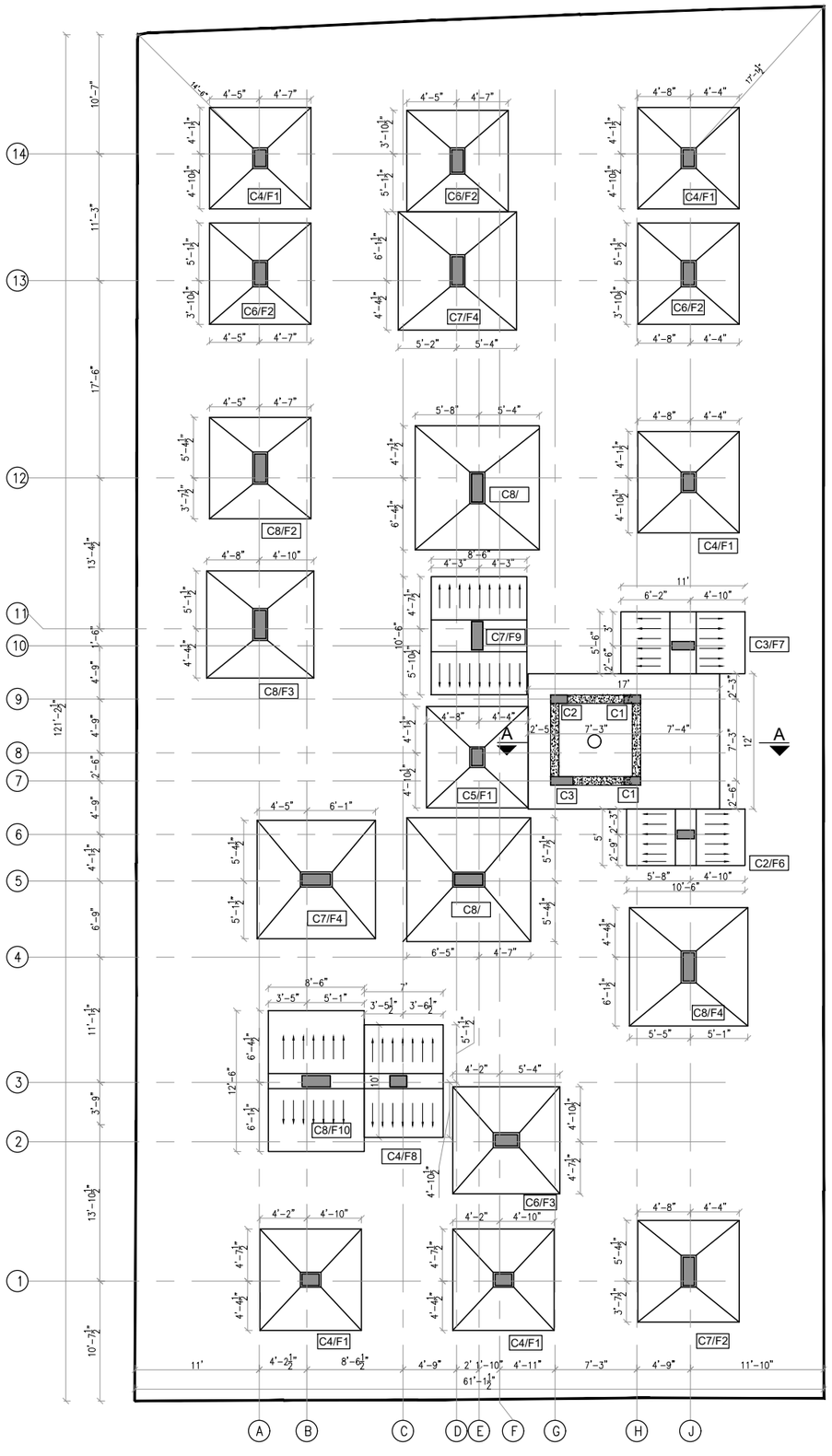
The relevant Standards/codes used for the design of various elements and components of the building are given below:

Sl.No	Code	Description
1.	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.
2.	IS:875 (Part 2) – 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Imposed loads.
3.	IS:875 (Part 3) – 1987	Code of Practice for Design Loads(other than earthquake) for buildings and structures – Wind loads.
4.	IS:875 (Part 4) – 1987	Code of Practice for Design Loads(other than earthquake) for buildings and structures – Snow loads.
5.	IS:875 (Part 5) – 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Special loads and load combinations.
6.	IS:1893(Part-1)-2016	Criteria for Earthquake Resistant Design of Structures- General Provisions and Buildings
7.	IS:1893(Part 4) - 2015	Criteria for Earthquake Resistant Design of Structures- Industrial Buildings including Stack like structures
8.	IS: 456- 2000	Code of Practice for Plain and Reinforced Concrete.
9.	IS:4326-2013	Earthquake Resistance Design and Construction of Buildings- Code of practice
10.	IS: 13920 - 2016	Ductile detailing of reinforced concrete structures subjected to seismic forces - Code of practice
15.	SP	Special Publications
16.	NBC-2005	National Building code of India



COLUMN SETTING OUT LAYOUT

LOCATION - DR10 / E / CURRENT / MYLAPORE		DRG. NO. 2023 -MYP - 01 - ST - 01	CONSULTANT
DRAWN : L.THILAGESWARI	DRAWING TITLE COLUMN SETTING OUT LAYOUT	PROJECT PROPOSED APARTMENT AT SRINIVASA ROAD , MYLAPORE	CIBI+ SIM EON Designs INNOVATIVE ARCHITECTURE + INTEGRATED ENGINEERING
DESIGN : B.SHARMILA			No.7,100 feet road, Rajeshwari nagar extn., Selaiyur, Chennai-600 073, India. E-MAIL : info@cibiandsimeondesigns.com, Ph No : +91 9962982727, +91 9176172727 Tel : 044-2227 3500, 044-2227 1828, 91 44 4332 4224 www.cibiandsimeondesigns.com
CHEKD : M. CIBI JACOB	ISSUED FOR: CONSTRUCTION	DEVELOPER HERALD CONSTRUCTIONS PRIVATE LIMITED	
DATE : 30 - 01 - 2024	WORKING DRAWING		



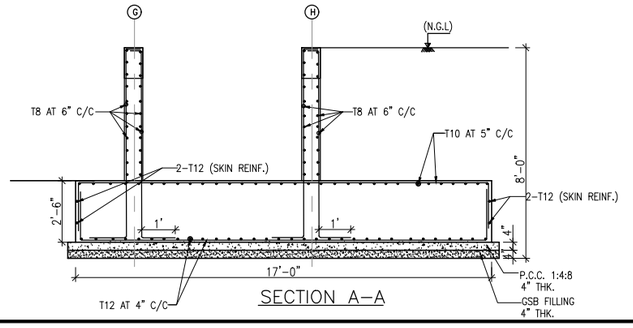
FOOTING LAYOUT

COLUMN SCHEDULE :

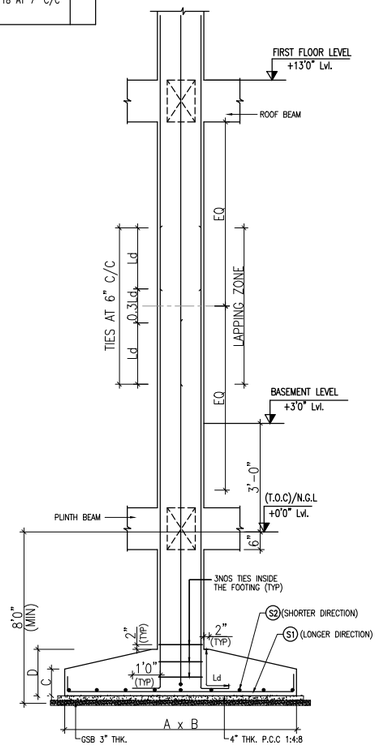
SL.NO	COLUMN TYPE	GRID	REINFORCEMENT (UPTO GROUND FLOOR ROOF LVL)	REINFORCEMENT (UPTO THIRD FLOOR ROOF LEVEL)	REINFORCEMENT (ABOVE THIRD FLOOR ROOF LEVEL)	NOS.
1.	C1	H7,H9	8–T16 T8 AT 7" C/C	8–T16 T8 AT 7" C/C	8–T16 T8 AT 7" C/C	2
2.	C2	G9,J6	4–T20 6–T16 T8 AT 7" C/C	4–T20 6–T16 T8 AT 7" C/C	4–T16 6–T12 T8 AT 7" C/C	2
3.	C3	G7,J10	4–T20 8–T16 T8 AT 7" C/C	12–T16 T8 AT 7" C/C	12–T16 T8 AT 7" C/C	2
4.	C4	A14,B1,C3 F1,J12,J14	2–T12 4–T20 6–T16 T8 AT 7" C/C	4–T20 6–T16 T8 AT 7" C/C	10–T16 T8 AT 7" C/C	6
5.	C5	E8	2–T12 10–T20 T8 AT 7" C/C	10–T20 T8 AT 7" C/C	4–T16 6–T12 T8 AT 7" C/C	1
6.	C6	A13,D14 F2,J13	2–T12 12–T20 T8 AT 7" C/C	8–T20 4–T16 T8 AT 7" C/C	4–T20 8–T16 T8 AT 7" C/C	4
7.	C7	B5,D13 E11,J1	2–T12 4–T25 10–T20 T8 AT 7" C/C	4–T25 10–T16 T8 AT 7" C/C	4–T20 10–T16 T8 AT 7" C/C	4
8.	C8	A11,A12,B3 E5,E12,J4	2–T12 8–T25 6–T20 T8 AT 7" C/C	8–T25 6–T20 T8 AT 7" C/C	4–T25 10–T20 T8 AT 7" C/C	6

FOOTING SCHEDULE :

SL.NO	FOOTING TYPE	GRID	FOOTING SIZE A	FOOTING SIZE B	C	D	REINFORCEMENT S1 ø	S1 SPACING	S2 ø	S2 SPACING	NOS.
1	F1	A14,B1,E8,F1,J12,J14	9'0"	9'0"	1'6"	2'6"	T12	6"	T12	6"	6
2	F2	A12,A13,D14,J1,J13	9'0"	9'0"	1'6"	2'6"	T12	5"	T12	5"	5
3	F3	A11,F2	9'6"	9'6"	2'0"	3'0"	T12	4"	T12	4"	2
4	F4	B5,D13,J4	10'6"	10'6"	2'6"	3'0"	T12	4"	T12	4"	3
5	F5	E5,E12	11'0"	11'0"	2'6"	3'6"	T12	4"	T12	4"	2
6	F6	J6	5'0"	10'6"	2'0"	3'0"	T12	4"	T12	4"	1
7	F7	J10	5'6"	11'0"	2'6"	3'0"	T12	4"	T12	4"	1
8	F8	C3	7'0"	10'0"	2'6"	3'0"	T12	4"	T12	4"	1
9	F9	E11	8'6"	10'6"	1'6"	2'6"	T12	5"	T12	5"	1
10	F10	B3	8'6"	12'6"	2'6"	3'6"	T12	4"	T12	4"	1
11	RF1	G7,G9,H7,H9	12'0"	17'0"	REFER SECTION A–A						



SECTION A–A



TYP. L.S. OF FOOTING

NOTES:

1. ALL DIMENSIONS ARE IN FEET & INCHES
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE LATEST ARCHITECTURAL DRAWING
3. GRADE OF CONCRETE SHALL BE M25 U.O.S
4. CLEAR COVER FOR REINFORCEMENTS SHALL BE AS FOLLOWS :
   a) FOR FOOTINGS - 50mm b) FOR COLUMNS - 40mm c) BEAM -50mm
5. T- DENOTES HIGH TENSILE STRENGTH DEFORMED BARS HAVING TENSILE STRENGTH NOT LESS THAN 550 N/mm² CONFORMING TO IS: 1786-2008.
6. LAP LENGTH SHALL BE 53 TIMES DIA. OF BAR AND SHALL BE KEPT STAGGERED.
7. FOOTING SHOULD BE FOUNDED AT 8'0" BELOW G.L WHERE THE SOIL CAPACITY IS 225KN/M² (AS PER SOIL REPORT)
8. STRUCTURAL ENGINEERS RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
9. RESPONSIBILITY OF CONSTRUCTION LIES WITH CONTRACTOR / OWNER

REVISION HISTORY

5.
4.
3.
2.
1.

LOCATION - DR10 / E / CURRENT / MYLAPORE

ISSUED FOR :- CONSTRUCTION

DRAWN : L.THILAGESWARI	DATE : 30 - 01 - 2024
DESIGN : B.SHARMILA	SCALE : 1 : 100
CHEKD : M. CIBI JACOB	REVISION SUFFIX : R-0

DRAWING TITLE
LAYOUT AND R.C DETAIL OF COLUMN AND FOOTING

DRAWING NUMBER
2022 -MYP - 01 - ST - 02

PROJECT
PROPOSED APARTMENT AT SRINIVASA ROAD , MYLAPORE

DEVELOPER
HERALD CONSTRUCTIONS PRIVATE LIMITED

CONSULTANT
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Property Documentation & Workflow Tools

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Vastu & Property Management Tools

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