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DIGITALLY VERIFIED RECORD

A.K .CONSULTANT
STRUCTURAL DESIGN CONSULTANT.
No.24, Ground Floor,
CRR Puram Phase-3,
Manapakkam,
Chennai – 600 125

Phone: **044-43512027,9584423058**
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STRUCTURAL STABILITY CERTIFICATE

Name of work : The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height – 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

Preamble :

1. I hereby certify that the structural design sheet is done for column, Foundation, Slab and beam.

2. The usage of the building is Stilt floor + 5 upper Floors.

3. The Super Structure is built on outer 230mm walls and inner 115mm walls.

4. All concrete for RCC members in Stilt + 5 Floors are M30 concrete.

5. The structural design includes the Earth quake Criteria as per IS: 1893(part 1)-latest revision.

This is to certify that the Structural Design of the proposed construction of residential building at above said site has been DESIGNED on the basis of EARTHQUAKE RESISTANT DESIGN OF STRUCTURES IS 1893 (Part1): 2002 General Provisions & Buildings, with latest declaration of Seismic Zone III, Zone factor 0.16 and according to I.S. Loading standards I.S. – 875. All precautions have been taken as per the CONTENTS OF REPORT FOUNDATION ANALYSIS. This Report has recommendations for effect of Seismic Condition for this Soil.

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CALCULATION OF SEISMIC CO-EFFICIENT

Name of city	: Chennai
Type of Building	: Residential Building
Building Frame System	: Special RC-Moment resisting frame (SMRF)
Fundamental Natural Period (Ts)	: (0.075)h ^3/4 =0.483sec.
Soil conditions	: medium
Zone Factor (Refer Table:2) (Z)	: 0.16 (moderate)
Importance Factor (Refer Table:6) (I)	: 1
Response Reduction (Refer Table:7)	: 5.0
Average response acceleration Co-efficient (Sa/g)	: 2.35

EARTH QUAKE ANALYSIS:

Horizontal Seismic Co-efficient (Ah)	= (Z/2)(I / R)(Sa/g) = (0.16/2) (1/5.0) (2.35) = 0.038
Design value of Ah	= 0.038
Type of Foundation	: Combined Footing

1. GENERAL LOADING CONDITIONS:

(a) Imposed loads on Roof	- 1.50kN/m^2
(b) Imposed loads on Hall, Kitchen. & Bed, Residential	- 2.00kN/m^2
(d) Dead weight of R.C.C	- 25kN/m^3
(e) Dead weight of Brick Work	- 20kN/m^3

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2. LOADING ON SLABS:

2.1 Loading on Roof slab:

Roof finished with lime concrete terracing	=(0.10)(20)	=2.000kN/m^2
S/W of slab 125mm thick	=(.125)(25)	=3.125kN/m^2
Dead load	=5.125kN/m^2	
Live load	=1.50kN/m^2	
Total load on Roof	= 6.625kN/m^2	

2.2 Loading on Floor slabs:

Floor finish	= 1.00kN/m^2
S/w of slab 125mm thick	= 3.125kN/m^2
Dead load	=4.125kN/m^2
Live load	=2.00kN/m^2
Total load on Roof	= 6.125kN/m^2

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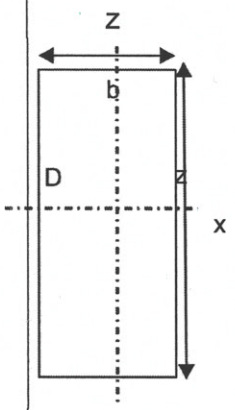
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3 DESIGN:

3.1 COLUMN DESIGN

Grade of Concrete			M 30	
Characteristic Strength of Reinf.		N/mm²	500	
Width of Column	b	mm	300	
Depth of Column	D	mm	600	
Unsupported Length of Column	l_x	mm	3000	
Unsupported Length of Column	l_y	mm	3000	
Clear Cover to Reinf.		mm	40	
Diameter of Bar		mm	20	
Load		T		
Moment	M_{xx}	T.m		
Moment	M_{zz}	T.m		
Factored Load	P_u	kN	690.000	1
Factored Moment	M_{ux}	kN.m	89.950	1
Factored Moment	M_{uz}	kN.m	32.510	1
Effective Length of Column	l_{ex}	mm	3600	1.2
	l_{ez}	mm	3600	1.2
	l_{ex}/D		6	0
			<12- Short Column	
	l_{ey}/b		12	0
			<12- Short Column	
Additional Moment due to Slender	M_{ax}	kN.m	0	
Additional Moment due to Slender	M_{az}	kN.m	0	
Percentage of Reinf.	p	%	1.8	
Gross Area of Cross Section	A_g	mm²	180000	
Ultimate Axial Load	P_{uz}	kN	3601.26	
d'/D (about x-x axis)			0.084	0.1
d'/D (about y-y axis)			0.167	0.2
(Table 60)	k1		0.207	



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	k2		0.328	
	P_{bx}	kN	1224.072	
	k1		0.184	
	k2		0.028	
	P_{bz}	kN	1002.672	
	k_x		1.000	
	k_y		1.000	
Minimum Eccentricity	e_x	mm	26	
	e_y	mm	16	
Moments due to min. eccentricity	M_{ex}	kN.m	17.94	< 89.950 kN.m
Moments due to min. eccentricity	M_{ez}	kN.m	11.04	< 32.510 kN.m
Total Moments for which the column is to be designed are				
	M_{ux}	kN.m	89.950	
	M_{uz}	kN.m	32.510	
The section is to be checked for biaxial bending				
	$P_u/f_{ck}bD$		0.128	
	p/f_{ck}		0.06	
Referring (d'/D is0.1)	$M_u/f_{ck}bD^2$		0.09	
	M_{ux1}	kN.m	291.600	
Referring to (d'/D = 0.2)	$M_u/f_{ck}bD^2$		0.100	
	M_{uy1}	kN.m	162.000	
	M_{ux}/M_{ux1}		0.308	
	M_{uy}/M_{uy1}		0.201	
	P_u/P_{uz}		0.192	
		a	0	1
Mux/Mux1 + Muy/Muy1			0.509	< 1 OK
Area of Reinforcement	As	mm^2	3240	
Minimum no of to be provided			6	
No of Bars to be provided	Nos.		11	
Provide 11 Nos of 20 Diameter				

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3.2 FOUNDATION DESIGN

3.2.1 COMBAINED FOOTING

1 Footing Size Design

Load 1	Pu1	660 KN
Load 2	Pu2	690 KN
Combine load	Pcu	1350 KN
Design Load	Pc	990 KN
Moment in x dir	Mux	35 KN-m
Moment in y dir	Muy	40 KN-m
c/c dist b/w col in x dir		3.430 meters
c/c dist b/w col in y dir		0.000 meters
Col Dim	x dir	0.60 meters
	y dir	0.30 meters
SBC	q	120 KNm2
Footing Size required	A req	8.25 sqmm
Footing Size Provided	L	**6.00 meters**
	B	**2.30 meters**
Area Provided	A prvd	**13.80 meters**
	x bar	1.753
	y bar	0.000
	Zx	5.29
	Zx	13.80
	Nup	78 KNm2

Footing Size OK

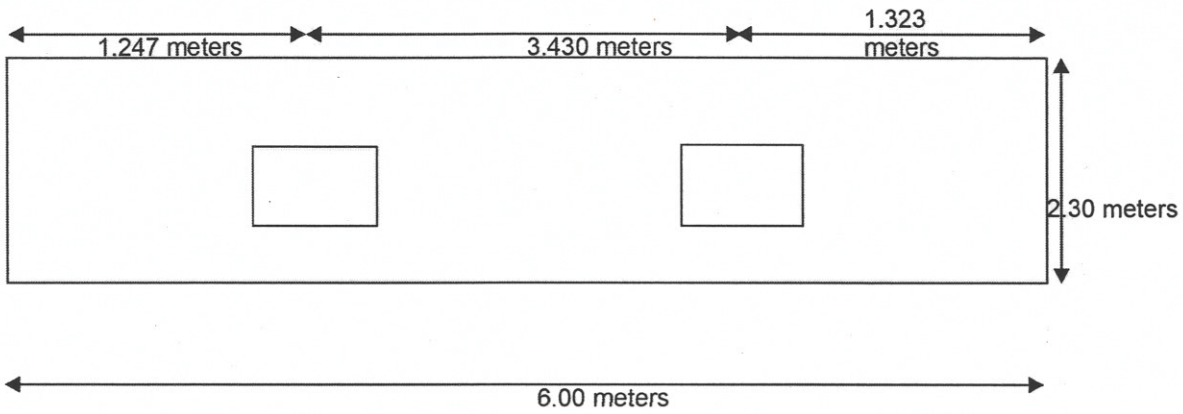
2 Beam Design

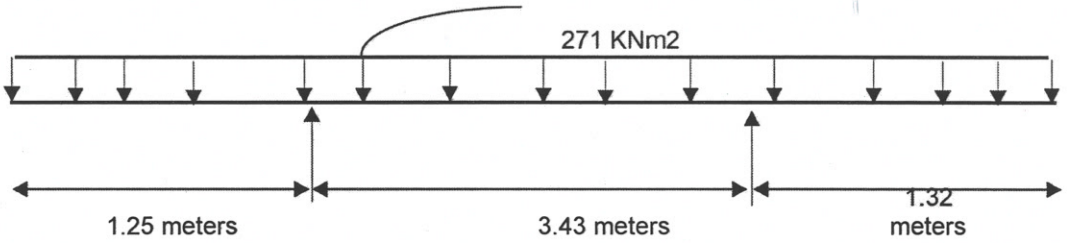
Total Load	W	78 KNm2
Factored Load	Wu	271 KNm2

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Beam Size	width	600 mm
	depth	685 mm
Moment	Mb	898 KN-m

Design the beam from the BEAM DESIGN SHEET

Bottom Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	20 mm	6	1885 sqmm
Layer 2	-		
Layer 3	-		
		Total Steel Provided	1885 sqmm
		Percentage of Steel	0.487 %

Top Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	20 mm	6	1885 sqmm
Layer 2	-		

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Layer 3	-		
		Total Steel Provided	1885 sqmm

3 Slab Design

Net upward pressure	Nup	78 KNm2	
	l	0.85 meters	*/=width of footing from col face*
Bending Moment	Ms	28 KN-m	*M=Nup*l²/2*
Factored Moment	Mus	43 KN-m	*1.5*Ms*
Concrete	fck	30 MPa	
Steel	fy	500 MPa	
Minimum Depth Required	dmin	103	*d=sqrt(Ms/Rumax*1000*b)*
Depth Provided	D	**600 mm**	
Clear Cover	c	50 mm	
Effective Cover	d'	56 mm	
Effective Depth	d'	544 mm	

Area of Steel across x dir	Spacing c/c in mm		
	12#	16#	20#
653 sqmm	173 c/c	308 c/c	481 c/c

Minimum Ast required across x direcion

Ast across x direction	**12 mm dia**	**@ 150 mm c/c**	**754 sqmm**
Dist Ast across y direction	**10 mm dia**	**@ 150 mm c/c**	**524 sqmm**

4 Shear Check for Slab

Vu1	36 KN
ζv	0.066 MPa
ζc	0.265 MPa

Shear Check OK

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3.3 BEAM DESIGN

Beam Design

Beam Data

width	230 mm
depth	530 mm
clear cover to main reinf.	30 mm
Slab Thickness	125 mm

d'	48 mm	*.= cc+ sdia + mdia/2*
eff depth	482 mm	*.= d - d'*

Material Grades

Concrete	30 MPa
Steel	500 MPa

	Span Moment	Support Moment
Mu/bd²	3.93	3.56
xumax	220	220
Mulim	213	213
Mulim/bd²	3.99	3.99

Span Moment	210 KN-m	
Support Moment	190 KN-m	190 KN-m
		0 KN-m

Span Reinforcement
Beam is designed as Singly Reinforced Beam

Area of Steel	Tension (Ast)	Compr (Asc)
Percentage	1.110 %	------
Area of Steel	1230 sqmm	

Refer Table 2 SP 16 pg 48

400 KN-m

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	20 mm	3	942 sqmm
Layer 2	20 mm	3	942 sqmm
Layer 3	-		
	Total Steel Provided		1885 sqmm

2014 sqmm

1.700 %

Provided Steel OK

Compression Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	-		

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Layer 2	-		
Layer 3			
Total Steel Provided			#VALUE!

Support Reinforcement
Beam is designed as Singly Reinforced Beam

Area of Steel	Tension (Ast)	Compr (Asc)	
Percentage	0.977 %	-------	*Refer Table 2 SP 16 pg 48*
Area of Steel	1084 sqmm		

4.35702571251516
-1.546985529821000
0.132294005725571

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel	
Layer 1	**25 mm**	**3**	1473 sqmm	
Layer 2	**25 mm**	**3**	1473 sqmm	
Layer 3	-			
Total Steel Provided			2945 sqmm	2.657 %
Provided Steel OK				1804 sqmm
				1445 sqmm

Compression Reinforcement 2486 sqmm

Type	Bar dia	Nos	Area of Steel	
Layer 1	-			
Layer 2	-			
Layer 3				
Total Steel Provided				#VALUE!

Shear Force (Vu)	**112 KN**		
ζv	1.010	*.=Vu / (b * d)*	
ζc	0.797	*Refer Table 61 SP 16 pg 179*	*or =(0.85*√(0.8*fck)*√(1+5β)-1)) / (6β)*
ζcmax	3.5	*Refer Table J SP 16 pg 175*	

Type	Bar Dia	Nos	Area of Steel
Layer 1	**12 mm**	**0**	0 sqmm
Layer 2	**25 mm**	**0**	0 sqmm
Layer 3	**20 mm**	**0**	0 sqmm

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	0 sqmm	0.000 %	

Sectional Dimensions OK
Shear Reinforcements required

Steel	**415 MPa**	Vus/d	0.490 kN/cm	1.458
Type of stirrup	**2 legged**			
Stirrup diameter	**8 mm**			
Spacing	300 c/c	Safe		

3.4 TWO WAY SLAB DESIGN

Slab Design

Slab thickness	t	125 mm
Concrete	fck	30 MPa
Steel	fy	500 MPa

Sunken Depth: 0 mm

Loading

Slab Load

Dead Load	DL	3.125 KN/m
Live Load	LL	2.000 KN/m
Finishes Load	WL	1.000 KN/m
Total Load	Ws	6.125 KN/m
Factored Load	Wsu	9 KN/m

Sunken Slab Load

Dead Load	DL	3.125 KN/m
Filler Load	FL	0 KN/m
Live Load	LL	3.0 KN/m
Finishes Load	WL	1.0 KN/m
Total Load	Wsk	7.13 KN/m
Factored Load	Wsku	11 KN/m

Slab Data

Slab Type	Regular
Load	9 KN/m
Longer Span (ly)	4.40 m
Shorter Span (lx)	3.23 m

ly/lx ratio	1.36
Slab type	±

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Loading on edges		one way	two way
W_{longer}	**12 KN/m**	.=w*lx/2	.=(w*lx/2) + (1-(1/3)*(lx/ly)^2)
$W_{shorter}$	**10 KN/m**		.=w*lx/3

Moments		one way	two way
Mx	8 KN-m	.=w*lx^2/ 8	.=αx * w*lx^2
My	5 KN-m		.=αy * w*lx^2

Thickness Check	OK	.=Mulim > Mux or Muy
Deflection	10 mm	.= 5*W*l^4/(384EI)

Area of Steel	Astx	Asty
	178 sqmm	**150 sqmm**

Refer Chart 4 SP 16 pg 21
Refer Table 5-44 SP 16 pg 51-80

or

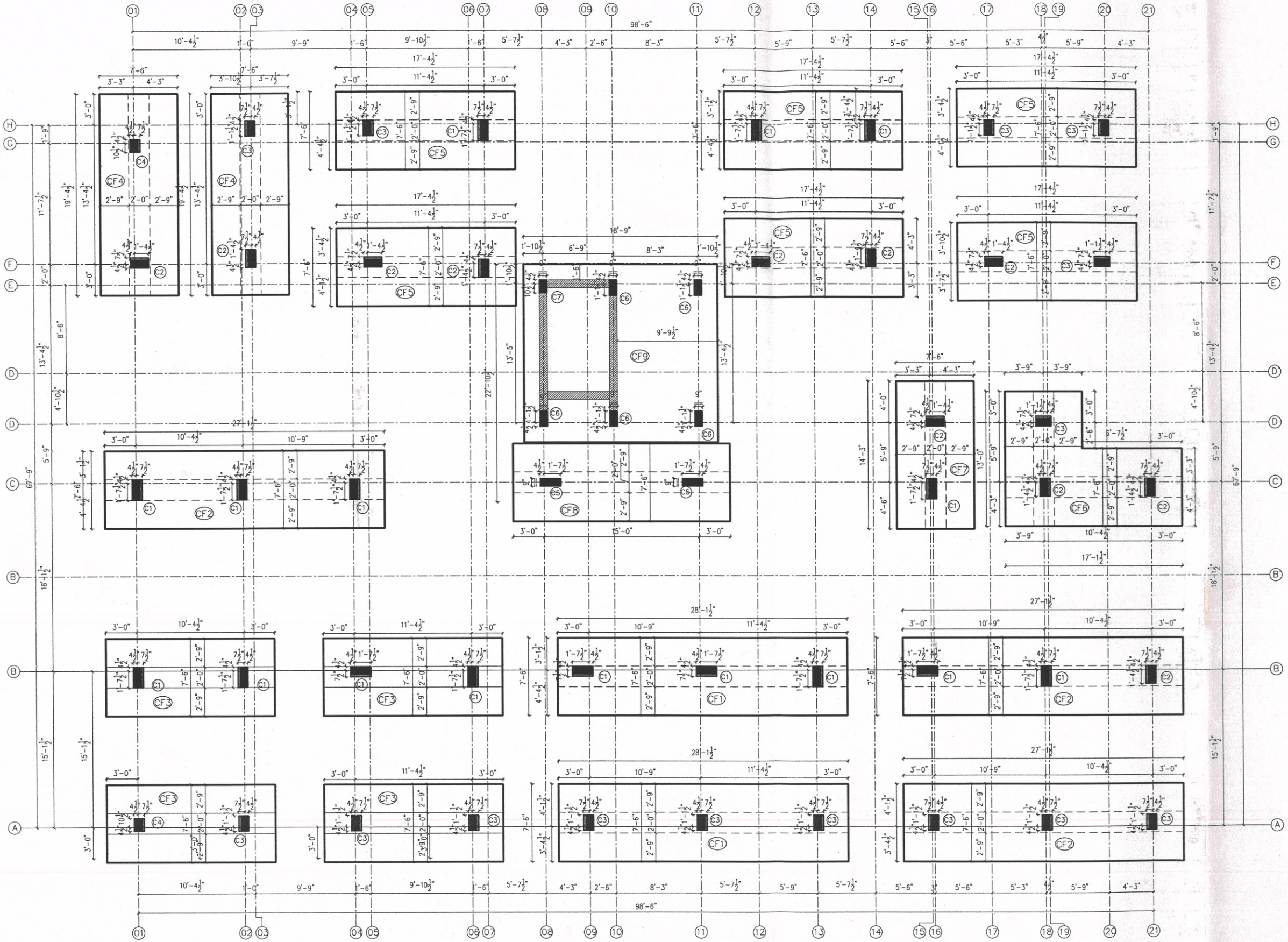
Spacing required in mm

8#		10#		12#		16#	
x	y	x	y	x	y	x	x
282 c/c	**335 c/c**	**440 c/c**	**524 c/c**	**634 c/c**	**754 c/c**	**#######**	**1340 c/c**

*.=ast of bar*1000/ast req*

Final Ast provided	x	y
	8# @ 150c/c	**10# @ 150c/c**

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FOUNDATION LAYOUT–(BLOCK–1)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
   * If ready mixed concrete is being used, client/contractor shall cast concrete cubes independently at site and send cube results thus obtained to us.
5. Maximum water cement ratio :
   for 1:2:4 – 0.50
   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For PB : 25mm,Lift rc wall :25mm
   For Raft Beam : 75mm.For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. S.B.C of soil is assumed as –t/sq.m
12. Foundation is designed for Ground+5Floors.
13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

REV.	DATE	REVISION NOTE NO	SIGN	CHKD
-	-	-	-	-

FOUNDATION LAYOUT (BLOCK-1)

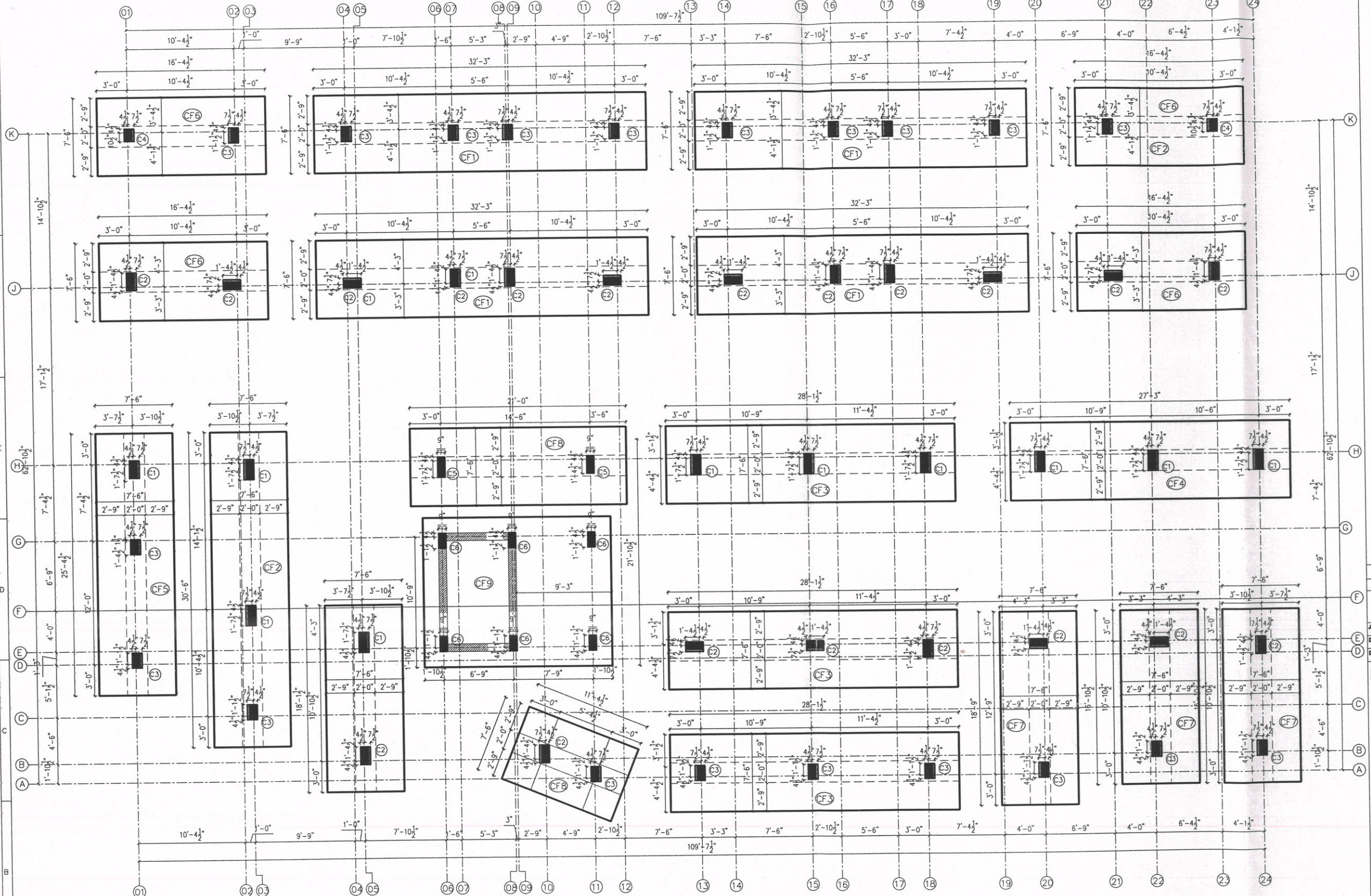
JOB NO : -	DRAWN : -
DRG.NO: S-01	DESIGNED : -
DATE : -	

PROJECT :

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

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FOUNDATION LAYOUT (BLOCK–2)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
   * If ready mixed concrete is being used, client/contractor shall cast concrete cubes independently at site and send cube results thus obtained to us.
5. Maximum water cement ratio :
   for 1:2:4 – 0.50
   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For PB : 25mm,Lift rc wall : 25mm
   For Raft Beam : 75mm, For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. S.B.C of soil is assumed as –t/sq.m
12. Foundation is designed for Ground+5Floors.
13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

REV.	DATE	REVISION NOTE NO	SIGN	CHKD
-	-	-	-	-

FOUNDATION LAYOUT (BLOCK-2)

JOB NO :	-	DRAWN :	-
DRG.NO:	S-02	DESIGNED :	-
DATE :	-		

PROJECT :

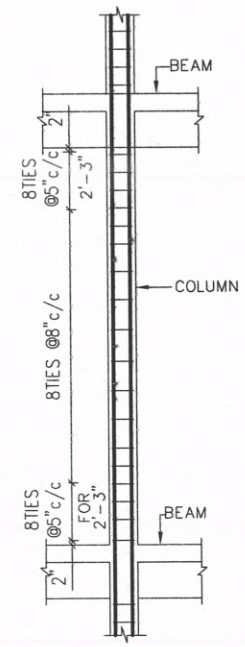
The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

STRUCTURAL CONSULTANT

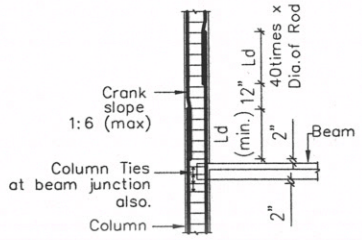
Er. P. RAMAN, B.E (Civil), M.E (Struct)., MIE., C.Eng.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.

SCHEDULE OF COLUMNS (MIX: 30)

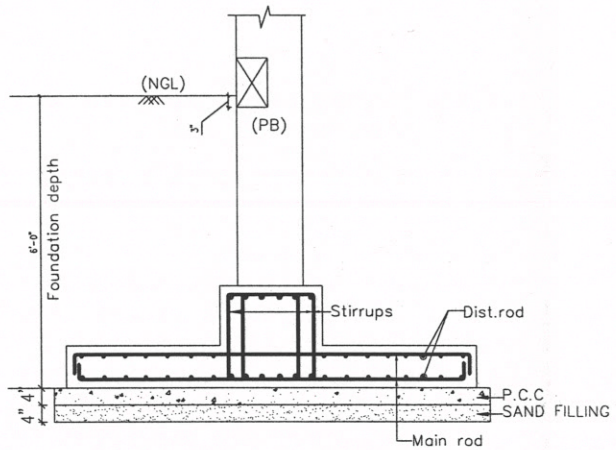
TYPE	FOOTING SIZE	DEPTH		FOOTING REINFORCEMENT		COLUMN REINFORCEMENT						
		h1	h2	L	B	GROUND FLOOR	FIRST FLOOR	SECOND FLOOR	THIRD FLOOR	FOURTH FLOOR	FIFTH FLOOR	STIRRUPS
C1	LIFT & COMBINE FOOTING					8-ø20+4-ø16 12" 24"	8-ø20+4-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	ø8Tor
C2						8-ø20+2-ø16 12" 21"	8-ø20+2-ø16 9" 21"	10-ø16 9" 21"	10-ø16 9" 21"	10-ø16 9" 21"	10-ø16 9" 21"	ø8Tor
C3						8-ø16 12" 18"	8-ø16 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	ø8Tor
C4						4-ø16+4-ø12 12" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	ø8Tor
C5						8-ø20+4-ø16 9" 24"	8-ø20+4-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	12-ø16 9" 24"	ø8Tor
C6						8-ø16 9" 18"	8-ø16 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	4-ø16+4-ø12 9" 18"	ø8Tor
C7						4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	4-ø16+4-ø12 9" 15"	ø8Tor



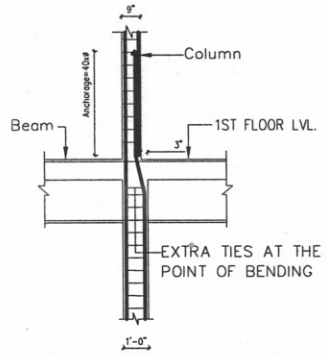
TYPICAL TIES ARRANGEMENT IN COLUMN

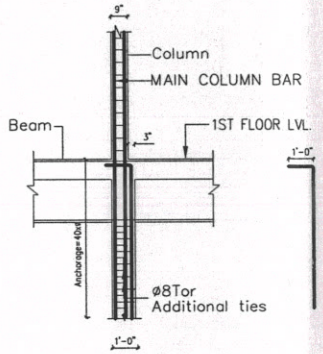


SPLICE WITH UPPER BARS CRANKED INTO POSITION INSIDE LOWER BARS

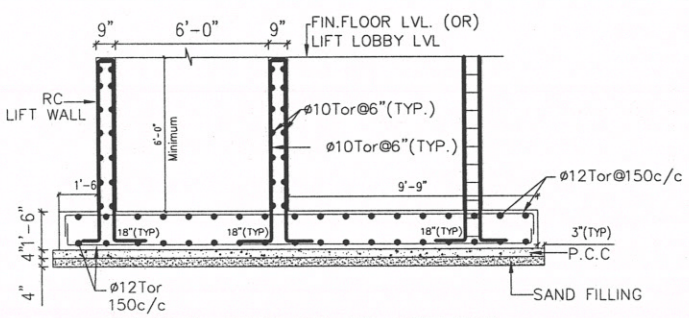


TYPICAL VERTICAL SECTION (COMBINED FOOTING)

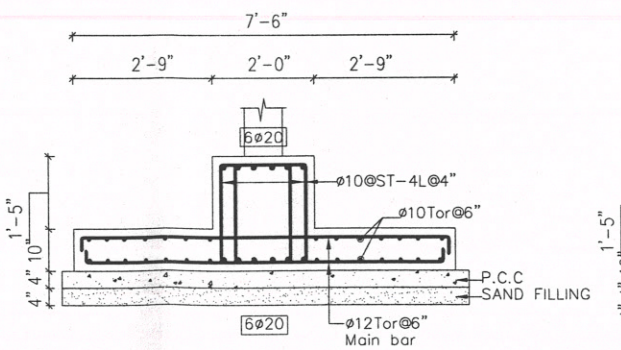




ANCHORAGE DETAIL FOR REDUCTION IN SIZE OF COLUMN AT 1ST FLOOR LEVEL

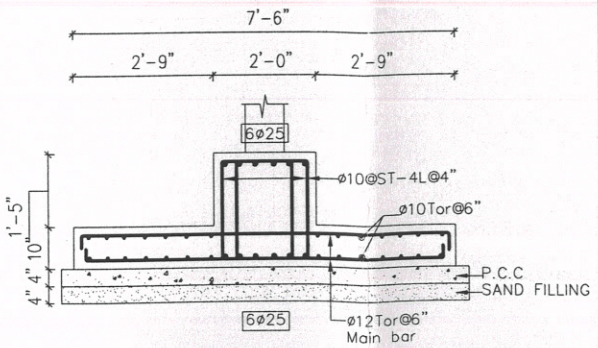


TYPICAL DETAILS OF LIFT PIT COMBINED FOOTING–CF9



C.S OF COMBINED FOOTING–CF1

SAME STEEL DETAILS FOLLOW – CF2,CF3,CF4,CF5,CF6&CF7



C.S OF COMBINED FOOTING–CF8

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
   * If ready mixed concrete is being used, client/contractor shall cast concrete cubes independently at site and send cube results thus obtained to us.
5. Maximum water cement ratio :
   for 1:2:4 – 0.50
   for 1:1 1/2:3 – 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For PB : 25mm,Lift rc wall : 25mm
   For Raft Beam : 75mm,For Raft slab : 50mm
   For Footing : 50mm, For Lift base slab–50mm,
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. S.B.C of soil is assumed as 10t/sq.m
12. Foundation is designed for Ground+5Floors.
13. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
14. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

REV.	DATE	REVISION NOTE NO	SIGN	CHKD
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COLUMN SCHEDULE AND FOOTING DETAILS. (BLOCK-1&2)

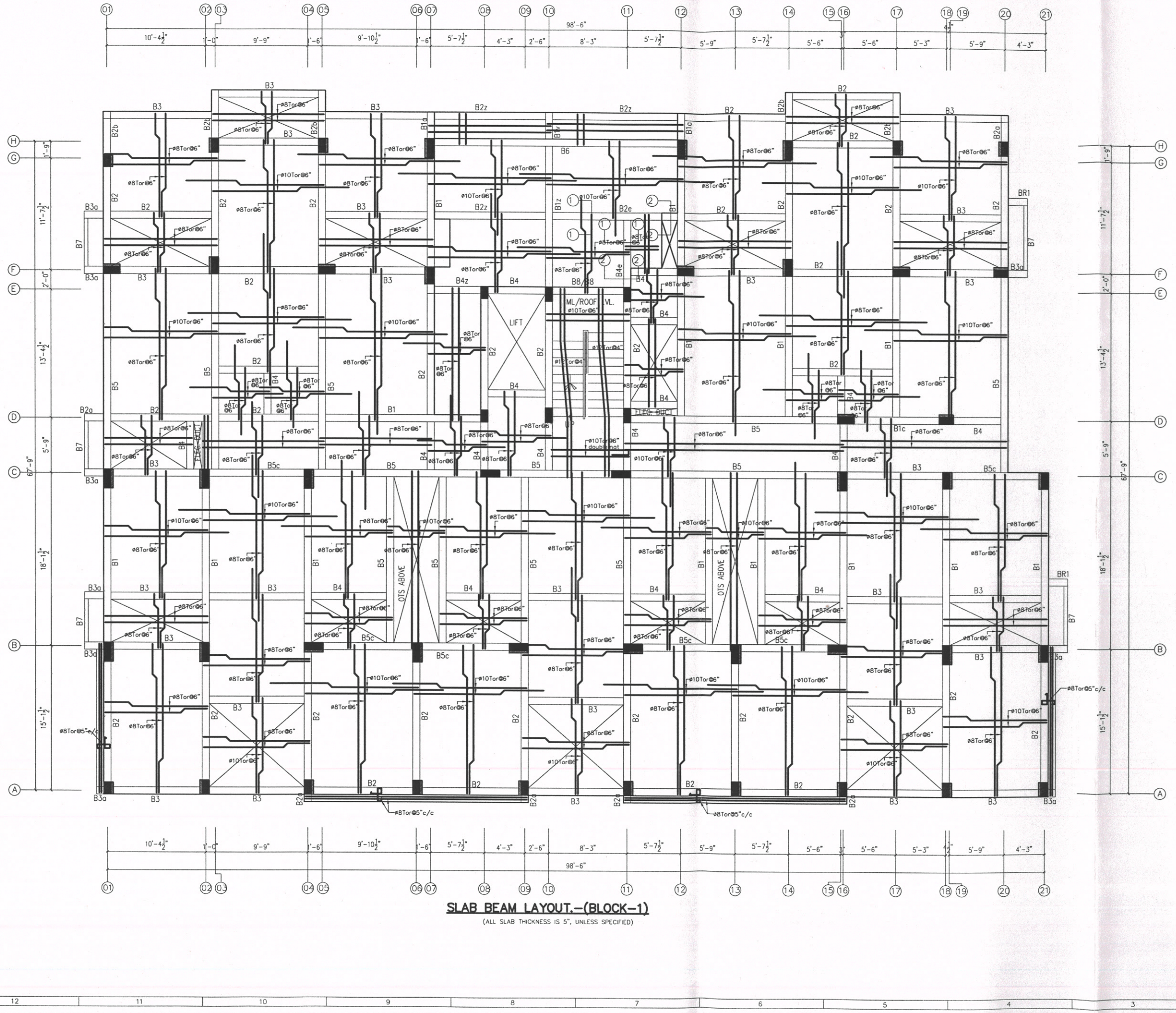
JOB NO : -	DRAWN : -
DRG.NO: S-03	DESIGNED : -
DATE : -	

PROJECT :

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

STRUCTURAL CONSULTANT

Er. P. RAMAN, B.E (Civil)., M.E (Struct)., MIE., C.Eng.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.



NOTES:

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   (Cement Content -360 kg/m3)
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5. Maximum water cement ratio :
   for 1:2:4 - 0.50
   for 1:1 1/2:3 - 0.45
6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For BEAM : 25mm,SLAB : 20mm
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size - 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
11. The centering and shuttering to support structural concrete must be sufficiently strong and rigidly braced.Horizontal ties shall be provided at every 1.5m height.
12. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

REV.	DATE	REVISION NOTE NO	SIGN	CHKD
-	-	-	-	-

SLAB BEAM LAYOUT.(BLOCK-1)

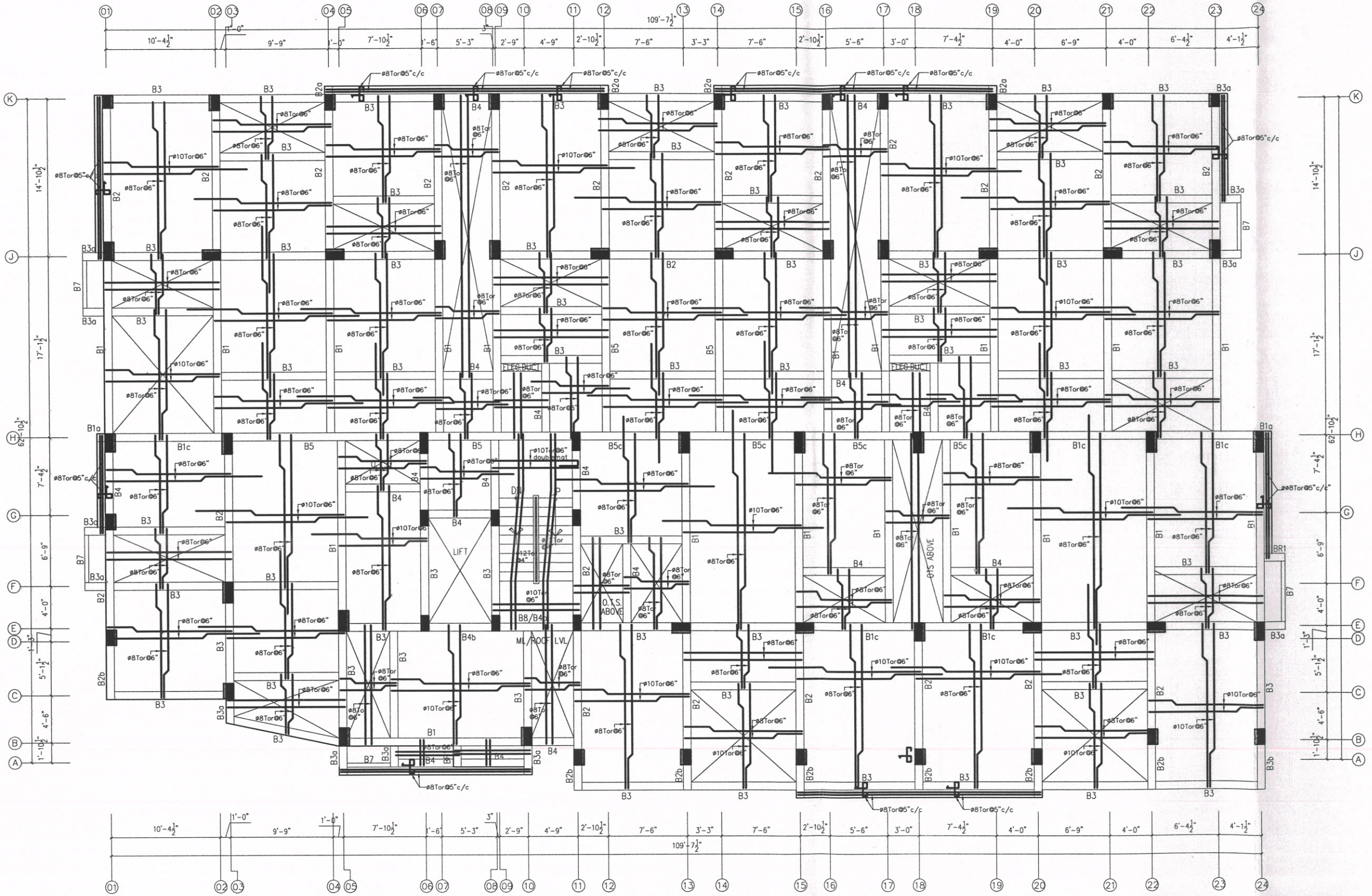
JOB NO : -	DRAWN : -
DRG.NO: S-04	DESIGNED : -
DATE : -	

PROJECT :

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

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Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.



SLAB BEAM LAYOUT. (BLOCK–2)

(ALL SLAB THICKNESS IS 5", UNLESS SPECIFIED)

NOTES:

1. All dimensions are in inches
2. This drg shall be read in conjunction with relevant architectural drawings
3. All dimensions shall be checked and verified before execution of works.
4. Concrete mix :–
   For columns : M30.
   (Cement Content –360 kg/m3)
   * Contractor / Client shall send us cube test results to substantiate the concrete mix grade.
   * If ready mixed concrete is being used, client/contractor shall cast concrete cubes independently at site and send cube results thus obtained to us.
5. Maximum water cement ratio :
   for 1:2:4 – 0.50
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6. REINFORCEMENT :
   TOR STEEL for ø8mm & above conforming to IS 1786 (latest revision)
7. Clear concrete cover to main bars :
   For columns : 40mm ,For BEAM : 25mm,SLAB : 20mm
8. Use stone aggregates and sand conforming to IS 383 (latest revision)
   Stone aggregates size – 20mm and down grade
9. Use good water for concrete mixing and curing conforming to IS 456 (latest revision)
10. Use ordinary portland cement conforming to IS 8112 (latest revision) for 43 grade cement & IS 12269 for 53 grade cement.
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12. The stability of supports and strength of the centering and formwork should be ensured by the Contractor and Site Engineer before placing concrete.

REV.	DATE	REVISION NOTE NO	SIGN	CHKD
-	-	-	-	-

SLAB BEAM LAYOUT.(BLOCK-2)

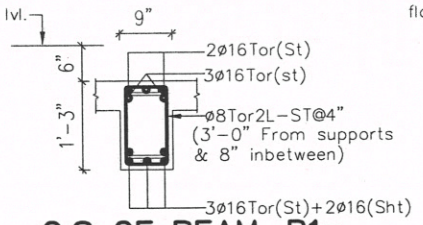
JOB NO :	-	DRAWN :	-
DRG.NO:	S-05	DESIGNED :	-
DATE :	-		

PROJECT :

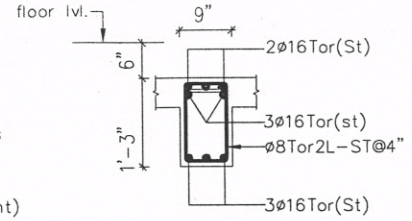
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STRUCTURAL CONSULTANT

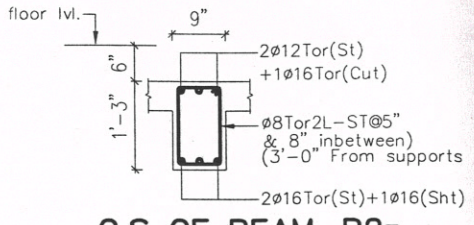
Er. P. RAMAN, B.E.(Civil)., M.E (Struct)., MIE., C.Engg.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.



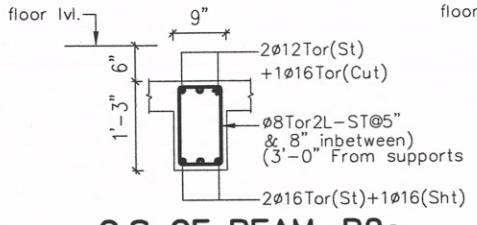
C.S OF BEAM-B1z



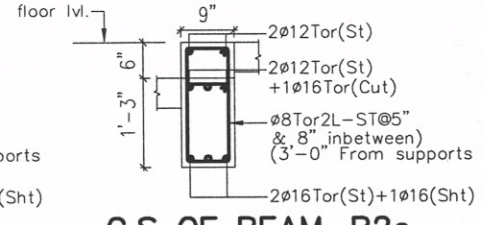
C.S OF BEAM-B1v



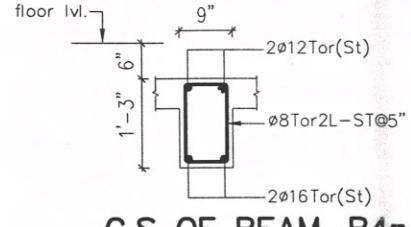
C.S OF BEAM-B2z



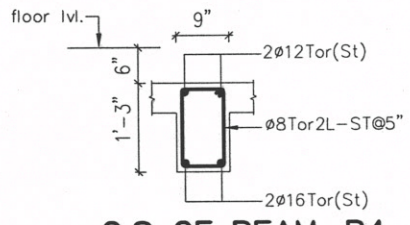
C.S OF BEAM-B2e
section on 1-1



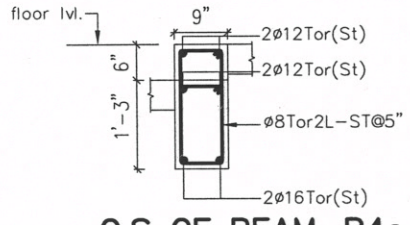
C.S OF BEAM-B2e
section on 2-2



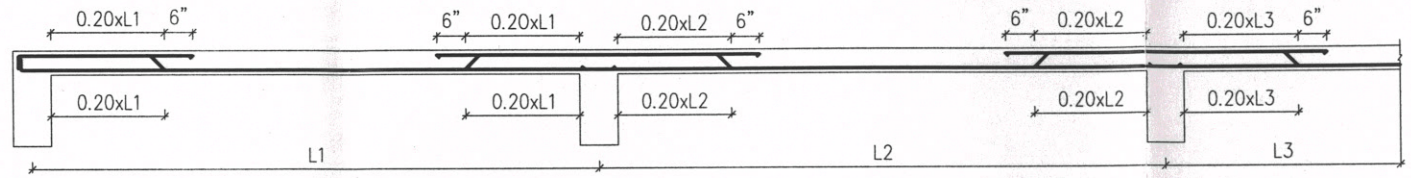
C.S OF BEAM-B4z



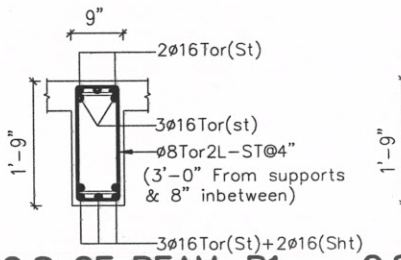
C.S OF BEAM-B4e
section on 1-1



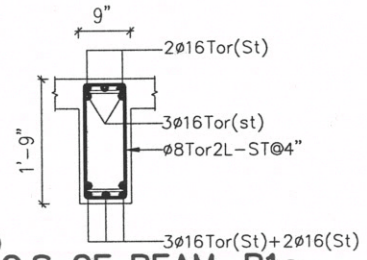
C.S OF BEAM-B4e
section on 2-2



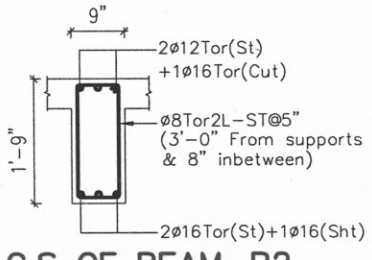
TYPICAL SLAB ROD BENDING DETAILS.



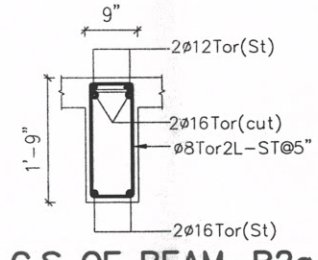
C.S OF BEAM-B1



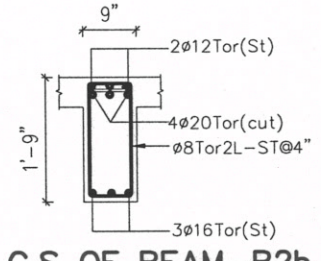
C.S OF BEAM-B1c



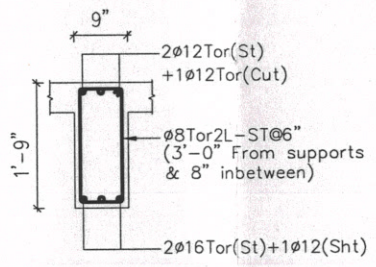
C.S OF BEAM-B2



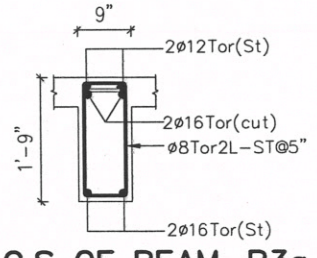
C.S OF BEAM-B2a



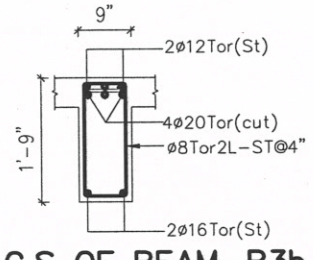
C.S OF BEAM-B2b



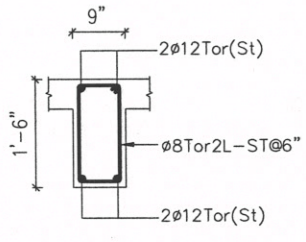
C.S OF BEAM-B3



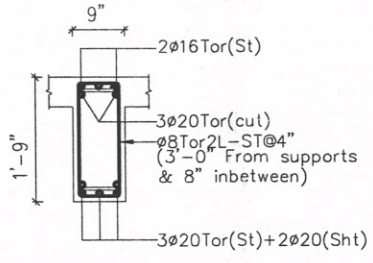
C.S OF BEAM-B3a



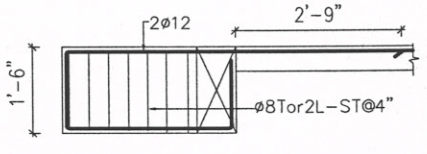
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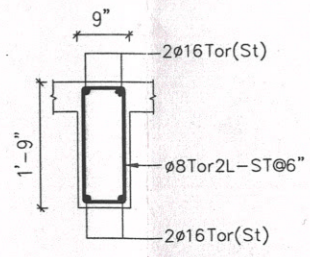
C.S OF BEAM-B4



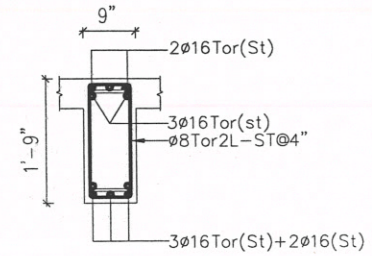
C.S OF BEAM-B5



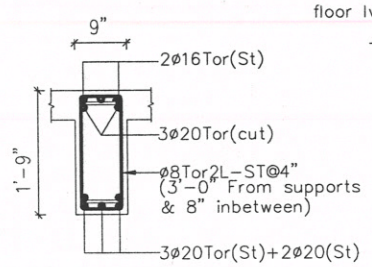
L.S OF BRACKET BEAM-BR1



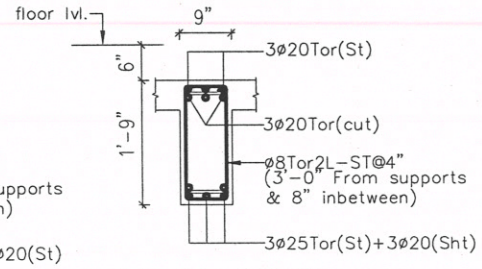
C.S OF BEAM-B4b



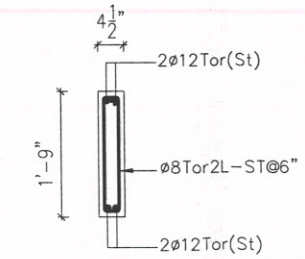
C.S OF BEAM-B1a



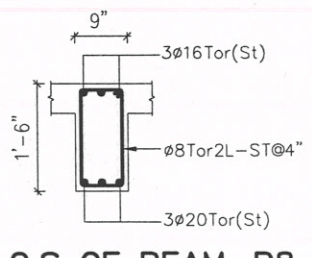
C.S OF BEAM-B5c



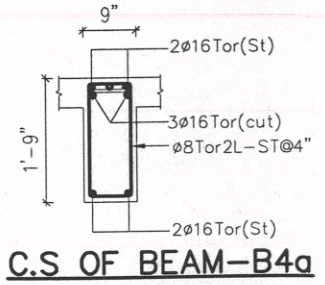
C.S OF BEAM-B6



C.S OF BEAM-B7



C.S OF BEAM-B8



C.S OF BEAM-B4a

-	-	-	-	-
REV.	DATE	REVISION NOTE NO	SIGN	CHKD

RCC DETAILS OF BEAM. (BLOCK-1&2)

JOB NO : -	DRAWN : -
DRG.NO: B-08	DESIGNED : -
DATE : -	

PROJECT :

The Planning Permission Application for the proposed construction of Group Development Residential building consisting 2 Blocks, Block A - Stilt Floor + 5 Floors(Height - 18.30m) with 25 dwelling units, Block B - Stilt Floor + 5 Floors (Height - 18.30m) with 30 dwelling units totally 55 dwelling units with availing premium FSI at T Ponnambalam Salai, Kulapakkam, Chennai comprised inS.No. 116/2 of Kulapakkam village within the limits of Kundrathur Panchayat Union

STRUCTURAL CONSULTANT

Er. P. RAMAN, B.E (Civil)., M.E (Struct)., MIE., C.Eng.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/ GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.

THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

Verified RealEstate™

Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

Verified RealEstate
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hello@verified.realestate
+91 9996 12 9996

Prepared from the registers named on the page each finding sits on. Where a register could not be read, this document says so in its place rather than leaving the gap to be read as a clean result.