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DESIGN REPORT

PROPOSED CONSTRUCTION OF

“CRT MAGILAGAM”

APARTMENT HAVING STILT +5 FLOORS IN T.S.No.2/3, WARD-E, BLOCK-21 AT PERIYAR NAGAR, ERODE CITY MUNICIPAL CORPORATION, ERODE TALUK, ERODE DISTRICT.

CLIENT:

CHOLA RANK TOWERS

DESIGN BASIS REPORT

For

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1.0 OBJECTIVE

The Building is designed for stilt + 5 floors. The Structure is supported on column in turn Resting on column footing foundation. The structural System comprises columns, beams, slabs and wall structure.

3-D Analysis of all the building structures will be carried out using ETABS 20 Software packaged and analysis results shall be used for designing the various elements.

2.0 DESIGN LOADS

2.1 Dead Loads

The Dead loads that are envisaged to act permanently are considered as per **IS: 875 (Part-1)-1987-Dead Loads.** Indian Standard "**Code of Practice for Design Loads (Other than earthquakes) for Buildings and Structures".**

1. Slab is assumed to be 125mm thick -3.125 KN/m2
2. Floor finish – 1.5 KN/m2
3. AAC Block masonry walls 200mm & 100mm thick are proposed to be used (location of wall per Architectural drawings) Unit weight is taken as 6.5 KN/m3
4. Weathering course in Terrace finish-2 KN/m2

2.2 Imposed Loads

The imposed loads that are envisaged to get permanently are Considered as per **IS : 875 (Part – 2)-1987.** Indian Standard "**Code of practice for Design loads (Other than earthquake) for Buildings and Structures".**

1. Living = 2 KN/m2

2. Staircase = 3 KN/m2

3. Toilets = 2 KN/m2

4. Terrace floors = 1.5 KN/m2

2.3 Earthquake Load

The loading due to earthquake is assessed based on the provisions of **IS : 1893-2016.** Structures with ductile detailing ic Considered as per **IS:13920-2016.**

Madurai falls under Seismic Zone II

Zone factor = 0.10

Response reduction factor = 5

Importance factor = 1.2

Structure With ductile detailing is Considered as per IS:13920-2016

2.4 Load Combinations

The Various loads shall be combined in accordance with the stipulations in IS:875(Part 5)-1987. Whichever Combinations Produced the most unfavorable effect in the building, foundation or structural member concerned shall be adopted. The various load Combinations Considered in the analysis are as follows:

1. 1(DL + LL)
2. 1(DL + 0.8LL + 0.8 SQX + 1
3. 1(DL + 0.8LL + 0.8 SQX – 1
4. 1(DL + 0.8LL + 0.8 SQZ + 1
5. 1(DL + 0.8LL + 0.8 SQZ – 1
6. 1.0(DL + SQX + 1)
7. 1.0(DL + SQX -)
8. 1.0(DL + SQZ + 1)
9. 1.0(DL + SQZ – 1)
10. 1.5(DL + LL)
11. 1.5(DL + SQX + 1)
12. 1.5(DL + SQX – 1)
13. 1.5(DL + SQZ + 1)
14. 1.5(DL + SQZ – 1)
15. 1.2(DL + LL + SQX + 1)
16. 1.2(DL + LL + SQX – 1)
17. 1.2(DL + LL +SQZ + 1)

18. 1.2(DL + LL +SQZ – 1)
19. 0.9DL + 1.5SQX + 1
20. 0.9DL + 1.5SQX - 1
21. 0.9DL + 1.5SQZ + 1
22. 0.9DL + 1.5SQZ – 1

The above load combination will be considered and effect combinations will be taken for design of various building elements.

3.0 ANALYSIS METHODS

The analysis of the structures is carried out using the ETABS 20 .The entire super Structure is modeled using frame elements as appropriate. Beam and columns are modeled as frame elements. Appropriate loads and its combinations as per relevant IS code clauses, for most unfavorable effects are chose for design. Various load cases considered in the analysis are briefed above.

4.0 DESIGN ASSUMPTION

4.1.1 The Base of the Foundation is assumed to be FIXED & PINNED.

4.1.2 All concrete elements shall be designed in accordance with IS 456:2000 Limit state design.

4.1.3 Appropriate loads and its combination as per relevant clauses, for the most unfavorable effects are chosen for design. (Refer Load Combination below).

5.0 FOUNDATION DESIGN

Type of foundation

Depth of foundation

6.0 MATERIALS

The self-weight of the various elements are computed based on the unit weight of materials as given below:

S.no	**Materials**	**Unit Weight KN/ m3**
1	Reinforced Cement Concrete	25
2	AAC Block / Brick WORK (For life well& parapet)	6.5 / 20
3	Steel	78.50

Structural concrete shall be of grade M25 for Columns and Footing and M20 for Beams and Slabs r.c.c work.

Steel reinforcement shall be of grade Fe 500 confirming to IS : 1786-2008.

7.0 NOMINAL COVER TO REINFORCEMENT

From Durability requirement, exposure condition is assumed as mild for Structural elements above ground level and moderate for Structural elements above ground level.

The clear cover to reinforcement to meet durability requirement shall be as follows:

Footing - 50mm

Column - 40mm

Beam - 25mm

Slab - 20mm

IS 1893:2016 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQX according to IS 1893:2016, as calculated by ETABS.

Direction and Eccentricity

Direction = Multiple

Eccentricity Ratio = 5% for all diaphragms

Structural Period

Period Calculation Method = User Specified

User Period $T = 0.655\ sec$

Factors and Coefficients

Seismic Zone Factor, Z [IS Table 3] $Z = 0.1$

Response Reduction Factor, R [IS Table 9] $R = 5$

Importance Factor, I [IS Table 8] $I = 1.2$

Site Type [IS Table 1] = I

Seismic Response

Spectral Acceleration Coefficient, S_a/g [IS 6.4.2] $\frac{S_a}{g} = \frac{1}{T}$ $\frac{S_a}{g} = 1.525786$

Equivalent Lateral Forces

Seismic Coefficient, A_h [IS 6.4.2] $A_h = \frac{Z\, I \frac{S_a}{g}}{2\, R}$

Calculated Base Shear

Direction	Period Used (sec)	W (kN)	V_b (kN)
X	0.655	48293.5624	884.2276
X + Ecc. Y	0.655	48293.5624	884.2276
X - Ecc. Y	0.655	48293.5624	884.2276

Applied Story Forces

IS 1893:2016 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQX according to IS 1893:2016, as calculated by ETABS.

Direction and Eccentricity

Direction = Multiple

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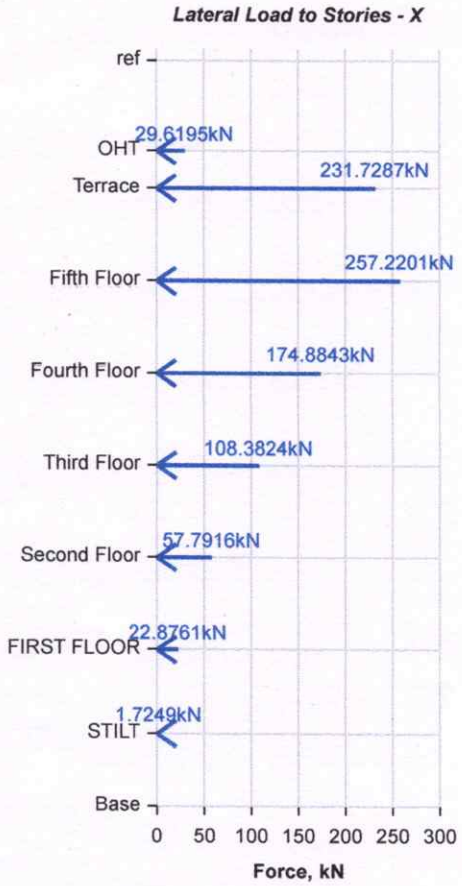
Equivalent Lateral Forces

Seismic Coefficient, A_h [IS 6.4.2] $A_h = \frac{Z\, I \frac{S_a}{g}}{2\, R}$

Calculated Base Shear

Direction	Period Used (sec)	W (kN)	V_b (kN)
X	0.655	48293.5624	884.2276
X + Ecc. Y	0.655	48293.5624	884.2276
X - Ecc. Y	0.655	48293.5624	884.2276

Applied Story Forces



Story	Elevation	X-Dir	Y-Dir
	m	kN	kN
ref	24.6408	0	0
OHT	21.6408	29.6195	0
Terrace	20.4216	231.7287	0
Fifth Floor	17.3736	257.2201	0
Fourth Floor	14.3256	174.8843	0
Third Floor	11.2776	108.3824	0
Second Floor	8.2296	57.7916	0
FIRST FLOOR	5.1816	22.8761	0
STILT	2.4384	1.7249	0
Base	0	0	0

IS 1893:2016 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQY according to IS 1893:2016, as calculated by ETABS.

Direction and Eccentricity

Direction = Multiple

Eccentricity Ratio = 5% for all diaphragms

Structural Period

Period Calculation Method = User Specified

User Period $T = 0.655\ sec$

Factors and Coefficients

Seismic Zone Factor, Z [IS Table 3] $Z = 0.1$

Response Reduction Factor, R [IS Table 9] $R = 5$

Importance Factor, I [IS Table 8] $I = 1.2$

Site Type [IS Table 1] = I

Seismic Response

Spectral Acceleration Coefficient, S_a/g [IS 6.4.2] $\frac{S_a}{g} = \frac{1}{T}$ $\frac{S_a}{g} = 1.525786$

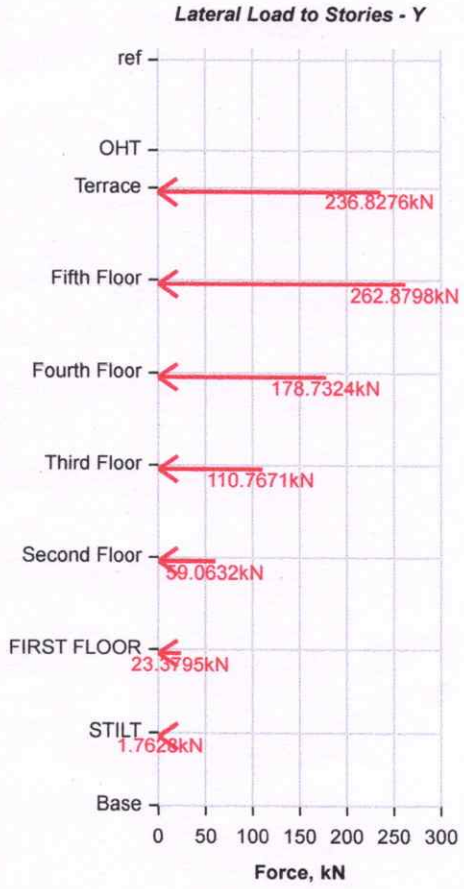
Equivalent Lateral Forces

Seismic Coefficient, A_h [IS 6.4.2] $A_h = \frac{Z\, I \frac{S_a}{g}}{2\, R}$

Calculated Base Shear

Direction	Period Used (sec)	W (kN)	V_b (kN)
Y	0.655	47702.8721	873.4124
Y + Ecc. X	0.655	47702.8721	873.4124
Y - Ecc. X	0.655	47702.8721	873.4124

Applied Story Forces



Story	Elevation	X-Dir	Y-Dir
	m	kN	kN
ref	24.6408	0	0
OHT	21.6408	0	0
Terrace	20.4216	0	236.8276
Fifth Floor	17.3736	0	262.8798
Fourth Floor	14.3256	0	178.7324
Third Floor	11.2776	0	110.7671
Second Floor	8.2296	0	59.0632
FIRST FLOOR	5.1816	0	23.3795
STILT	2.4384	0	1.7628
Base	0	0	0

1 Structure Data

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity.

1.1 Story Data

Table 1.1 - Story Definitions

Tower	Name	Height m	Master Story	Similar To	Splice Story	Color
T1	ref	3	No	None	No	Red
T1	OHT	1.2192	No	None	No	Yellow
T1	Terrace	3.048	No	FIRST FLOOR	No	Blue
T1	Fifth Floor	3.048	No	FIRST FLOOR	No	Cyan
T1	Fourth Floor	3.048	No	FIRST FLOOR	No	Magenta
T1	Third Floor	3.048	No	FIRST FLOOR	No	Gray8Dark
T1	Second Floor	3.048	No	FIRST FLOOR	No	Green
T1	FIRST FLOOR	2.7432	Yes	None	No	Red
T1	STILT	2.4384	Yes	None	No	Yellow

1.2 Grid Data

Table 1.2 - Grid Definitions - General

Tower	Name	Type	Ux m	Uy m	Rz deg	Story Range	Bubble Size mm	Color
T1	G1	Cartesian	0	0	0	Default	1250	Gray6

Table 1.3 - Grid Definitions - Grid Lines

Name	Grid Line Type	ID	Ordinate m	Bubble Location	Visible
G1	X (Cartesian)	A	-8.9337	End	Yes
G1	X (Cartesian)	B	-2.2916	End	Yes
G1	X (Cartesian)	C	-1.6947	End	Yes
G1	X (Cartesian)	D	0.8707	End	Yes
G1	X (Cartesian)	E	1.8278	End	Yes
G1	X (Cartesian)	F	3.4061	End	Yes
G1	X (Cartesian)	G	3.8852	End	Yes
G1	X (Cartesian)	H	4.1473	End	Yes
G1	X (Cartesian)	J	5.4635	End	Yes
G1	X (Cartesian)	K	7.8511	End	Yes
G1	X (Cartesian)	L	8.7401	End	Yes
G1	X (Cartesian)	M	10.7721	End	Yes
G1	X (Cartesian)	M'	11.0134	End	Yes
G1	X (Cartesian)	N	16.1777	End	Yes
G1	X (Cartesian)	P	17.9049	End	Yes
G1	Y (Cartesian)	20	-21.4318	End	Yes
G1	Y (Cartesian)	19	-17.1646	End	Yes
G1	Y (Cartesian)	18	-16.4407	End	Yes
G1	Y (Cartesian)	20	-15.62	Start	Yes
G1	Y (Cartesian)	17	-13.8845	End	Yes
G1	Y (Cartesian)	16	-12.17	End	Yes
G1	Y (Cartesian)	15	-11.6493	End	Yes
G1	Y (Cartesian)	14	-10.3412	End	Yes

Table 1.3 - Grid Definitions - Grid Lines (continued)

Name	Grid Line Type	ID	Ordinate m	Bubble Location	Visible
G1	Y (Cartesian)	13	-8.3727	End	Yes
G1	Y (Cartesian)	12	-7.0646	End	Yes
G1	Y (Cartesian)	11	-3.8989	End	Yes
G1	Y (Cartesian)	9	-3.1657	End	Yes
G1	Y (Cartesian)	8	-2.0701	End	Yes
G1	Y (Cartesian)	7	0	End	Yes
G1	Y (Cartesian)	6	0.2921	End	Yes
G1	Y (Cartesian)	5	2.6416	Start	Yes
G1	Y (Cartesian)	4	2.9718	Start	Yes
G1	Y (Cartesian)	3	3.2766	End	Yes
G1	Y (Cartesian)	2	4.2672	End	Yes
G1	Y (Cartesian)	1	6.1214	Start	Yes

1.3 Mass

Table 1.4 - Mass Source Definition

Name	Is Default	Include Lateral Mass?	Include Vertical Mass?	Lump Mass?	Source Self Mass?	Source Added Mass?	Source Load Patterns?	Move Mass Centroid?	Load Pattern	Multiplier
MsSrc1	Yes	Yes	No	Yes	No	No	Yes	No	Dead	1
MsSrc1									Live	0.25
MsSrc1									LL BCS	0.5

Table 1.5 - Centers Of Mass And Rigidity

Story	Diaphragm	Mass X kg	Mass Y kg	XCM m	YCM m	Cum Mass X kg	Cum Mass Y kg	XCCM m	YCCM m	XCR m	YCR m
FIRST FLOOR	D1	0	0	4.1753	-9.0236	0	0	0	0		
Second Floor	D2	0	0	3.7515	-8.8022	0	0	0	0		
Third Floor	D3	0	0	3.7686	-8.8098	0	0	0	0		
Fourth Floor	D4	0	0	3.7686	-8.8098	0	0	0	0		
Fifth Floor	D5	0	0	3.7686	-8.8098	0	0	0	0		
Terrace	D6	0	0	3.6615	-8.3975	0	0	0	0		

Table 1.6 - Mass Summary by Diaphragm

Story	Diaphragm	Mass X kg	Mass Y kg	Mass Moment of Inertia ton-m2	X Mass Center m	Y Mass Center m
Terrace	D6	0	0	0	3.6615	-8.3975
Fifth Floor	D5	0	0	0	3.7686	-8.8098
Fourth Floor	D4	0	0	0	3.7686	-8.8098
Third Floor	D3	0	0	0	3.7686	-8.8098
Second Floor	D2	0	0	0	3.7515	-8.8022
FIRST FLOOR	D1	0	0	0	4.1753	-9.0236

Table 1.7 - Mass Summary by Story

Story	UX kg	UY kg	UZ kg
ref	0	0	0
OHT	60233.65	60233.65	0
Terrace	529185.81	529185.81	0
Fifth Floor	811583.2	811583.2	0
Fourth Floor	811583.2	811583.2	0
Third Floor	811583.2	811583.2	0
Second Floor	812671.03	812671.03	0
FIRST FLOOR	811451.31	811451.31	0
STILT	276281.37	276281.37	0
Base	30670.79	30670.79	0

Table 1.8 - Mass Summary by Group

Group	Self Mass kg	Self Weight kN	Mass X kg	Mass Y kg	Mass Z kg
All	0	23160.0707	4955243.55	4955243.55	0
DXFIN1	0	0	0	0	0

1.4 Groups

Table 1.9 - Group Definitions

Name	Color	Steel Design?	Concrete Design?	Composite Design?
All	Yellow	No	No	No
DXFIN1	Yellow	No	No	No

2 Properties

This chapter provides property information for materials, frame sections, shell sections, and links.

2.1 Materials

Table 2.1 - Material Properties - General

Material	Type	SymType	Grade	Color	Notes
4000Psi	Concrete	Isotropic	f'c 4000 psi	Yellow	
A416Gr270	Tendon	Uniaxial	Grade 270	Cyan	
A615Gr60	Rebar	Uniaxial	Grade 60	Blue	
A992Fy50	Steel	Isotropic	Grade 50	Red	
HYSD500	Rebar	Uniaxial	HYSD Grade 500	Gray8Dark	
M20	Concrete	Isotropic	M20	Magenta	
M25	Concrete	Isotropic	M25	Green	

2.2 Frame Sections

Table 2.2 - Frame Section Property Definitions - Summary (Part 1 of 3)

Name	Material	Shape	Color	Area cm2	J cm4	I33 cm4	I22 cm4	As2 cm2	As3 cm2
Bm 1'x1'6"	M20	Concrete Rectangular	Cyan	1393.5	253281.8	242746.2	107887.2	1161.3	1161.3
bm 1'x2'6"	M20	Concrete Rectangular	Cyan	2322.6	538384.1	1123824.8	179812	1935.5	1935.5
Bm 9" x 1'3"	M20	Concrete Rectangular	Cyan	871	94986.9	105358.6	37929.1	725.8	725.8
Bm 9" x 1'6"	M20	Concrete Rectangular	Red	1045.2	125009.5	182059.6	45514.9	871	871
Bm 9" x 2'	M20	Concrete Rectangular	Yellow	1393.5	185491.9	431548.7	60686.5	1161.3	1161.3
CB 1'6" x 10"	M20	Concrete Rectangular	Magenta	1161.3	163024.1	62434.7	202288.5	967.7	967.7
Col 1' x 1'6"	M25	Concrete Rectangular	Blue	1393.5	253281.8	242746.2	107887.2	1161.3	1161.3
Col 1' x 2'	M25	Concrete Rectangular	Green	1858.1	395091.9	575398.3	143849.6	1548.4	1548.4
Col 1' x 2'3"	M25	Concrete Rectangular	Cyan	2090.3	466662	819268.3	161830.8	1741.9	1741.9
Col 1' x 2'6"	M25	Concrete Rectangular	Blue	2322.6	538384.1	1123824.8	179812	1935.5	1935.5
col 1'3"x2'3"	M25	Concrete Rectangular	Green	3483.9	1244342.7	2427461.7	421434.3	2903.2	2903.2
COL 1'6" X1'6"	M25	Concrete Rectangular	Red	2090.3	615361.5	364119.3	364119.3	1741.9	1741.9
Col 9" x 1'6"	M25	Concrete Rectangular	Magenta	1045.2	125009.5	182059.6	45514.9	871	871
Col 9" x 2'	M25	Concrete Rectangular	Yellow	1393.5	185491.9	431548.7	60686.5	1161.3	1161.3
Col 9" x 2'3"	M25	Concrete Rectangular	Gray8Dark	1567.7	215799.7	614451.2	68272.4	1306.4	1306.4
Col 9" x 2'6"	M25	Concrete Rectangular	Gray8Dark	1741.9	246122.6	842868.6	75858.2	1451.6	1451.6

Table 2.2 - Frame Section Property Definitions - Summary (Part 2 of 3)

Name	S33Pos cm3	S33Neg cm3	S22Pos cm3	S22Neg cm3	Z33 cm3	Z22 cm3	R33 mm	R22 mm	CG Offset 3 mm	CG Offset 2 mm	PNA Offset 3 mm
Bm 1'x1'6"	10618.8	10618.8	7079.2	7079.2	15928.2	10618.8	132	88	0	0	0
bm 1'x2'6"	29496.7	29496.7	11798.7	11798.7	44245.1	17698	220	88	0	0	0
Bm 9" x 1'3"	5530.6	5530.6	3318.4	3318.4	8296	4977.6	110	66	0	0	0
Bm 9" x 1'6"	7964.1	7964.1	3982.1	3982.1	11946.2	5973.1	132	66	0	0	0
Bm 9" x 2'	14158.4	14158.4	5309.4	5309.4	21237.6	7964.1	176	66	0	0	0
CB 1'6" x 10"	4916.1	4916.1	8849	8849	7374.2	13273.5	73.3	132	0	0	0
Col 1' x 1'6"	10618.8	10618.8	7079.2	7079.2	15928.2	10618.8	132	88	0	0	0
Col 1' x 2'	18877.9	18877.9	9438.9	9438.9	28316.8	14158.4	176	88	0	0	0
Col 1' x 2'3"	23892.3	23892.3	10618.8	10618.8	35838.5	15928.2	198	88	0	0	0
Col 1' x 2'6"	29496.7	29496.7	11798.7	11798.7	44245.1	17698	220	88	0	0	0

Table 2.2 - Frame Section Property Definitions - Summary (Part 2 of 3, continued)

Name	S33Pos cm3	S33Neg cm3	S22Pos cm3	S22Neg cm3	Z33 cm3	Z22 cm3	R33 mm	R22 mm	CG Offset 3 mm	CG Offset 2 mm	PNA Offset 3 mm
col 1'3"x2'3"	53094.1	53094.1	22122.5	22122.5	79641.1	33183.8	264	110	0	0	0
COL 1'6" X1'6"	15928.2	15928.2	15928.2	15928.2	23892.3	23892.3	132	132	0	0	0
Col 9" x 1'6"	7964.1	7964.1	3982.1	3982.1	11946.2	5973.1	132	66	0	0	0
Col 9" x 2'	14158.4	14158.4	5309.4	5309.4	21237.6	7964.1	176	66	0	0	0
Col 9" x 2'3"	17919.3	17919.3	5973.1	5973.1	26878.9	8959.6	198	66	0	0	0
Col 9" x 2'6"	22122.5	22122.5	6636.8	6636.8	33183.8	9955.1	220	66	0	0	0

Table 2.2 - Frame Section Property Definitions - Summary (Part 3 of 3)

Name	Area Modifier	As2 Modifier	As3 Modifier	J Modifier	I33 Modifier	I22 Modifier	Mass Modifier	Weight Modifier
Bm 1'x1'6"	1	1	1	1	1	1	1	1
bm 1'x2'6"	1	1	1	1	1	1	1	1
Bm 9" x 1'3"	1	1	1	1	1	1	1	1
Bm 9" x 1'6"	1	1	1	1	1	1	1	1
Bm 9" x 2'	1	1	1	1	1	1	1	1
CB 1'6" x 10"	1	1	1	1	1	1	1	1
Col 1' x 1'6"	1	1	1	1	1	1	1	1
Col 1' x 2'	1	1	1	1	1	1	1	1
Col 1' x 2'3"	1	1	1	1	1	1	1	1
Col 1' x 2'6"	1	1	1	1	1	1	1	1
col 1'3"x2'3"	1	1	1	1	1	1	1	1
COL 1'6" X1'6"	1	1	1	1	1	1	1	1
Col 9" x 1'6"	1	1	1	1	1	1	1	1
Col 9" x 2'	1	1	1	1	1	1	1	1
Col 9" x 2'3"	1	1	1	1	1	1	1	1
Col 9" x 2'6"	1	1	1	1	1	1	1	1

2.3 Shell Sections

Table 2.3 - Area Section Property Definitions - Summary

Name	Type	Element Type	Material	Total Thickness mm	Deck Material	Deck Depth mm
Deck1	Deck	Membrane	4000Psi	162.5	A992Fy50	75
RCC 230	Wall	Shell-Thin	M20	230		
Slab 4.5"	Slab	Shell-Thin	M20	114.3		
Slab 4.5" oneway	Slab	Membrane	M20	114.3		
Slab 5"	Slab	Shell-Thin	M20	127		
Slab 6"	Slab	Shell-Thin	M20	150		
Wall1	Wall	Shell-Thin	4000Psi	250		

2.4 Reinforcement Sizes

Table 2.4 - Reinforcing Bar Sizes

Name	Diameter mm	Area cm2
6	6	0.3
8	8	0.5
10	10	0.8

Table 2.4 - Reinforcing Bar Sizes (continued)

Name	Diameter mm	Area cm2
12	12	1.1
14	14	1.5
16	16	2
18	18	2.5
20	20	3.1
22	22	3.8
25	25	4.9
26	26	5.3
28	28	6.2
32	32	8
36	36	10.2
40	40	12.6
50	50	19.6

2.5 Links

Table 2.5 - Link Property Definitions - Summary

Name	Type	Degrees of Freedom	Mass kg	Weight kN	Defined Length m	Defined Area m2
Link1	Linear	U1	0	0	1	1

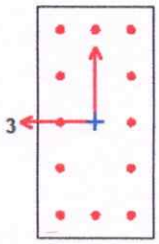
2.6 Tendon Sections

Table 2.6 - Tendon Section Properties

Name	Material	StrandArea cm2	Color	Notes
Tendon1	A416Gr270	1	Magenta	

ETABS Concrete Frame Design

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



Column Element Details

Level	Element	Unique Name	Section ID	Combo ID	Station Loc	Length (mm)	LLRF	Type
FIRST FLOOR	C22	85	Col 1' x 2'	A.0.9DL-1.5EQY	2286	2743.2	0.65	Ductile Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
304.8	609.6	60	30

Material Properties

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

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 % %
597.7172	64.5849	-45.9788	11.9543	17.7933	1486	0.8

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)	1.687834	4724.4	-10.08	31.1727	17.7933
Minor Bend(M2)	1.437923	2286	-14.5691	0	11.9543

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}	46.4601	106.494	67.0075	46.4601	337.85
Minor, V_{u3}	44.609	100.6901	59.6925	44.609	675.7

Joint Shear Check/Design

	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}	0	33.1858	224.143	929.0304	1858.1	0.241
Minor Shear, V_{u3}	0	31.8635	200.95	580.644	1161.3	0.346

(1.4) Beam/Column Capacity Ratio

Major Ratio	Minor Ratio
0.298	0.679

Additional Moment Reduction Factor k (IS 39.7.1.1)

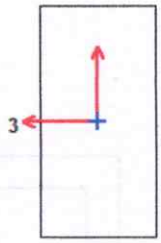
A_g cm²	A_{sc} cm²	P_{uz} kN	P_b kN	P_u kN	k Unitless
1858.1	14.9	2647.7366	889.462	597.7172	1

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	1.722	609.6	13.081	12	Yes	31.1727
Minor Bending (M_2)	Yes	0.833	304.8	10.784	12	No	0

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
FIRST FLOOR	B74	868	Bm 9" x 1'6"	A.1.5DL-1.5EQX	342.9	5164.3	1	Ductile Frame

Section Properties

b (mm)	h (mm)	b_f (mm)	d_s (mm)	d_{ct} (mm)	d_{cb} (mm)
228.6	457.2	228.6	0	40	40

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
22360.68	20	1	500	500

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
-108.4265	7.8703	111.2556	-4.5419

Design Moments, M_{u3} & M_t

Factored Moment kN-m	Factored M_t kN-m	Positive Moment kN-m	Negative Moment kN-m
-108.4265	13.8887	0	-122.3152

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)	-122.3152		822	5	822	206
Bottom (-2 Axis)		0	411	5	103	411

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
152.0261	0	207.111	57.5979	1375.65

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
7.8703	111.2556	168.6	397.2	733.09

Design of Square Footing

Unfactored Axial Load (P)	1600	kN	
Column dim.b (Shorter)	300	mm	0.3 m
Column dim.d (Longer)	600	mm	0.6 m
Safe Bearing Capacity (SBC)	300	kN/m2	
fck	25	N/mm2	
fy	500	N/mm2	

Sizing of Footing

Area of footing req	Req. Area= $\frac{Un.Axial\ Load}{SBC}$	5.3333	m2	
Req Size of footing (B)	$Req.Size = \sqrt{Req.Area}$	2.31	m	7.57 ft
Footing B		2.363	m	
Footing B		2.363	m	
Net upward rxn	Net upward pressure, $Po = \frac{Un.Axial\ Load}{Area\ of\ footing\ provided}$	286.54	kN/m2	OK Po < SBC

Sizing of Pedestal

0.45 fck Ac = Factored Axial load (Pu)

Ac = Req. Area of pedestal

Ac				
Available Area of pedestal	Col. Area = b*d	213333	mm2	
If Col area > Ac, Pedestal not required		180000	mm2	
		PROVIDE PEDESTAL		
Req pedestral b/d	√Ac	462	mm	
Pedestral b/d		450	mm	750 mm
		0.45	m	0.75 m

Ultimate Moment Mu & Depth of footing D

Factored moment Mu	Mu= $\frac{Po.B.(B-b)^2}{8}$*1.5	465	kNm	
Req Eff Depth of footing d	$d_{req}= \sqrt{\frac{Mu}{2.66*Pedestal\ width}}$	623	mm	
Req. Overall depth D		688	mm	
Depth of footing		685	mm	
Effective depth deff		0.62	m	620 mm

Check for Punching shear

Punch.Shear Force (Vp)	$Vp = Po*(B^2 - (pedestal\ b+deff)^2)$	1180	kN	
Punching Perimeter (Bo)	(Pedestal b+deff)+(Pedestal d+deff)	4880	mm	
Punching shear stress (τ_{vp})	$\tau_{vp}= \frac{Vpu}{Bo*deff}$	0.58	<1.12	ok

Check for flexural shear

Flexural Shear Force (Vf)	*Vf = Po*[(B-pedestal b)/2-deff]*	96	kN/m width of footing		
Depth of critical section D @ d from pedestral face		685	mm		
dc		620	mm		
Flexural Shear stress (τvf)	$\tau_{vf} = \frac{Vfu}{1000 * dc}$	0.233	N/mm2	<0.36	IS 456 Pg:7

Pedestral height

$$\tan \alpha \leq 0.9 \sqrt{\frac{100 q_a}{f_{ck}} + 1}$$

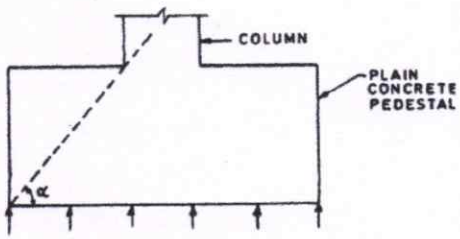


Fig. 20

Maximum Bending Pressure (q0)	$q_o = \frac{Unfactored\ Axial\ load\ P}{Pedestal\ Area}$	4.74	kN/m2
		4.47	
tan α = h/(pedestal projection from col. face)		4.02	
h = Pedestal height		302	mm
Pedestal height Provided		450	mm

Matte Reinforcement

K = Mu/bd2	$K = \frac{Factored\ moment\ Mu}{Pedestal\ width\ b\ x\ deff}$	2.69	

Ast = 0.5 fck [1-(√ 1- 4.6Mu/fck*pedestal b*deff^2)] x pedestal b x deff

Ast req	2014	mm2
$= \frac{4.6\ X\ Mu}{fck.b.d^2}$	0.494207581	
1-√1-A67	0.288809155	

Astmin = 0.12% of b*d

Ast min	1942.386	mm2

Reinforced Concrete Structural Slab Design

Slab Size – 7.01m x 3.05m

Concrete Grade – M20

Steel Grade – Fe 500

Slab Thickness – 130mm

Ly = 7.01m

Lx = 3.58m

Slab distributed load

Including Self weight and imposed load = 8.75 kN/m2

Ly/Lx = 7.01/3.58 = 2 (One-way Continuous Slab)

$M = wl^2/10 = 8.75 \times 3.58^2/10$

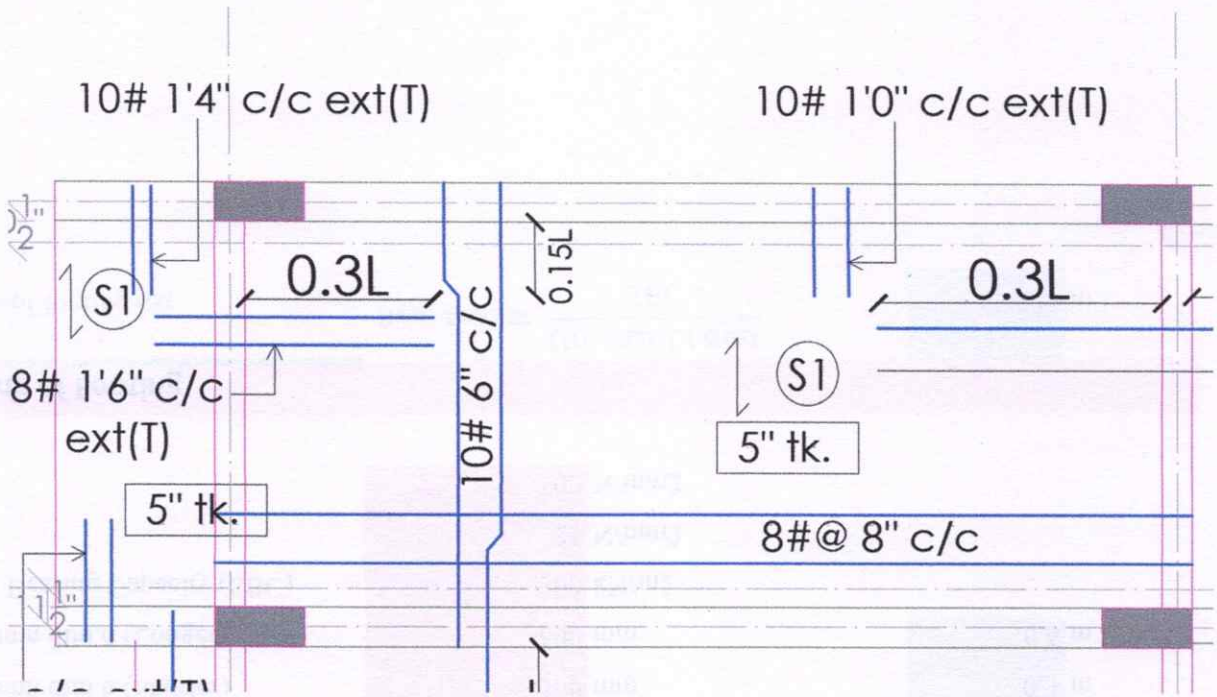
Mu = 16.8 kNm

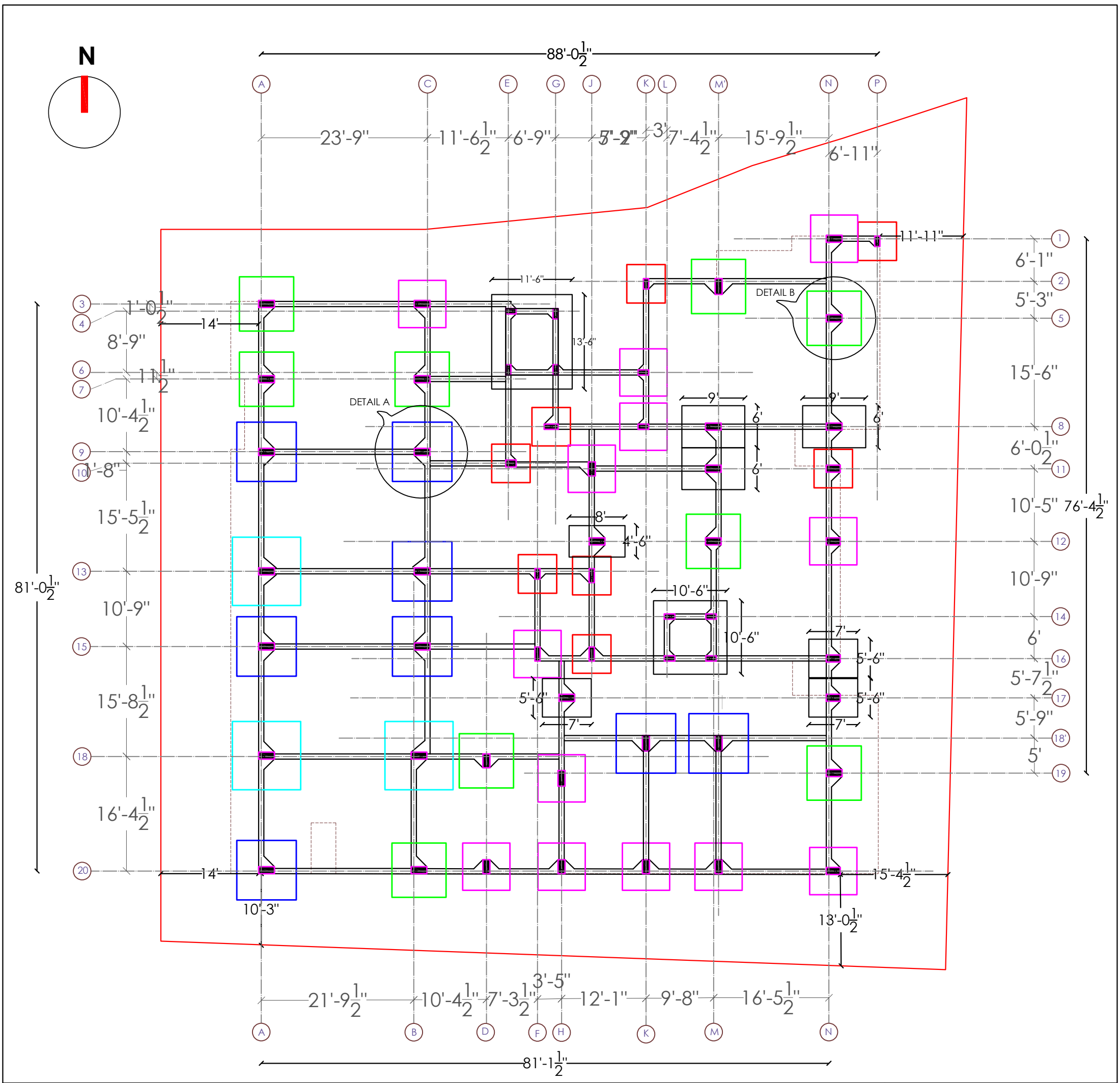
As per IS-456 (Design Aids SP-16) Table 38

Provided,

Main Reinforcement = 10# @6" c/c

Distributors = 8# @8" c/c





PROPOSED "Magilagam" Apartment Building for Chola Rank Towers @ Periyar Nagar , Erode

Centerline Foundation & Plinth Beam Layout-Sheet-589/SD/003/rev1

RCC SIZE OF FOOTING

FG1	5'6" x 5'6" - 8 Nos	FG4	8'6" x 8'6" - 8 Nos
FG2	6'9" x 6'9" - 13 Nos	FG5	9'9 x 9'9" - 3 Nos
FG3	7'9" x 7'9" - 9 Nos		

Refer Column size detail sheet 007 for column size

S.NO	REVISION	DATE	DRAWN

JOB NO : 589 **Date:15.04.2024**

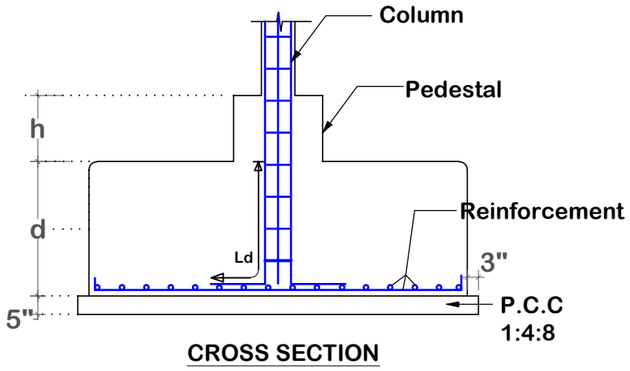
DRAWN BY : S.N. **CHKD BY :Er.S.K.S**

DESIGNED BY : S.N **NOT TO SCALE**

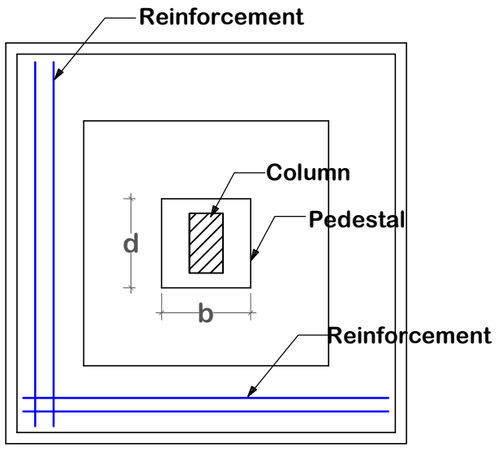
Ref: Gdrive/Chola Ongoing/ Magilagam / Drawing /Structural drawing Centerline drawing

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CROSS SECTION



PLAN

FOOTING SIZE & REINFORCEMENT

(ALL DIMENSIONS ARE IN FEET & INCHES)

Footing Group	Column Name	Nos	Size of Column	Footing Size P.C.C	Footing Size R.C.C	Footing	Size of Pedestal		Reinforcement
						d	Width (d)	Height (h)	
FG1	E10,F13,P1,K2	4	1'6"	6'0" x 6'0"	5'6" x 5'6"	1'6"	2'0"	1'3"	12 Nos 10# Bothways
	J13,J16,N11,G8	4	2'0"	6'0" x 6'0"	5'6" x 5'6"	1'6"	2'6"	1'3"	
FG2	K6,K8	2	1'6"	7'3" x 7'3"	6'9" x 6'9"	1'9"	2'0"	1'6"	15 Nos 12# Bothways
	M'20,N12,J11, D20,F16,K20,H20	7	2'0"	7'3" x 7'3"	6'9" x 6'9"	1'9"	2'6"	1'6"	
	N1,N20,C3,H19	4	2'3"	7'3" x 7'3"	6'9" x 6'9"	1'9"	2'9"	1'6"	
FG3	D18	1	2'0"	8'3" x 8'3"	7'9" x 7'9"	2'3"	2'6"	1'6"	19 Nos 12# Bothways
	A3,A7,C7,B20,M'2, M'12,N5,N19	8	2'3"	8'3" x 8'3"	7'9" x 7'9"	2'3"	2'9"	1'6"	
FG4	A15,K18',M18'	3	2'3"	9'0" x 9'0"	8'6" x 8'6"	2'6"	2'9"	1'6"	14 Nos 16# Bothways
	A9,C9,C13,C15,A20	5	2'6"	9'0" x 9'0"	8'6" x 8'6"	2'6"	3'0"	1'6"	
FG5	B18,A18	2	2'3"	10'3" x 10'3"	9'9" x 9'9"	2'6"	2'9"	2'6"	19 Nos 16# Bothways
	A13	1	2'6"	10'3" x 10'3"	9'9" x 9'9"	2'6"	3'0"	2'6"	
Combined Footing									
FG9	L14,L16,M14,M16,E4,G4,E6,G6	8	Refer Detail SD/589-009, 11			–	–	–	–

PROPOSED "Magilagam" Apartment Building FOR Chola Rank Towers @ Periyar Nagar , Erode

Foundation Details
Sheet no : /SD/005/REV - 1

NOTES :

* All dimensions are in Feet & Inches.
* Designed for Ground Parking + 5 Floors.
* SBC of soil : 300 KN /m²
* Concrete : M25 - Mix (1:1:2)
* Steel : Fe 500
* For Pedestal size,provide +3" of the column size of all sides.
* P.C.C : 1:4:8
* Clear cover for
  (a) Footing : 50 mm
  (b) Column : 25 mm
* Center of footing should coincide Center of column.
* Take care of Center line of wall & Center line of Column.

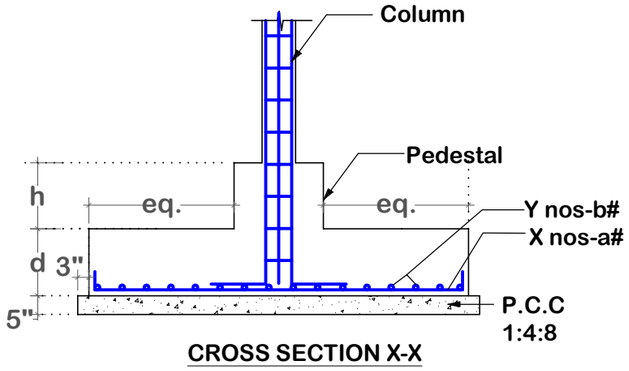
S.No	REVISION - 1	DATE	DRAWN

DESIGNED BY : S.N	DATE :15.04.2024
DRAWN BY :M.B	CHKD BY :Er.S.K.S

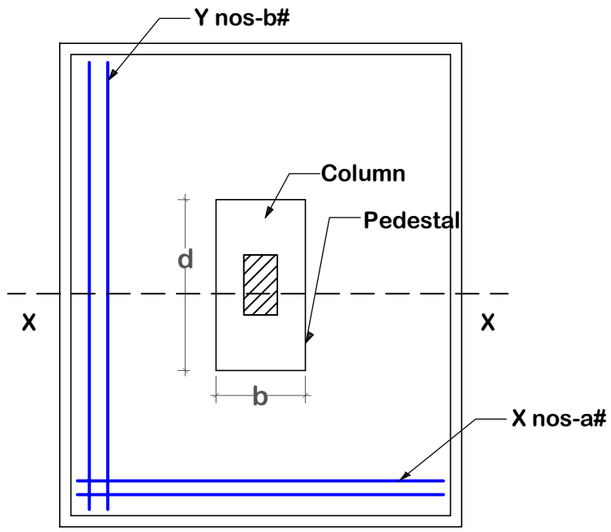
Ref: Gdrive/ Chola Ongoing Magilagam / Drawing / Structural Drawings/ Footing Detail1

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CROSS SECTION X-X



PLAN

FOOTING SIZE & REINFORCEMENT

ALL DIMENSIONS ARE IN FEET & INCHES

Footing Group	Column Name	Nos	Size of Column (Till Stilt Floor)	Footing Size P.C.C	Footing Size R.C.C	footing depth	Size of Pedestal			Reinforcement	
	Rectangular footing					d	Length (b)	Width (d)	Height (h)	X direction	Y direction
FG6	M'8,M'11,N8	3	1'0"x2'3"	6'6" x 9'6"	6'0" x 9'0"	2'0"	1'6"	2'9"	1'3"	17 Nos-10#	18 Nos-12#
FG7	J12	1	1'0"x2'3"	5'0" x 8'6"	4'6" x 8'0"	2'0"	1'6"	2'9"	1'3"	13 Nos-10#	16 Nos-12#
FG8	H17,N16,N17	3	1'0"x2'0"	6'0" x 7'6"	5'6" x 7'0"	1'9"	1'6"	2'6"	1'3"	11 Nos-12#	13 Nos-12#
	Total	7									

PROPOSED "Magilagam" Apartment Building
FOR Chola Rank Towers
@ Periyar Nagar , Erode

Foundation Details
Sheet No.569 / SD / 006

NOTES :

* All dimensions are in Feet & Inches.
* Designed for Ground Parking + 5 Floors.
* SBC of soil : 300 KN /m²
* Concrete : M25 - Mix (1:1:2)
* Steel : Fe 500
* P.C.C : 1:4:8
* Clear cover for (a) Footing : 50 mm
* Development Length of Column : 60 Times the Diameter of Rod.
* Center of footing should coincide Center of column.
* Take care of Center line of wall & Center line of Column.

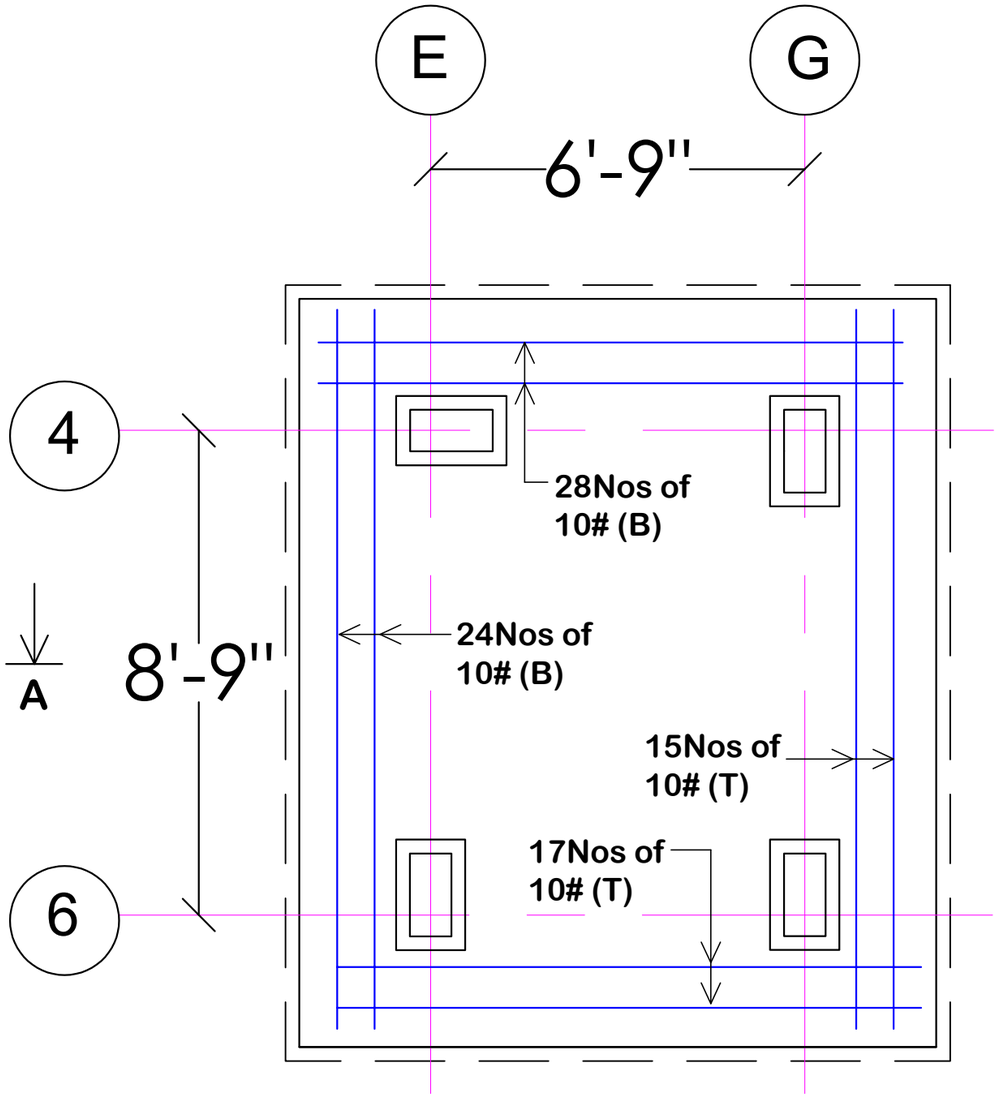
Dimensions have to to checked with footing & plinth Beam layout

S.No	REVISION	DATE	DRAWN
DESIGN BY : S.N		DATE :14.02.2024	
DRAWN BY :M.B		CHKD BY :Er.S.K.S	

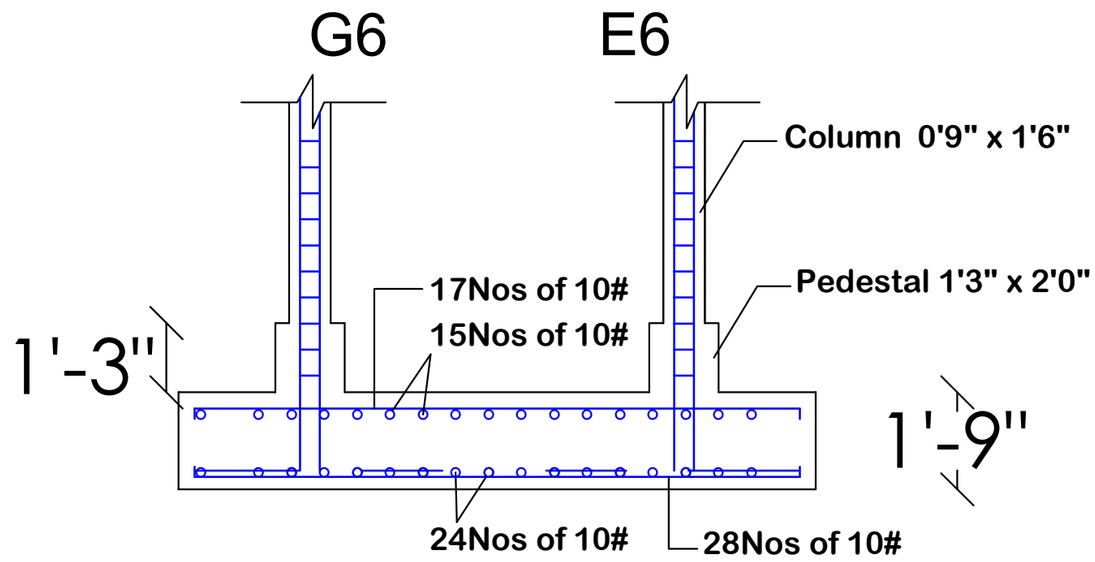
Ref: Gdrive/ Chola Ongoing/ Magilagam/ Drawing Structural Drawings/ Footing Detail2

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PLAN



Section A-A

Footing Size

P.C.C.Size : 12'0" x 14'0"
R.C.C.Size : 11'6" x 13'6"

PROPOSED "Magilagam" Apartment Building FOR Chola Rank Towers @ Periyar Nagar , Erode

Combined Footing Details
Sheet no : /SD/0011

NOTES :

* All dimensions are in Feet & Inches.
* Designed for Ground Parking + 5 Floors.
* SBC of soil : 300 KN /m²
* Footing Concrete : M25 - Mix (1:1:2)
* Steel : Fe 500
* P.C.C : 1:4:8
* Clear cover for
  (a) Footing : 50 mm
  (b) Column : 25 mm
* Center of footing should coincide Center of column.
* Take care of Center line of wall & Center line of Column.

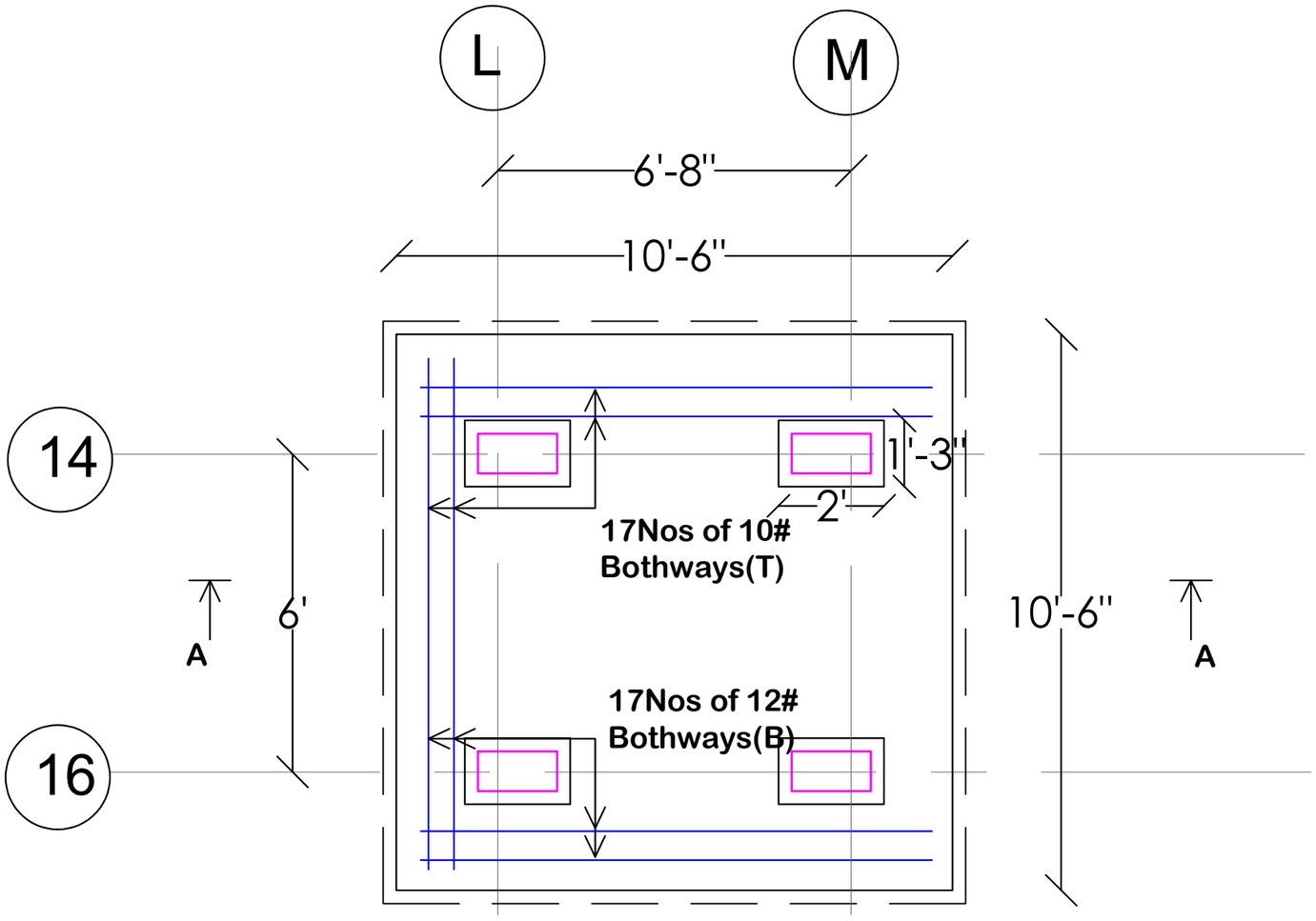
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DESIGNED BY : S.N	DATE :15.04.2024
DRAWN BY :R.K	CHKD BY :Er.S.K.S

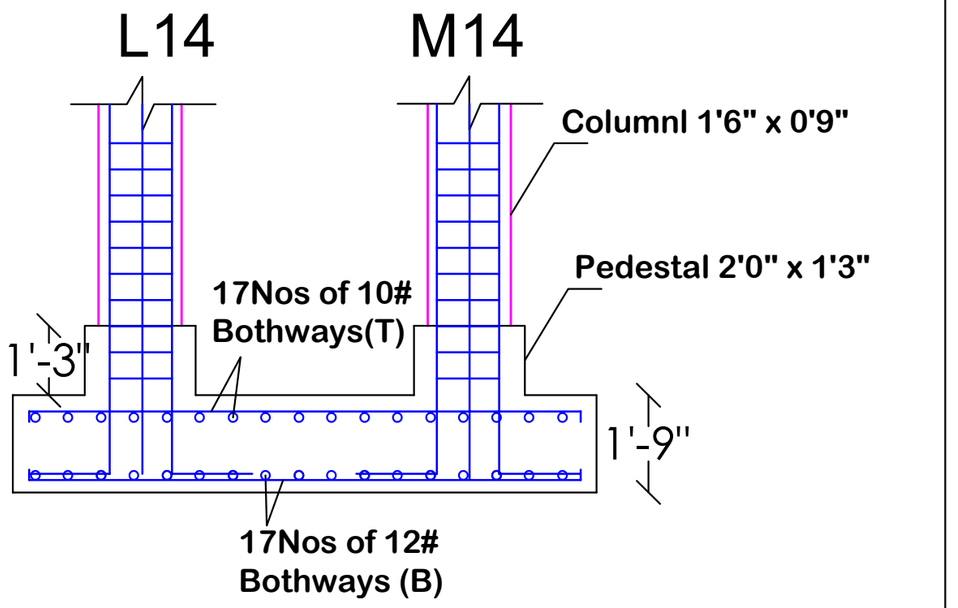
Ref: Gdrive/ Chola Ongoing Magilagam / Drawing / Structural Drawings/ Footing Detail3

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Off : 0427 4040952



PLAN



Section A-A

Footing Size

P.C.C.Size : 11'0" x 11'0"
R.C.C.Size : 10'6" x 10'6"

PROPOSED "Magilagam" Apartment Building FOR Chola Rank Towers @ Periyar Nagar , Erode

Combined Footing Details
Sheet no : /SD/009

NOTES :

* All dimensions are in Feet & Inches.
* Designed for Ground Parking + 5 Floors.
* SBC of soil : 300 KN /m²
* Concrete : M25 - Mix (1:1:2)
* Steel : Fe 500
* P.C.C : 1:4:8
* Clear cover for
  (a) Footing : 50 mm
  (b) Column : 40 mm
* Center of footing should coincide Center of column.
* Take care of Center line of wall & Center line of Column.

S.No	REVISION	DATE	DRAWN

DESIGNED BY : S.N	DATE :08.03.2024
DRAWN BY :S.N.	CHKD BY :Er.S.K.S

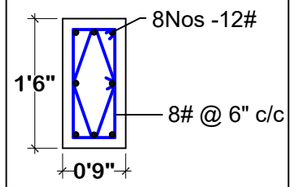
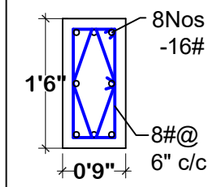
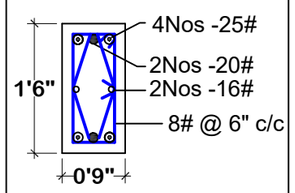
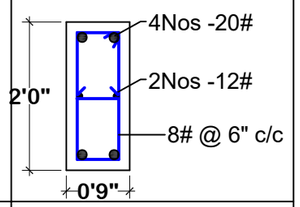
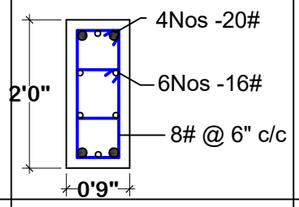
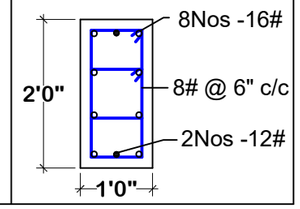
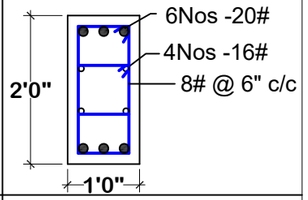
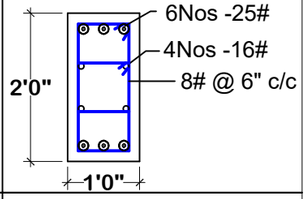
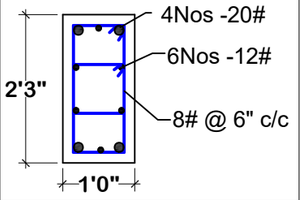
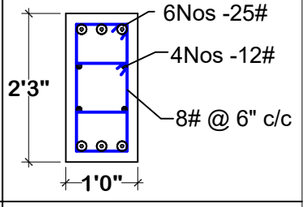
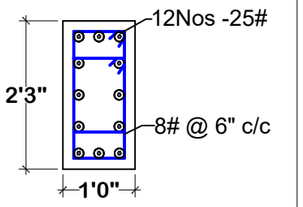
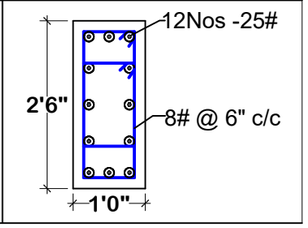
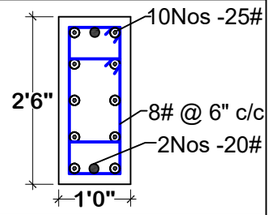
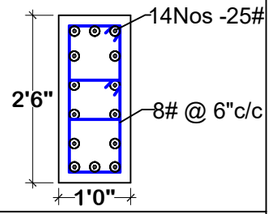
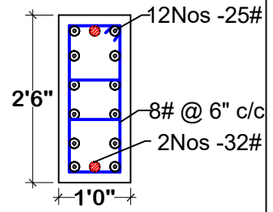
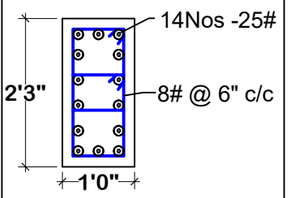
Ref: Gdrive/ Chola Ongoing Magilagam / Drawing / Structural Drawings/ Footing Detail3

ENGINEERS :

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
Off : 0427 4040952

COLUMN SIZE & REINFORCEMENT - Magilagam

ALL DIMENSIONS ARE IN FEET & INCHES

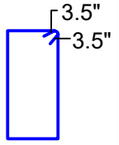
Column Group	Column Name	Nos	Cross Section
CG1	F13,G4,K2, L16,P1	5	
CG2	E6,E10,K8	3	
CG3	E4,G6,K6, L14,M14,M16	6	
CG4	G8,J13	2	
CG5	F16,J16	2	
CG6	K20, N17	2	
CG7	D18,D20,H20, N11	4	
CG8	J11,M'20,N12, N16	4	
CG9	H17,H19, M'11,N1,K18'	5	
CG10	A3,A7,C7, N8,J12,M'18'	6	
CG11	A15,N5,N19, ,M'12,C3, M'2,M'8	8	
CG12	A9,A13	2	
CG13	C13	1	
CG14	C9,C15	2	
CG15	A20	1	
CG16	A18,B18,B20	3	
	Total	56	

PROPOSED "Magilagam" Apartment Building for
Chola Rank Towers
@ Periyar Nagar , Erode

Column Reinforcement details-Sheet-589/SD/008/REV 1

NOTES :

* All dimensions are in Feet & Inches.
* Concrete : M25 - Mix (1:1:2)
* Steel : Fe 500
* Clear cover for
  (a) Column : 25 mm
* Hook should be of 3.5" minimum



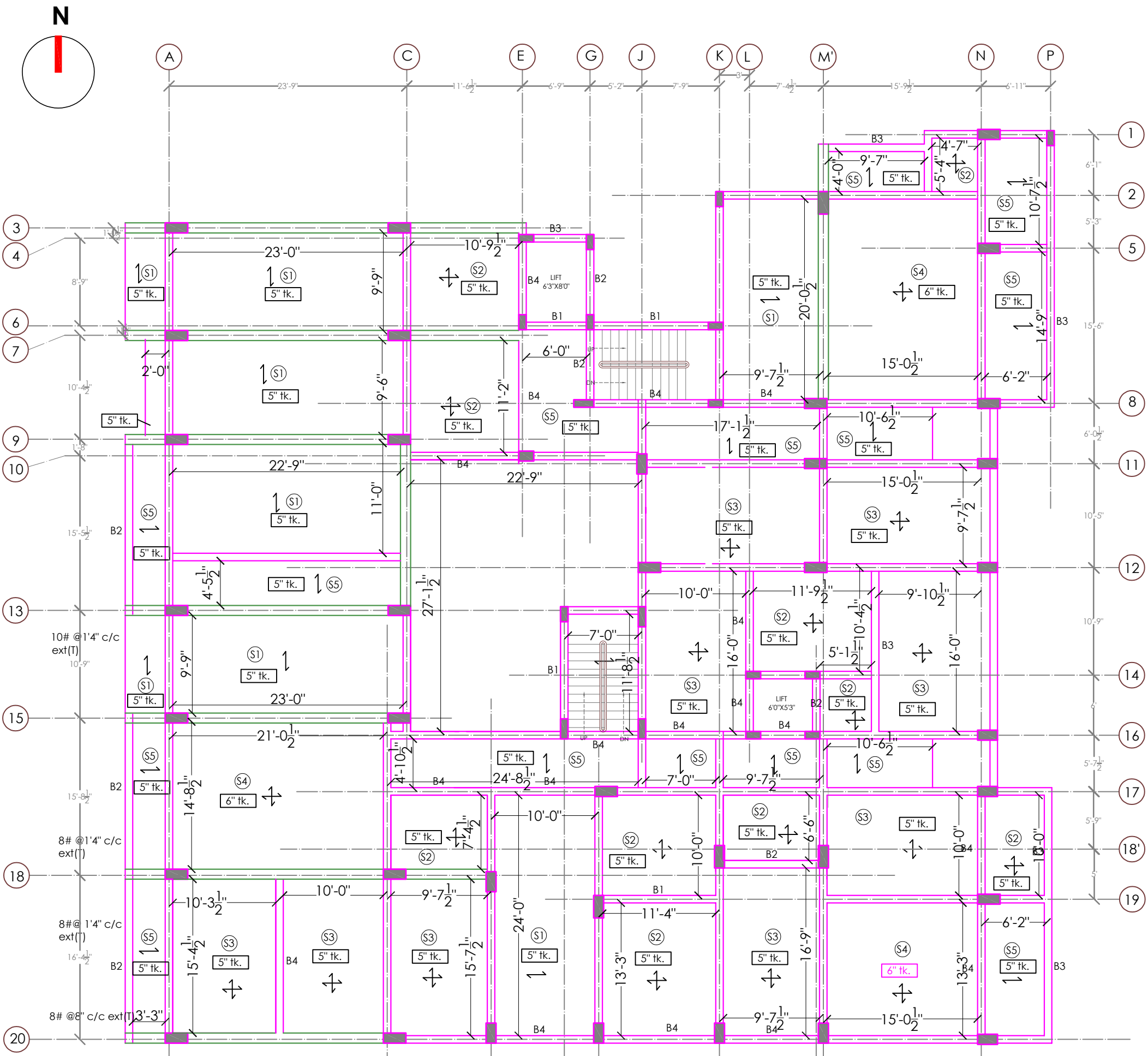
S.No	REVISION - 1	DATE	DRAWN

DESIGN BY :S.N.	DATE :15.04.2024
DRAWN BY :M.B	CHKD BY :Er.S.K.S

Ref : Gdrive/ Chola Ongoing/ Magilagam Drawings/Structural Drawing/ Col Detail

ENGINEERS :

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
Off : 0427 4040952



9" X 1'6" **1'0" X 1'6"**

PROPOSED "Magilagam" Apartment Building for Chola Rank Towers @ Periyar Nagar , Erode

Centerline & Typical Roof Beam Layout
Layout-Sheet-589/SD/014

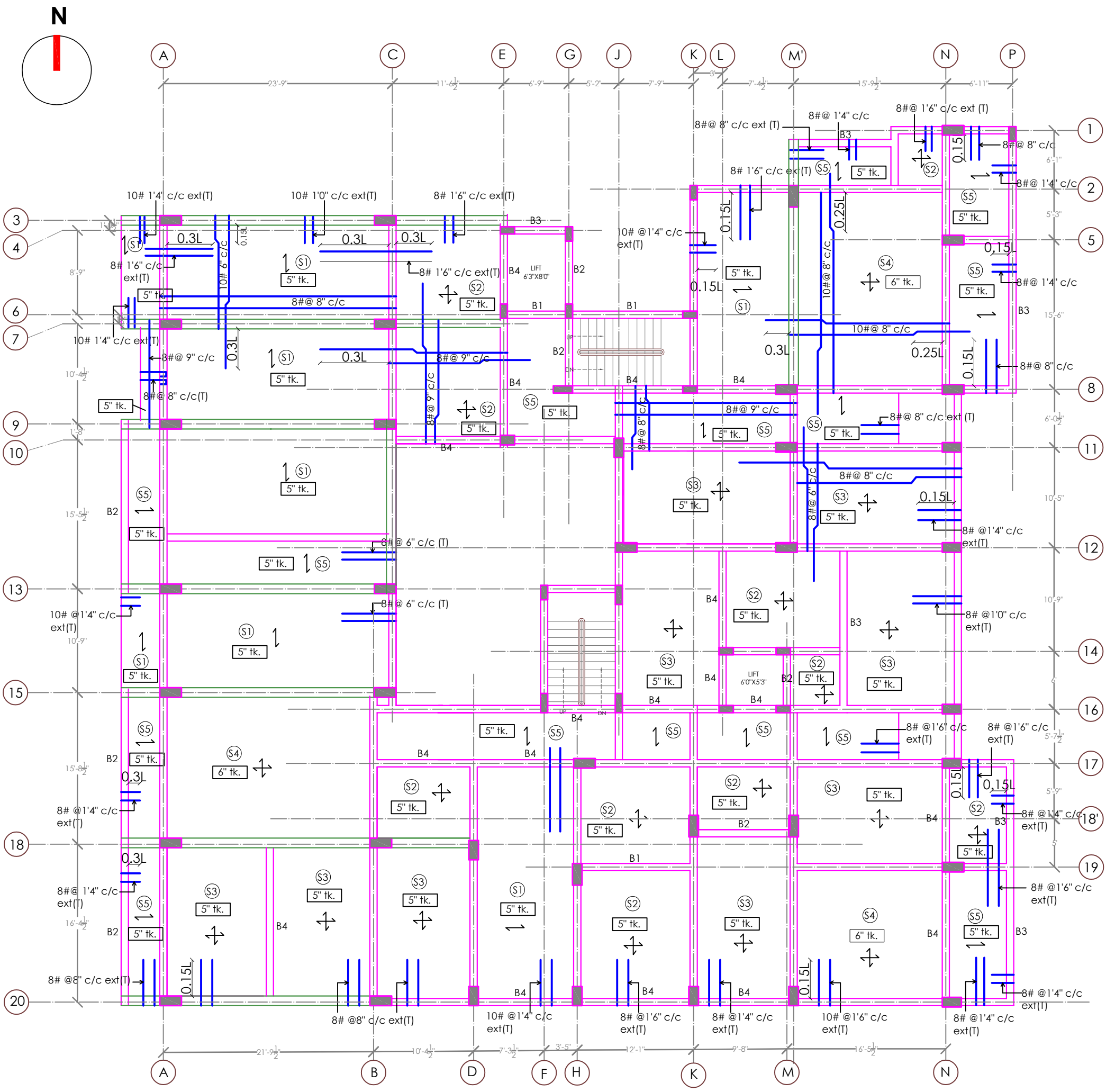
* **Refer dimensions as per architectural drawing**
* **Designed for Ground + 5 floor**
* Concrete : M20 - Mix (1:1.5:3)
* Steel : Fe 500
* Clear cover for
  - (a) Column : 25 mm
  - **(b) Beam : 25 mm**
  - **(c) Slab : 15 mm**
* **Column Lapping - 60 dia**
* **Beam Development length Ld-70 dia**

S.NO	REVISION	DATE	DRAWN
JOB NO : 589		Date:06.07.2024	
DRAWN BY : S.N.		CHKD BY :Er.S.K.S	
DESIGNED BY : S.N		NOT TO SCALE	

Ref: Gdrive/Chola Ongoing/ Magilagam / Drawing /Structural drawing Centerline drawing

ENGINEERS :

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
Off : 0427 4040952



9" X 1'6"

1'0" X 1'6"

PROPOSED "Magilagam" Apartment Building for Chola Rank Towers @ Periyar Nagar , Erode

Stilt Roof Slab Detail Layout-Sheet-589/SD-07/015

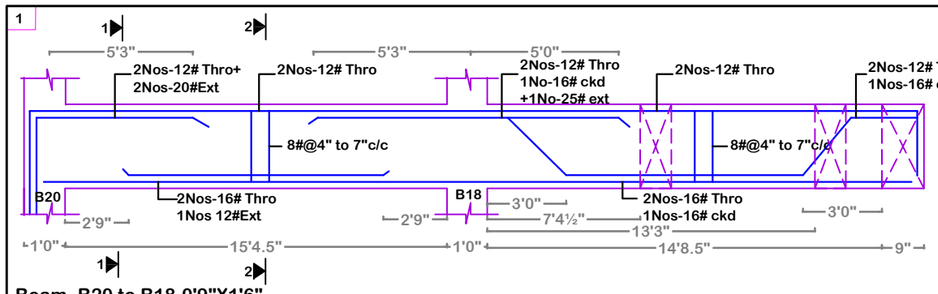
* Refer dimensions as per architectural drawing
* Designed for Ground + 5 floor
* Concrete : M20 - Mix (1:1.5:3)
* Steel : Fe 500
* Clear cover for
  - (a) Column : 25 mm
  - (b) Beam : 25 mm
  - (C) Slab : 15 mm
* Column Lapping - 60 dia
* Beam Development length Ld-70 dia

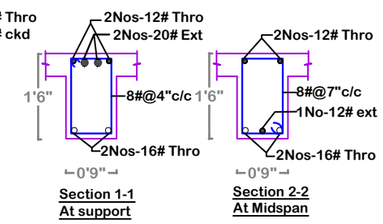
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JOB NO : 589		Date:06.07.2024	
DRAWN BY : S.N.		CHKD BY :Er.S.K.S	
DESIGNED BY : S.N		NOT TO SCALE	

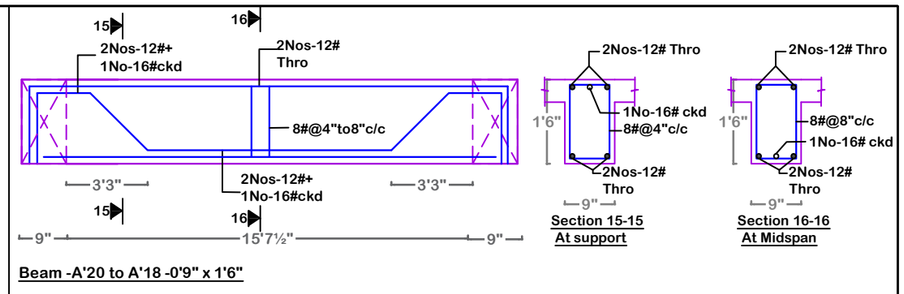
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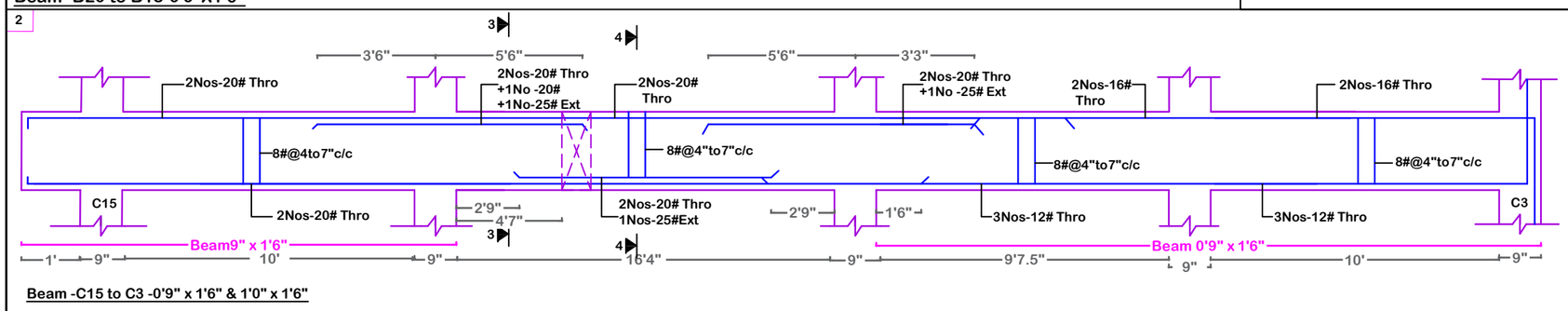
ENGINEERS :

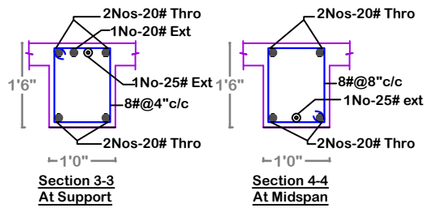
Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352, 94433 44696,Off:0427 4973482
Off : 0427 4040952

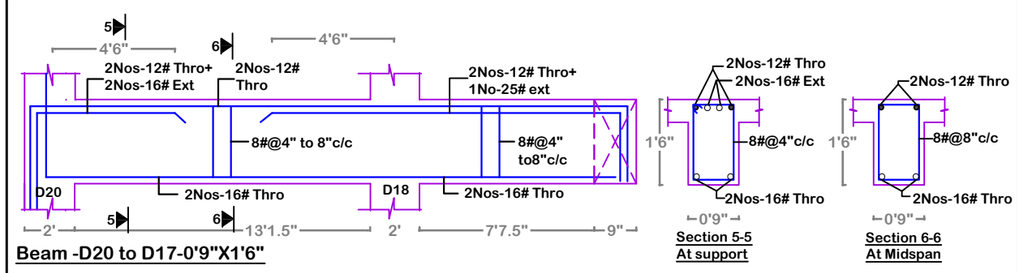


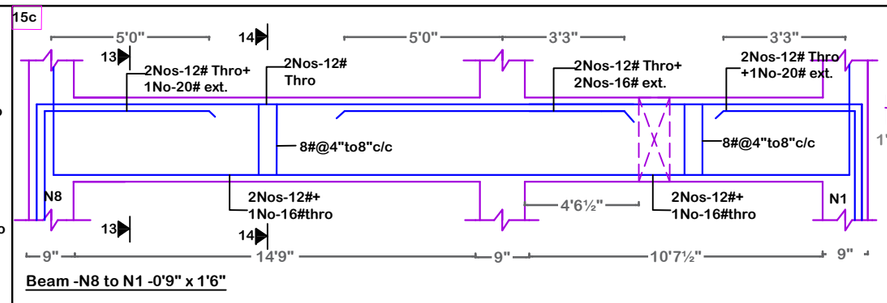


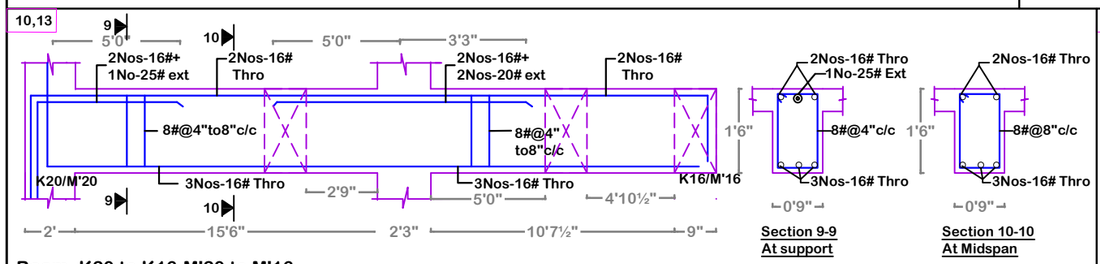


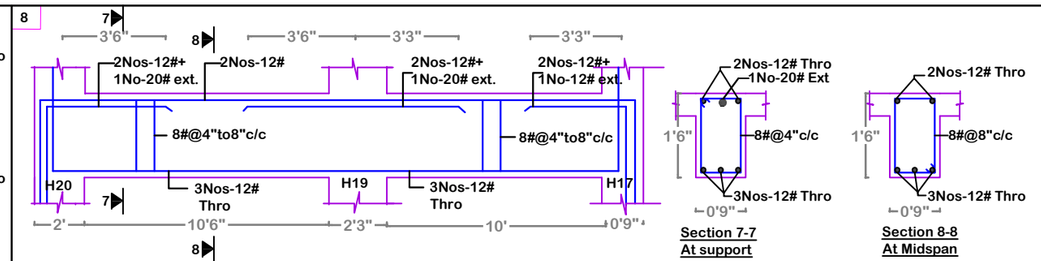


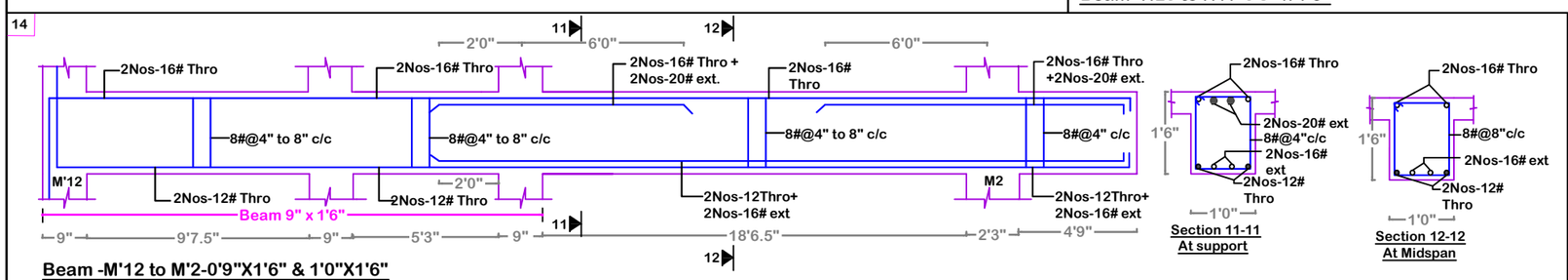












PROPOSED "Magilagam" Apartment Building for Chola Rank Towers @ Periyar Nagar , Erode

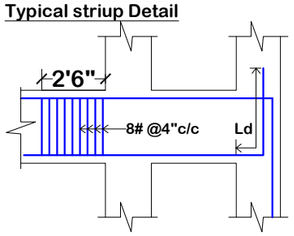
TYPICAL Floor - Roof Beam Details

Sheet No. 589 / SD/016

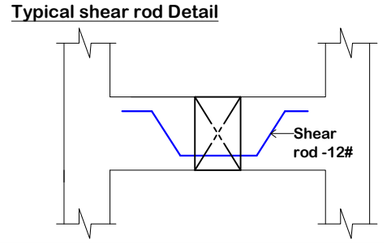
Note:

* **Designed for Ground + 5 floor**
* Concrete : M20 - Mix (1:1.5:3)
* Steel : Fe 500
* Clear cover for
  - (a) Column : 25 mm
  - **(b) Beam : 25 mm**
* **Column Lapping - 60Ø**
* **Beam Development length Ld-70Ø**
* **Refer dimensions as per architectural drawing**
* Provide Shear rod 12# @ where beam rest on other support *Development length 60Ø

Typical striup Detail



Typical shear rod Detail



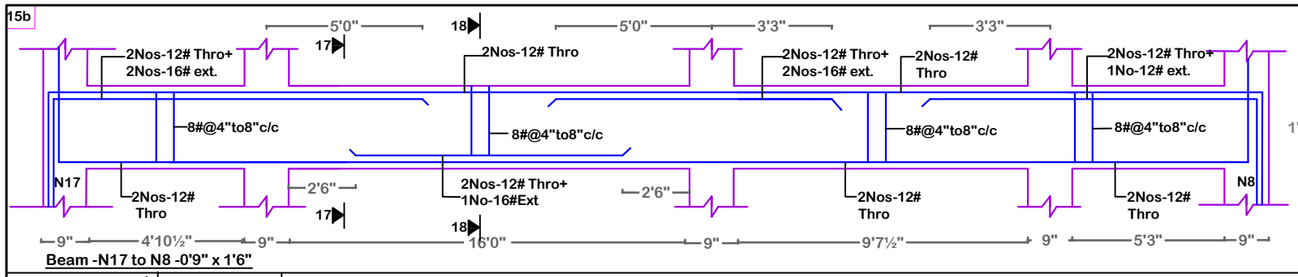
S.No	Revision	Date	Drawn
Designed BY :S.N		DATE :27.06.2024	
DRAWN BY :R.K		CHKD BY :Er.S.K.S	
NOT TO SCALE			

Ref : Sys 2/D/Apartments/Magilagam /Drawings/**Stilt Floor roof beam details**

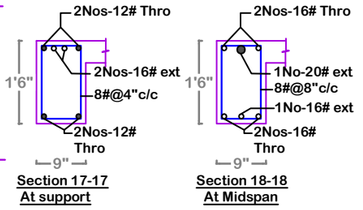
ENGINEER:

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
Off : 0427 4040952

15b



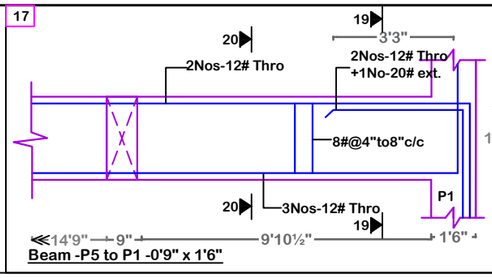
Beam -N17 to N8 -0'9" x 1'6"



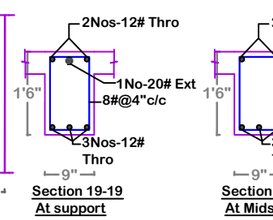
Section 17-17
At support

Section 18-18
At Midspan

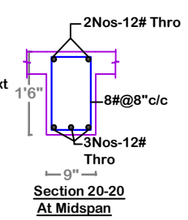
17



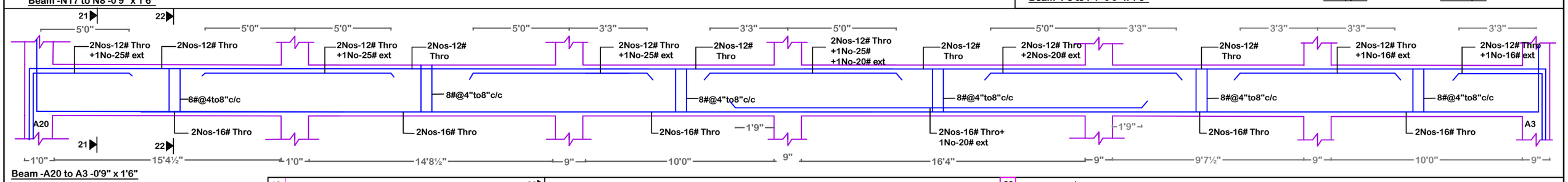
Beam -P5 to P1 -0'9" x 1'6"



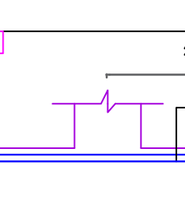
Section 19-19
At support



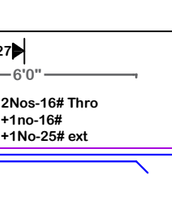
Section 20-20
At Midspan



Beam -A20 to A3 -0'9" x 1'6"

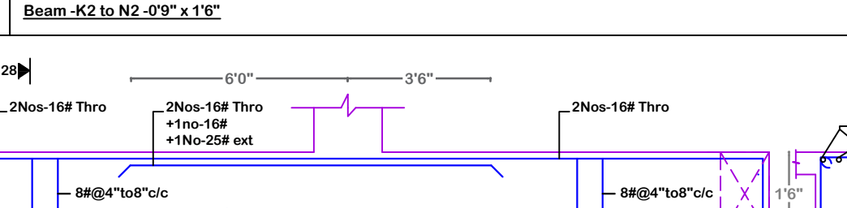


Section 21-21
At support

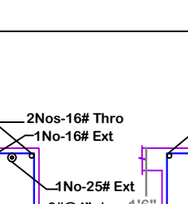


Section 22-22
At Midspan

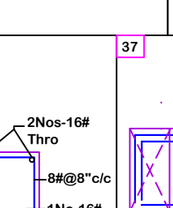
19



Beam -K2 to N2 -0'9" x 1'6"

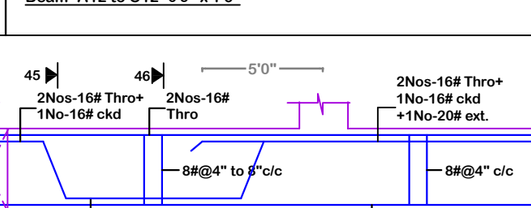


Section 23-23
At support

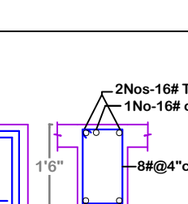


Section 24-24
At Midspan

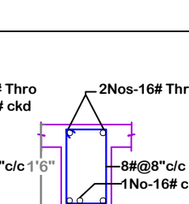
26



Beam -A12 to C12 -0'9" x 1'6"



Section 25-25
At support



Section 26-26
At Midspan

21,22

Beam -A3 to C3,A7 to C7 -1'0" x 1'6"

Section 27-27
At Support

Section 28-28
At Midspan

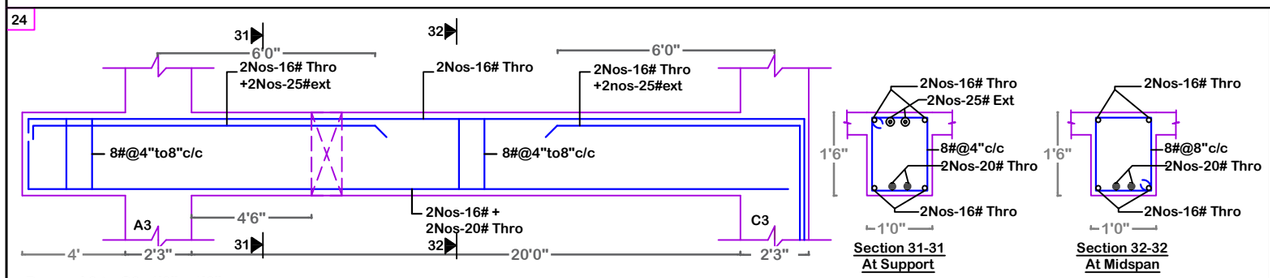
37

Beam -M19 to N19-0'9"X1'6"

Section 45-45
At support

Section 46-46
At Midspan

24

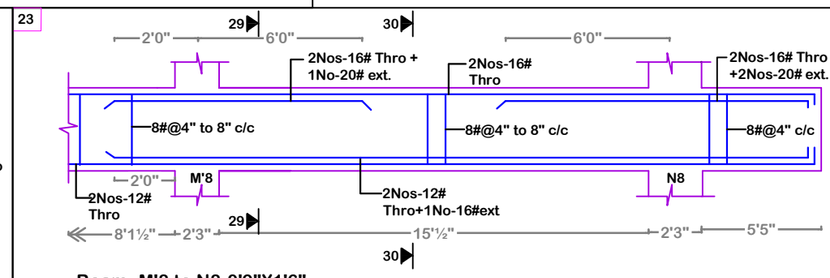


Beam -A9 to C9 -1'0" x 1'6"

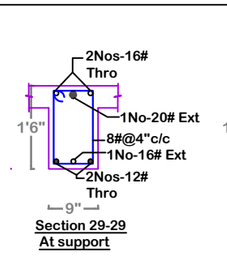
Section 31-31
At Support

Section 32-32
At Midspan

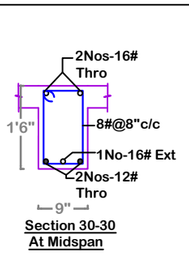
23



Beam -M'8 to N8-0'9"X1'6"



Section 29-29
At support



Section 30-30
At Midspan

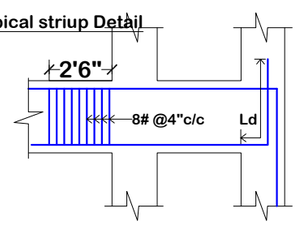
PROPOSED "Magilagam"
Apartment Building for
Chola Rank Towers
@ Periyar Nagar , Erode

Typical Floor
- Roof Beam Details

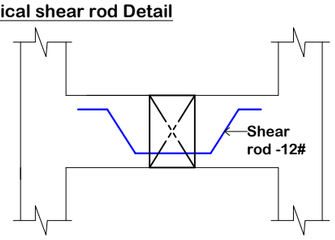
Sheet No. 589 / SD/017

* **Designed for Ground + 5 floor**
* Concrete : M20 - Mix (1:1.5:3)
* Steel : Fe 500
* Clear cover for
  (a) Column : 25 mm
  (b) Beam : 25 mm
* **Column Lapping - 60Ø**
* **Beam Development length Ld-70Ø**
* **Refer dimensions as per architectural drawing**
* Provide Shear rod 12# @ where beam rest on other support *Development length 60

Typical striup Detail



Typical shear rod Detail



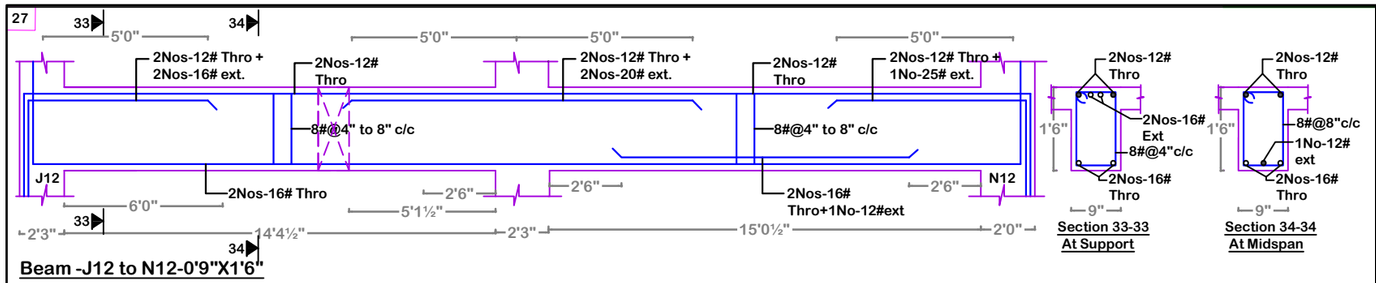
S.No	Revision	Date	Drawn
Designed BY :S.N		DATE :27.06.2024	
DRAWN BY :R.K		CHKD BY :Er.S.K.S	
NOT TO SCALE			

Ref : Sys 2/D/Apartments/Magilagam /Drawings/**Stilt Floor roof beam details**

ENGINEER:

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
Off : 0427 4040952

27

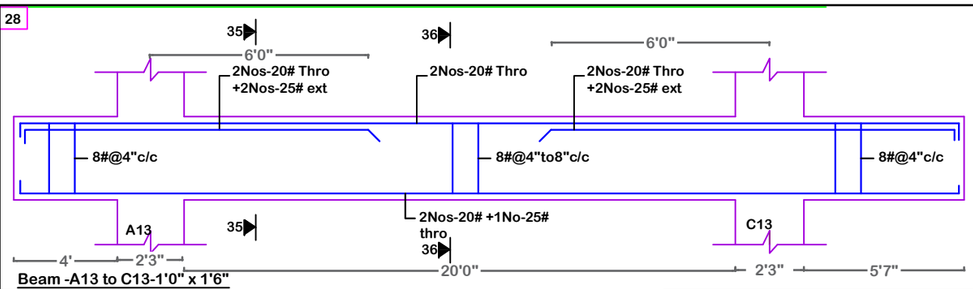


Beam -J12 to N12-0'9"X1'6"

Section 33-33
At Support

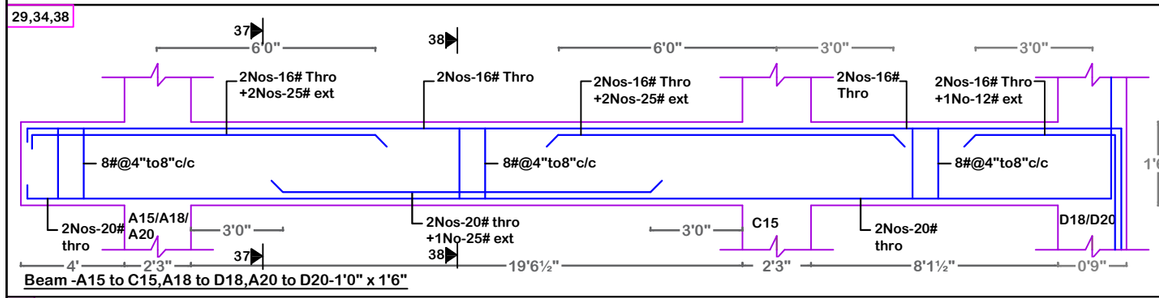
Section 34-34
At Midspan

28

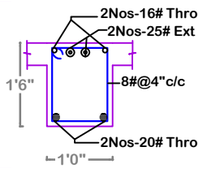


Beam -A13 to C13-1'0" x 1'6"

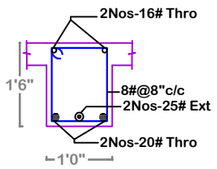
29,34,38



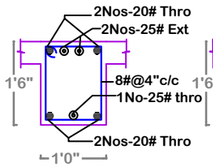
Beam -A15 to C15,A18 to D18,A20 to D20-1'0" x 1'6"



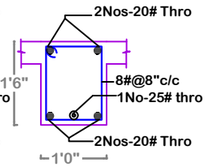
Section 37-37
At Support



Section 38-38
At Midspan



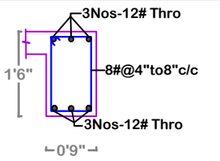
Section 35-35
At Support



Section 36-36
At Midspan

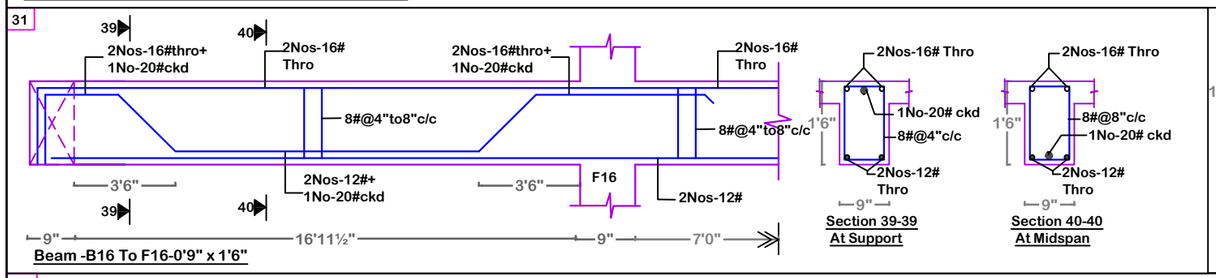


Beam B1 -
F13 to F15,H19 to K19
E6 to K6-0'9"X1'6"



Beam B2 -G4 to G8,
A'20toA'15,A'13toA'9,
K18' to M18',M14 to M16
-0'9"X1'6"

31



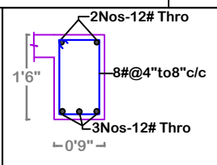
Beam -B16 To F16-0'9" x 1'6"

Section 39-39
At Support

Section 40-40
At Midspan



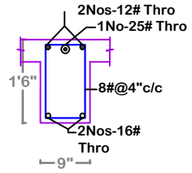
Beam -
J11 to N11,J8 to J17
C13 TO J13-0'9"X1'6"



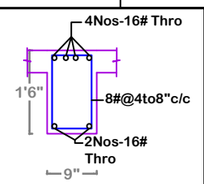
Beam B3 -
P17 to P20,P8 to P5,
M'1' to N1',E4 to G4,
M'12 to M'16
-0'9"X1'6"



Beam -
N1 to P1-0'9"X1'6"

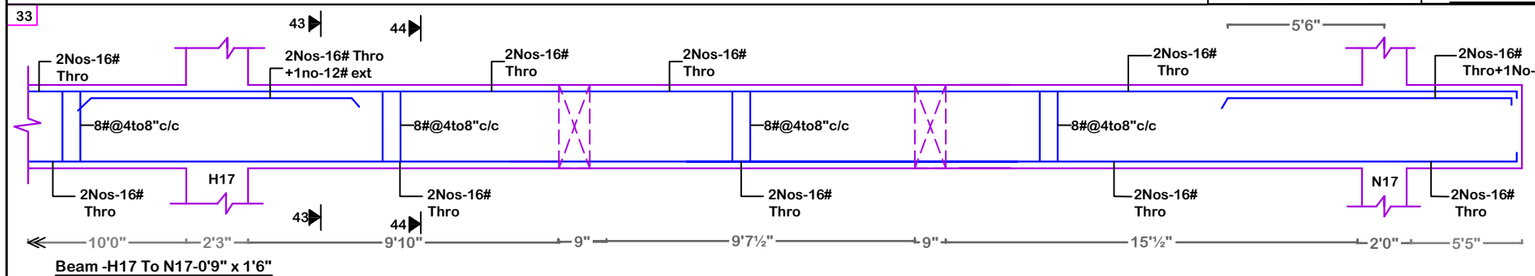


Beam N5 to P5
Details

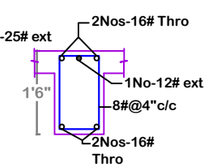


Beam K14 To M'14
Details

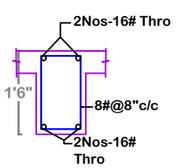
33



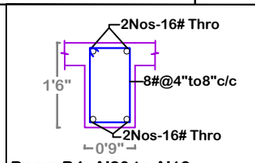
Beam -H17 To N17-0'9" x 1'6"



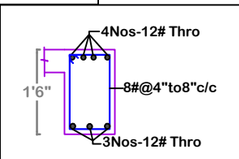
Section 43-43
At support



Section 44-44
At Midspan

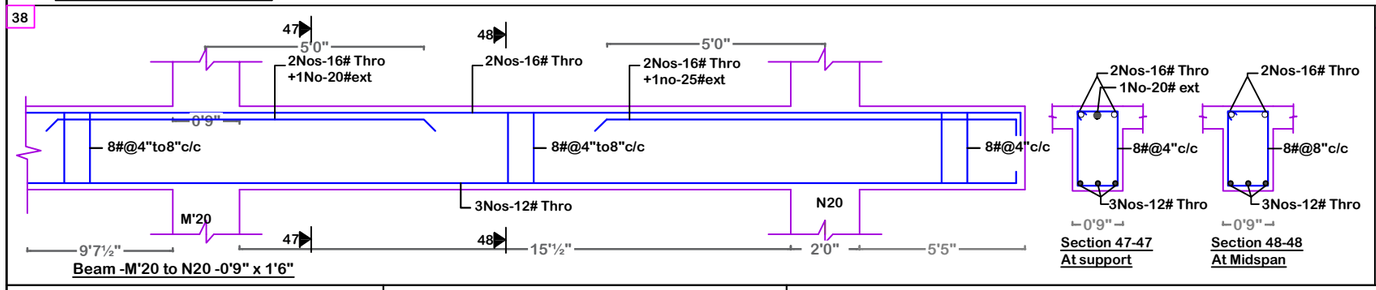


Beam B4 -A'20 to A'18,
D20 to M'20,B17 to H17,
E13 to E4,N20 to N17,
G8 to M'8,C10 to E10,
F16 to M'16,L12 to L16-0'9"X1'6"



Beam -
K2 to K8-0'9"X1'6"

38

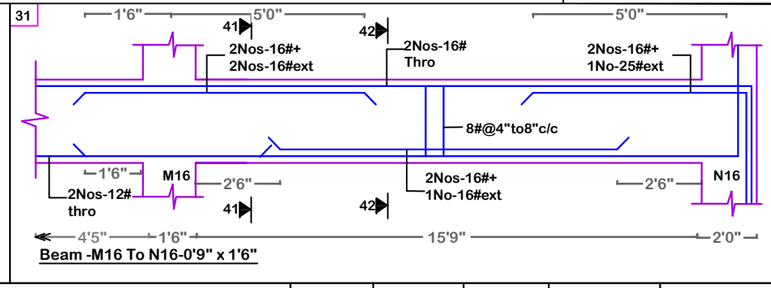


Beam -M'20 to N20 -0'9" x 1'6"

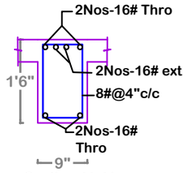
Section 47-47
At support

Section 48-48
At Midspan

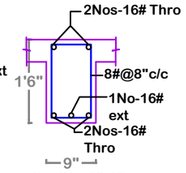
31



Beam -M16 To N16-0'9" x 1'6"



Section 41-41
At support



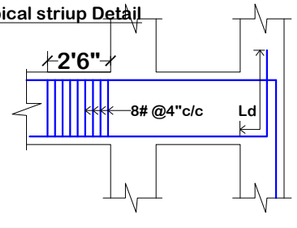
Section 42-42
At support

PROPOSED "Magilagam"
Apartment Building for
Chola Rank Towers
@ Periyar Nagar , Erode

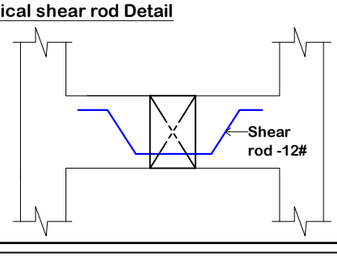
Typical Floor
- Roof Beam Details
Sheet No. 589 / SD/018

*** Designed for Ground + 5 floor**
* Concrete : M20 - Mix (1:1.5:3)
* Steel : Fe 500
* Clear cover for
(a) Column : 25 mm
(b) Beam : 25 mm
* **Column Lapping - 60Ø**
* **Beam Development length Ld-70Ø**
* **Refer dimensions as per architectural drawing**
* Provide Shear rod 12# @ where beam rest on other support *Development length 60

Typical striup Detail



Typical shear rod Detail



S.No	Revision	Date	Drawn
Designed BY :S.N		DATE :27.06.2024	
DRAWN BY :R.K		CHKD BY :Er.S.K.S	
NOT TO SCALE			

Ref : Sys 2/D/Apartments/Magilagam /Drawings/**Stilt Floor roof beam details**

ENGINEER:

Er.SK.SENTHILKUMAR,B.E.,
Er.ASHOK,B.E.,
Chola Rank Towers
Salem - 16.
Mobile : 98427 44352,
94433 44696,Off:0427 4973482
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