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DIGITALLY VERIFIED RECORD

Er. T.PARAMASIVAN,B.E.,(CIVIL)M.E.,(Struct)
STRUCTURAL ENGINEER.
Flat-B, Annai Vista Block-2
Plot-12,Ramamoorthy Avenue,
Mugalivakkam, Chennai-600125.

Phone: 99414 17702
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STRUCTURAL STABILITY CERTIFICATE

Project Information : Residential Building at Plot No: 7A-1, 9, 20, 21, 22, Comprised in S.No: 955/2, 958/1, 958/2, 960, 961, 962, 963, T.S. No: 102/3, 102/5, Block No-23, Ward-B of Aringer Anna Street, Alex Nagar, Madhavaram Village, Madhavaram Taluk, Greater Chennai Corporation, Division: 25, Zone-03

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 ground floor + 2upper Floors.

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

4. All concrete for RCC members in Stilt floor + 2FloorsareM25 concrete.

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

This is to certify that the Structural Design of the proposedconstruction 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.

Paramesivan

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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 =0.513sec.
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	: Pile Foundation

1. GENERAL LOADING CONDITIONS:

(a) Imposed loads on Roof	- 4kN/m^2
(b) Dead weight of R.C.C	- 25kN/m^3
(c) 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	=(0.125)(25)	=3.125kN/m^2
Dead load	=5.125kN/m^2	
Live load	=2 kN/m^2	
Total load on Roof	= 7.125kN/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	=3.00kN/m^2
Total load on Roof	= 7.125kN/m^2

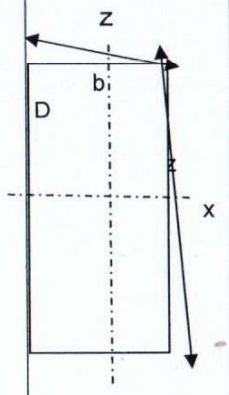
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3 DESIGN:

3.1 COLUMN DESIGN

Grade of Concrete			M 25	
Characteristic Strength of Reinf.		N/mm²	500	
Width of Column	b	mm	200	
Depth of Column	D	mm	450	
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	16	
Load		T		
Moment	M_{xx}	T.m		
Moment	M_{zz}	T.m		
Factored Load	P_u	kN	632.000	1
Factored Moment	M_{ux}	kN.m	25.000	1
Factored Moment	M_{uz}	kN.m	25.000	1
Effective Length of Column	l_{ex}	mm	3600	1.2
	l_{ez}	mm	3600	1.2
	l_{ex}/D		9.4736842 <12- Short Column	0
	l_{ey}/b		15.652174 >12- Slender Column	1
Additional Moment due to Slender	M_{ax}	kN.m	0	
Additional Moment due to Slender	M_{az}	kN.m	13.213565	
Percentage of Reinf.	p	%	1.6	
Gross Area of Cross Section	A_g	mm²	87400	
Ultimate Axial Load	P_{uz}	kN	1555.5015	
d'/D (about x-x axis)			0.127	0.15
d'/D (about y-y axis)			0.209	0.2
(Table 60)	k_1		0.196	



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	k2		0.203	
	P_{bx}	kN	460.196	
	k1		0	
	k2		0	
	P_{bz}	kN	0.000	
	k_x		0.992	
	k_y		0.698	
Minimum Eccentricity	e_x	mm	18.666667	
	e_y	mm	13.666667	
Moments due to min. eccentricity	M_{ex}	kN.m	8.75 < 25.000	kN.m
Moments due to min. eccentricity	M_{ez}	kN.m	6.41 < 25.000	kN.m
Total Moments for which the column is to be designed are				
	M_{ux}	kN.m	25.000	
	M_{uz}	kN.m	34.230	
The section is to be checked for biaxial bending				
	$P_u/f_{ck}bD$		0.215	
	p/f_{ck}		0.072	
Referring (d'/D is0.15)	$M_u/f_{ck}bD^2$		0.14	
	M_{ux1}	kN.m	116.242	
Referring to (d'/D = 0.2)	$M_u/f_{ck}bD^2$		0.100	
	M_{uy1}	kN.m	50.255	
	M_{ux}/M_{ux1}		0.215	
	M_{uy}/M_{uy1}		0.681	
	P_u/P_{uz}		0.302	
		a	1	1.17 < 1
Mux/Mux1 + Muy/Muy1			0.804	OK
Area of Reinforcement	As	mm^2	1573.2	
Minimum no of to be provided			4	
No of Bars to be provided	Nos.		8	
Provide 8 Nos of 16 Diameter				

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3.2 FOUNDATION DESIGN

3.2.1 PILE CAP DESIGN

Concrete Grade:	M25
Steel :	Fe 500

BASE SLAB

Bending moment (Mu) (kN-m/m)		Req.depth (D) (mm)	Total depth (D) (mm)	Bar dia. (mm)	Clear cover (mm)	Effect. depth (d) (mm)
Mx (+) =	21.00	118.32	800	12	50	742
Mx (-) =	482.00	566.86	800	16	50	742
My (+) =	17.00	106.46	800	12	50	742
My (-) =	382.00	504.65	800	16	50	742

Width (b) (mm)	Mu/bd^2	p_t required (%)	Ast required (mm^2/m)	S required mm c/c	S provided mm c/c	p_t provided (%)	Remarks
750	0.051	0.170	946.05	213	150	0.289	16Y @ 150
750	1.167	0.282	1569.33	128	150	0.289	16Y @ 150
750	0.041	0.170	946.05	213	150	0.289	16Y @ 150
750	0.925	0.221	1229.87	163	150	0.289	16Y @ 150

Check for Shear stresses :

Shear stress (τv) (N/mm^2)		p_t provided (%)	τc table 19, IS:456 (N/mm^2)	Remarks
SQx =	0.294	0.289	0.394	safe

-0.100

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SQy =	0.210	0.289	0.394	safe

3.3 BEAM DESIGN

Beam Data

width	200 mm
depth	450 mm
clear cover to main reinf.	25 mm
Slab Thickness	125 mm

d' 43 mm *= cc+ sdia + mdia/2*
eff depth 487 mm *= d - d'*

Material Grades

Concrete	30 MPa
Steel	500 MPa

				Span Moment	Support Moment
Span Moment	124 KN-m		Mu/bd^2	2.31	1.72
			xumax	222	222
			Mulim	218	218
Support Moment	118 KN-m	118 KN-m	$Mulim/bd^2$	3.99	3.99
		0 KN-m			

Span Reinforcement
Beam is designed as Singly Reinforced Beam

Area of Steel	Tension (Ast)	Compr (Asc)
Percentage	0.902 %	------
Area of Steel	838 sqmm	

Refer Table 2 SP 16 pg 48

190 KN-m

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	16 mm	3	603sqmm
Layer 2	16 mm	2	402 sqmm
Layer 3	-	0	0 sqmm
	Total Steel Provided		1005sqmm

1408 sqmm

1.082 %

Provided Steel OK

Compression Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	-	0	

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Layer 2	-	0	
Layer 3			
Total Steel Provided			#VALUE!

Support Reinforcement
Beam is designed as Singly Reinforced Beam

Area of Steel	Tension (Ast)	Compr (Asc)	
Percentage	0.852 %	-------	*Refer Table 2 SP 16 pg 48*
Area of Steel	797 sqmm		

1.68284581033290
-0.252285237331703

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel	
Layer 1	16 mm	3	603 sqmm	0.162506523303542
Layer 2	16 mm	2	402 sqmm	
Layer 3	12 mm		0 sqmm	
Total Steel Provided			1005 sqmm	1.082 %
Provided Steel OK				1198 sqmm
				839 sqmm

Compression Reinforcement 1880 sqmm

Type	Bar dia	Nos	Area of Steel	
Layer 1	25 mm	0		
Layer 2	25 mm	0		
Layer 3				
Total Steel Provided				#VALUE!

Shear Force (Vu)	90 KN		
ζv	0.775	*=Vu / (b * d)*	
ζc	0.613	*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

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Layer 1	25 mm	0	0 sqmm	
Layer 2	25 mm	0	0 sqmm	
Layer 3	20 mm	0	0 sqmm	
			0 sqmm	0.000 %

Sectional Dimensions OK
Shear Reinforcements required

Steel	**415 MPa**		Vus/d	0.437 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 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	23.000 KN/m
Finishes Load	WL	1.000 KN/m
Total Load	Ws	27.125 KN/m
Factored Load	Wsu	41 KN/m

Sunken Slab Load

Dead Load	DL	3.125 KN/m
Filler Load	FL	0 KN/m
Live Load	LL	4.0 KN/m
Finishes Load	WL	1.0 KN/m
Total Load	Wsk	8.13 KN/m
Factored Load	Wsku	12 KN/m

Slab Data

Slab Type	Regular
Load	41 KN/m
Longer Span (ly)	3.550 m
Shorter Span (lx)	3.150 m

ly/lx ratio	1.12
Slab type	+

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Loading on edges		one way	two way
W_{longer}	**48 KN/m**	.=w*lx/2	.=(w*lx/2) + (1-(1/3)*(lx/ly)^2)
$W_{shorter}$	**41 KN/m**		.=w*lx/3

Moments		one way	two way
Mx	28 KN-m	.=w*lx^2/ 8	.=αx * w*lx^2
My	21 KN-m		.=αy * w*lx^2

Thickness Check	OK	.=Mulim > Mux or Muy
Deflection	25 mm	.= 5*W*l^4/(384EI)

Area of Steel	Astx	Asty	Refer Chart 4 SP 16 pg 21	or
	691 sqmm	**487 sqmm**	Refer Table 5-44 SP 16 pg 51-80	

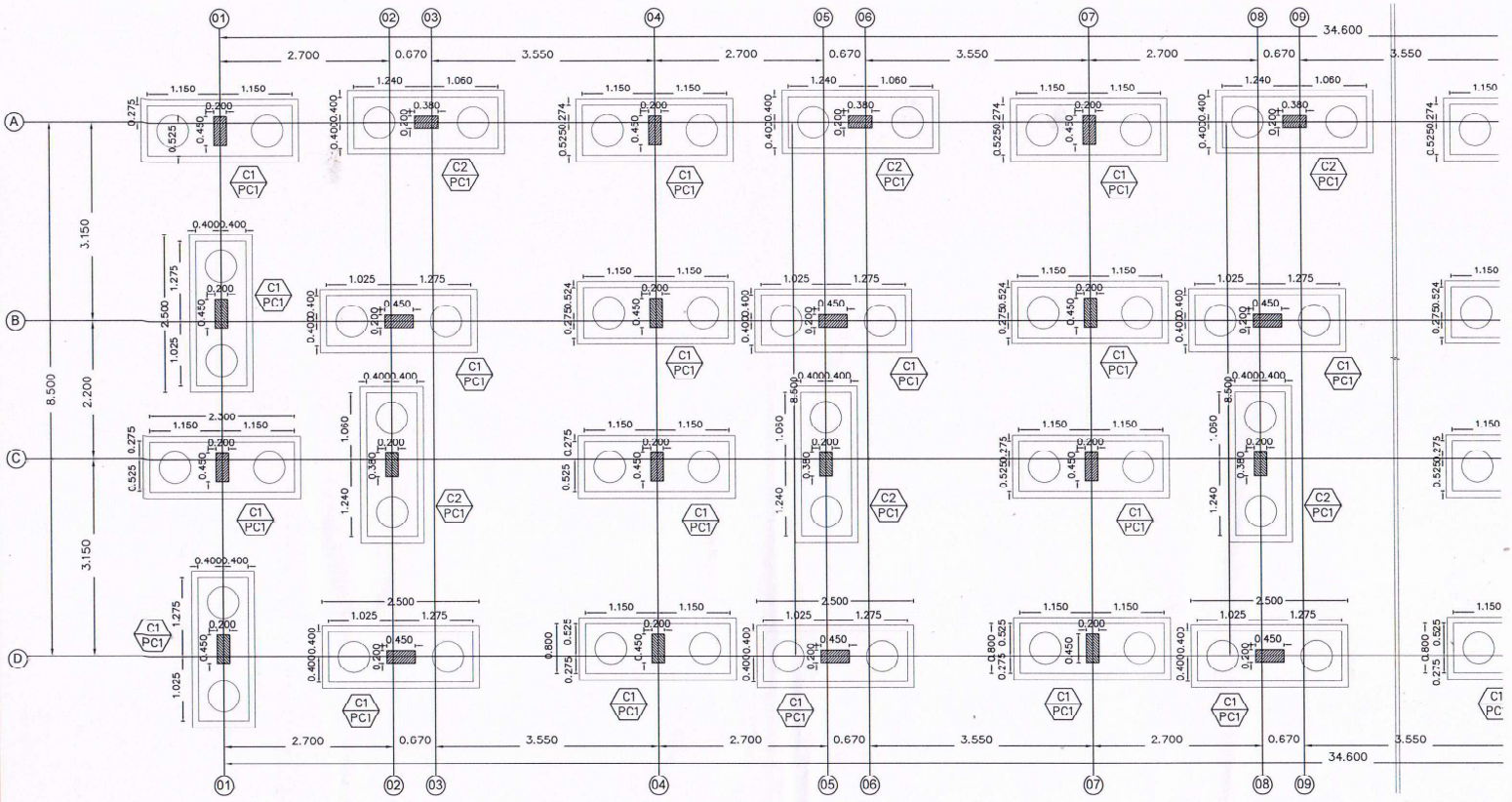
Spacing required in mm

8#		10#		12#		16#	
x	y	x	y	x	y	x	x
	103 c/c		**161 c/c**		**232 c/c**		**413 c/c**

.=ast of bar*1000/ast req

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

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PILE FOUNDATION LAYOUT

(SCALE 1: 50)

GENERAL NOTES :-

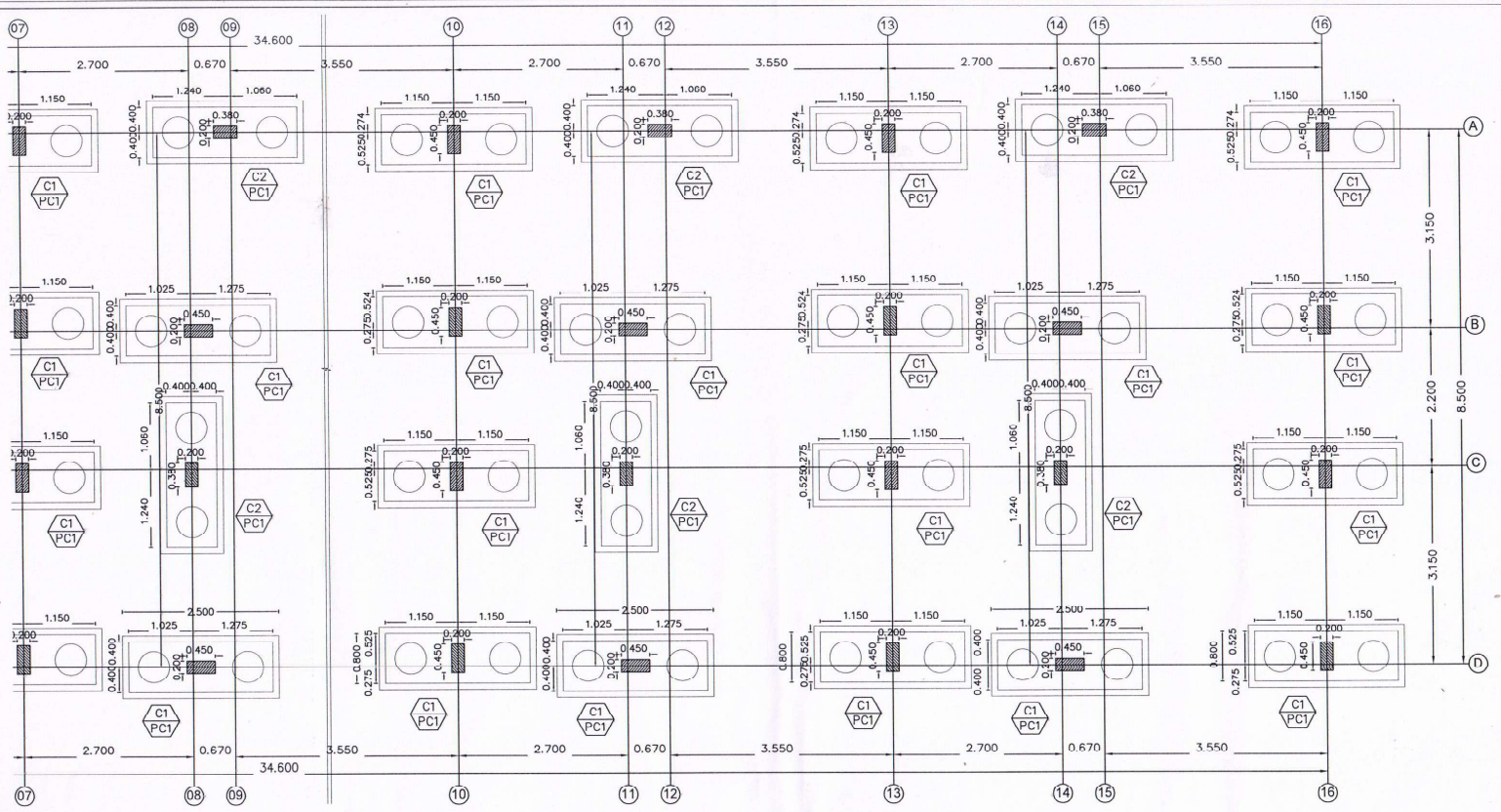
1. ALL DIMENSIONS ARE IN METRES.
2. THIS DWG SHALL BE READ IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE EXECUTION OF WORKS.
4. CONCRETE MIX :-
   - FOR PILE / PILECAP : M30 (CEMENT CONTENT -360 KG/M3)
   - FOR COLUMNS : M30/M25 (CEMENT CONTENT -340 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 1:1½:3 - 0.45 FOR 1:1:2 - 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 RC WALL : 25MM FOR PILE - 50MM , FOR PILE CAP - 75MM, BEAM--30MM
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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
12. PILES SHALL BE BORED AND UNDER REAMED AS ACCURATELY AS POSSIBLE.
13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE-III.
14. 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.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

DRAWING NO : 301

DRAWING NAME :
PILE FOUNDATION LAYOUT-PART-1

PROJECT NAME :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S NO:102/3, BLOCK NO:23, WARD -8, OF MADHAVARAM VIII AGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03 .

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PILE FOUNDATION LAYOUT

(SCALE 1:50)

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   FOR COLUMNS :- M30/M25 (CEMENT CONTENT -340 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 1:1½:3 :- 0.45
   FOR 1:1:2 :- 0.45
6. REINFORCEMENT :-
   FOR STEEL FOR 10MM & ABOVE CONFORMING TO IS 1786 (LATEST REVISION)
7. CLEAR CONCRETE COVER TO MAIN BARS :
   FOR COLUMNS :- 40MM, FOR RC WALL :- 25MM
   FOR PILE :- 50MM , FOR PILE CAP :- 75MM, BEAM-30MM
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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
12. PILES SHALL BE BORED AND UNDER REAMED AS ACCURATELY AS POSSIBLE.
13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE-III.
14. 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.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORMWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

DRAWING NO : S02

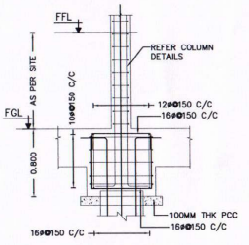
DRAWING NAME :
PILE FOUNDATION LAYOUT-PART-2

PROJECT NAME :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S.NO:102/3, BLOCK NO:23, WARD B, OF MADHAVARAM VILLAGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03 .

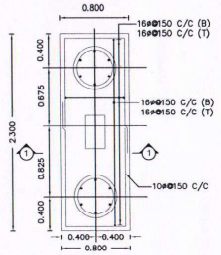
STRUCTURAL ENGINEER

Er. T. PARAMASIVAN, B.E(Civil)., M.E(Struct)., MIE., C.Eng.,
GREATER CHENNAI CORPORATION
Registered Structural Engineer Grade-I(RSE),
Registration No: RSE10004026,
Flat-B, Annai Vista Block-2,
Plot-12, Ramamoorthy Avenue,
Mugalivakkam, Chennai - 600 125.
PH: 99414 17702

FF TO SECOND FLOOR/ROOF	0.450 × 0.200	0.380 × 0.200
SIZE	450x200	380x200
CONCRETE GRADE/COVER	M25 / 40	M25 / 40
REINFORCEMENT/STEEL GRADE Fe	8-T16 / Fe500	4-T16+4-T12 / Fe500
LINKS/TIES/STEEL GRADE Fe	T8-125/T8-200/T8-125/Fe500	T8-125/T8-200/T8-125/Fe500
GF TO FIRST FLOOR	0.450 × 0.200	0.380 × 0.200
SIZE	450x200	380x200
CONCRETE GRADE/COVER	M25 / 40	M25 / 40
REINFORCEMENT/STEEL GRADE Fe	8-T16 / Fe500	4-T16+4-T12 / Fe500
LINKS/TIES/STEEL GRADE Fe	T8-125/T8-200/T8-125/Fe500	T8-125/T8-200/T8-125/Fe500
FDN TO GROUND FLOOR	0.450 × 0.200	0.380 × 0.200
SIZE	450x200	380x200
CONCRETE GRADE/COVER	M25 / 40	M25 / 40
REINFORCEMENT/STEEL GRADE Fe	8-T16 / Fe500	4-T16+4-T12 / Fe500
LINKS/TIES/STEEL GRADE Fe	T8-125/T8-200/T8-125/Fe500	T8-125/T8-200/T8-125/Fe500
COLUMN MARK	C1	C2



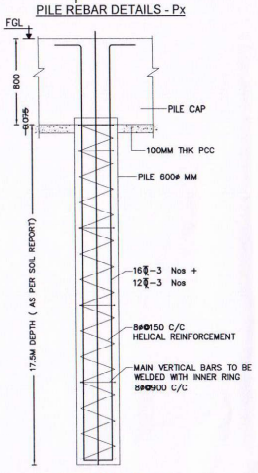
SECTION (1) (SCALE 1.25)



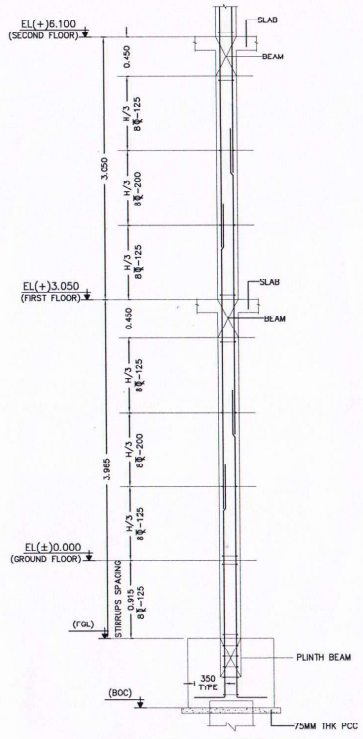
PILECAP DETAILS- PC1



PILE REBAR DETAILS - Px



PILE SECTION DETAILS



TYPICAL COLUMN SECTION (SCALE 1:25)

GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN METRES.
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 PILE / PILECAP : M30 (CEMENT CONTENT -360 KG/M3)
   FOR COLUMNS : M30/M25 (CEMENT CONTENT -340 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 1:1 1/2:3 - 0.45
   FOR 1:1:2 - 0.45
6. REINFORCEMENT :
   TOR STEEL FOR #8MM & ABOVE CONFORMING TO IS 1786 (LATEST REVISION)
7. CLEAR CONCRETE COVER TO MAIN BARS :
   FOR COLUMNS : 40MM, FOR RC WALL : 25MM
   FOR PILE - 50MM , FOR PILE CAP - 75MM, BEAM-30MM
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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
12. PILES SHALL BE BORED AND UNDER REAMED AS ACCURATELY AS POSSIBLE.
13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE-III.
14. 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.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORMWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

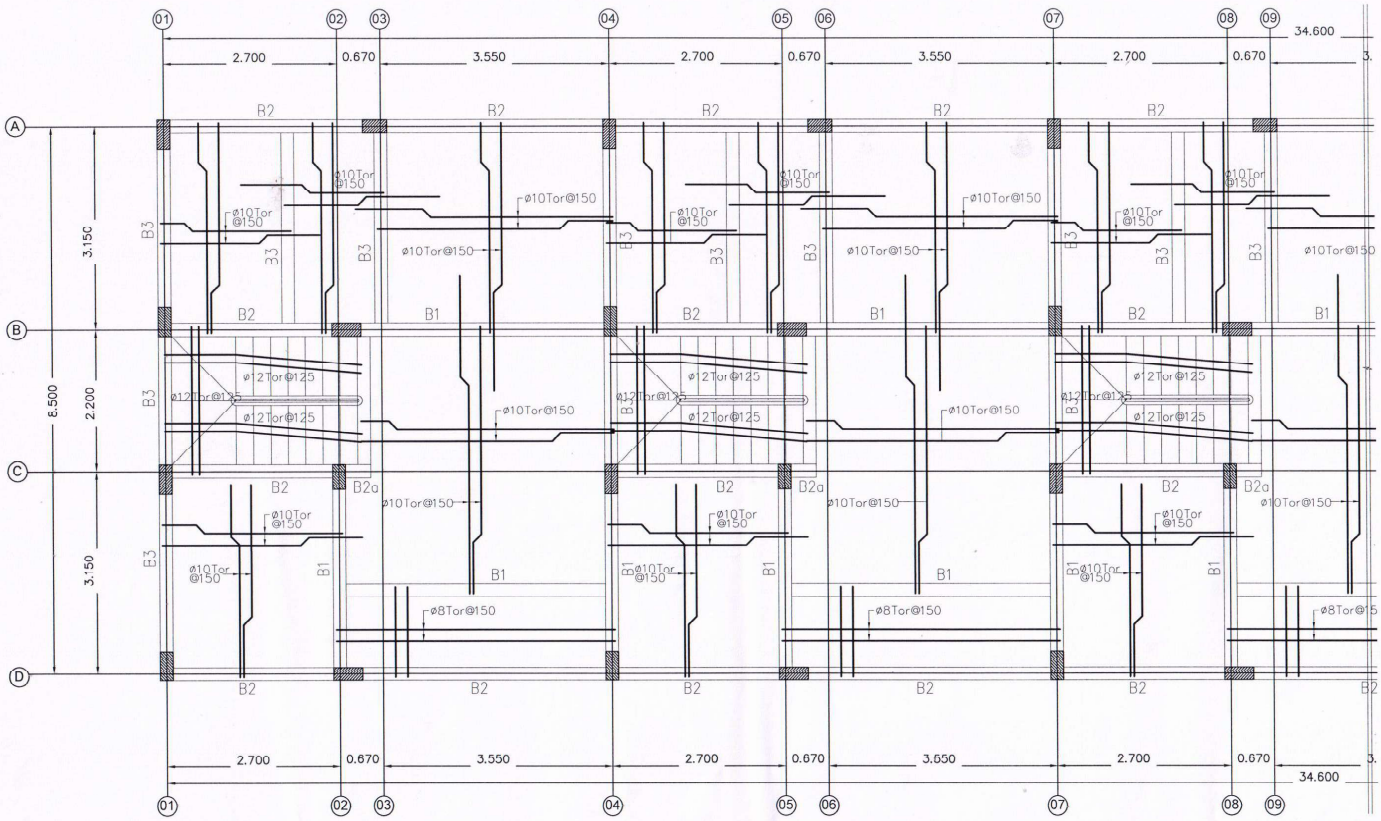
DRAWING NO : S03

DRAWING NAME :

PILE CAP & COLUMN SCHEDULE DETAILS

PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S.NO:102/3, BLOCK NO:23, WARD -B, OF MADHAVARAM VILLAGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03 .

STRUCTURAL ENGINEER
Er. T. PARAMASIVAN, B.E(Civil)., M.E(Struct)., MIE., C.Eng.,
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Registered Structural Engineer Grade-I(RSE),
Registration No: RSE100042026,
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Plot-12, Ramamoorthy Avenue,
Mugalivakkam, Chennai - 600 125.
PH: 99414 17702



SLAB BEAM LAYOUT.

(SCALE 1:50)

GENERAL NOTES :-

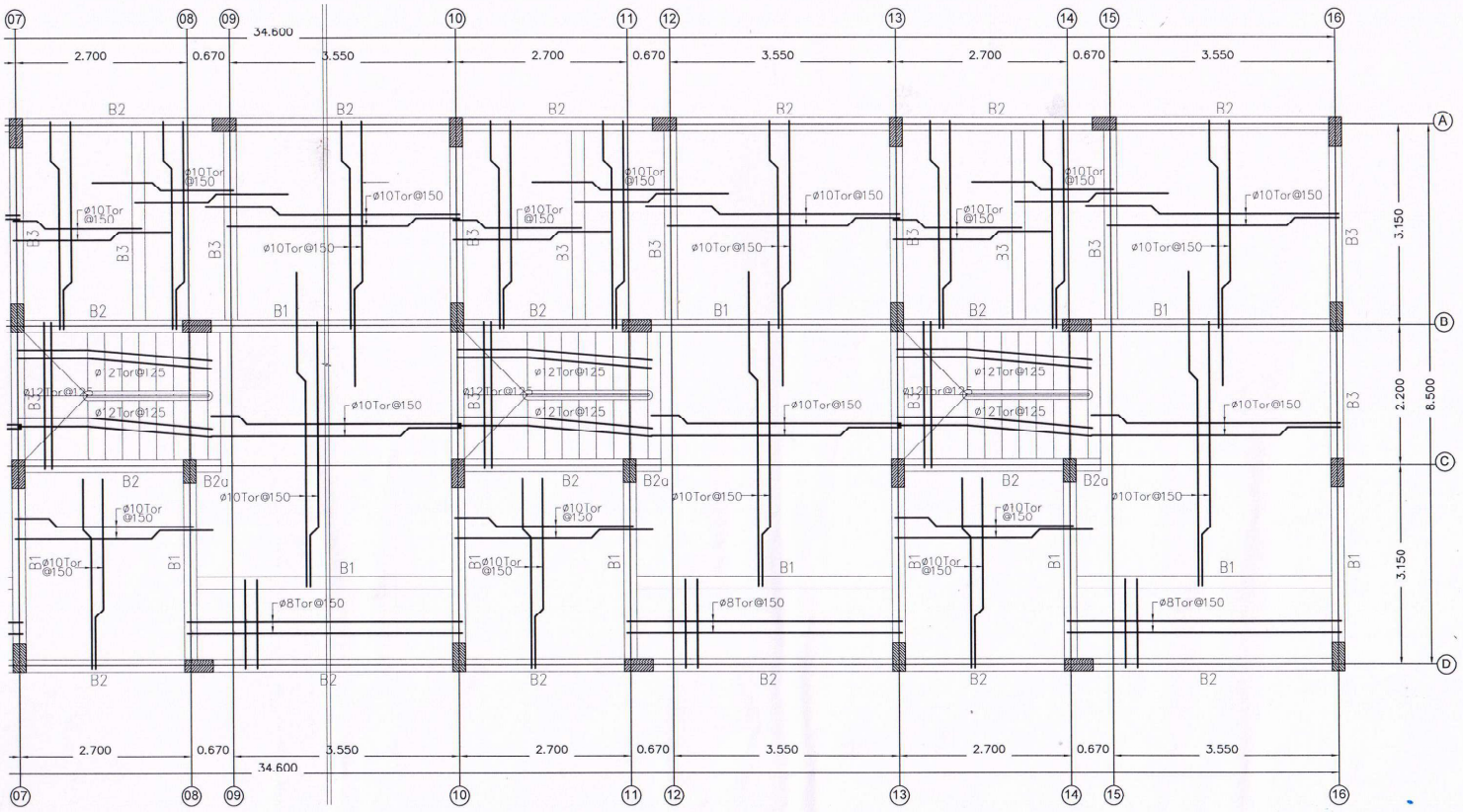
1. ALL DIMENSIONS ARE IN METRES.
2. THIS DRG SHALL BE READ IN CONJUNCTION WITH RELEVANT ARCHITECTURAL DRAWINGS
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE EXECUTION OF WORKS.
4. CONCRETE MIX :-
   FOR PILE / PILECAP : M30 (CEMENT CONTENT -360 KG/M3)
   FOR COLUMNS : M30/M25 (CEMENT CONTENT -340 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 1:1½:3 - 0.45
   FOR 1:1:2 - 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 RC WALL : 25MM
   FOR PILE - 50MM , FOR PILE CAP - 75MM, BEAM-30MM
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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
12. PILES SHALL BE BORED AND UNDER REAMED AS ACCURATELY AS POSSIBLE.
13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE-III
14. THE CENTERING AND SHUTTERING TO SUPPORT STRUCTURAL CONCRETE MUST BE SUFFICIENTLY STRONG AND RIGIDLY BRACED.HORIZONTAL TIES SHALL BE PROVIDED AT EVERY 1.6M HEIGHT.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

DRAWING NO : 304

DRAWING NAME :
SLAB BEAM LAYOUT-PART-1

PROJECT NAME :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S.NO:102/3, BLOCK NO:23, WARD -R, OF MADHAVARAM VII I AGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03 .

STRUCTURAL ENGINEER
Dr. T. PARAMASIVAN, B.E(Civil)., M.E(Struct)., MIE., C.Eng.,
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Registered Structural Engineer Grade-I(RSE),
Registration No: RSE100042026,
Flat-B, Annai Vista Block-2,
Plot-12, Ramamoorthy Avenue,
Mugalivakkam, Chennai - 600 125.
PH: 99414 17702



SLAB BEAM LAYOUT.

(SCALE 1:50)

GENERAL NOTES :-

1. ALL DIMENSIONS ARE IN METRES.
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 PILE / PILECAP : M30 (CEMENT CONTENT -360 KG/M3)
   FOR COLUMNS : M30/M25 (CEMENT CONTENT -340 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 1:1½:3 – 0.40
   FOR 1:1:2 – 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 RC WALL : 25MM
   FOR PILE – 50MM , FOR PILE CAP – 75MM, BEAM–30MM
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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
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13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE–III.
14. 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.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORMWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

DRAWING NO : 305

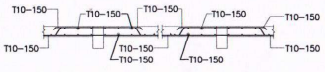
DRAWING NAME :
SLAB BEAM LAYOUT-PART-2

PROJECT NAME :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S.NO:102/3, BLOCK NO:23, WARD -B, OF MADHAVARAM VILLAGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03 .

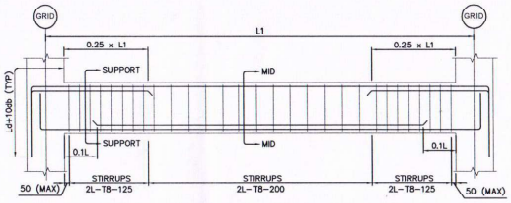
STRUCTURAL ENGINEER
Er. T. PARAMASIVAN, B.E(Civil)., M.E(Struct)., MIE., C.Eng.,
GREATER CHENNAI CORPORATION
Registered Structural Engineer Grade-I(RSE),
Registration No: RSE100042026,
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Plot-12, Ramamoorthy Avenue,
Mugalivakkam, Chennai - 600 125.
PH: 99414 17702

SCHEDULE OF ROOF BEAM DETAILS

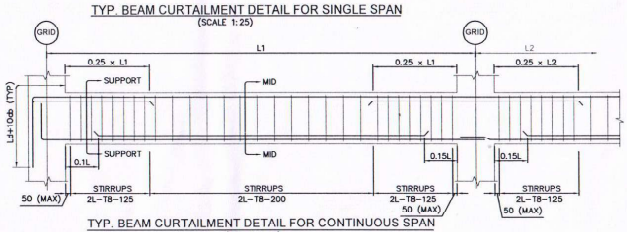
SL.No.	BEAM MARK	SUPPORT SECTION	MID SECTION
1	B1	0.200 2–T12 0.450 3–T16 2L–T8–125 (3'–0"FROM SUPPORTS) 3–T16	0.200 2–T12 0.450 2L–T8–200 2–T16 3–T16
2	B2	0.200 3–T12 0.450 1–T16 2L–T8–125 (3'–0"FROM SUPPORTS) 3–T16	0.200 2–T12 0.450 2L–T8–200 1–T16 3–T16
3	B3	0.200 2–T12 0.450 1–T16 2L–T8–125 (3'–0"FROM SUPPORTS) 2–T16	0.200 2–T12 0.450 2L–T8–200 1–T12 2–T16
4	B4	0.200 2–T12 0.450 2L–T8–150 2–T16	0.200 2–T12 0.450 2L–T8–150 2–T16
5	B2a	0.200 3–T12 0.450 3–T16 2L–T8–125 3–T16	



TYPICAL CROSS SECTION OF SLAB



TYP. BEAM CURTAILMENT DETAIL FOR SINGLE SPAN
(SCALE 1:25)



TYP. BEAM CURTAILMENT DETAIL FOR CONTINUOUS SPAN
(SCALE 1:25)

GENERAL NOTES:-

1. ALL DIMENSIONS ARE IN METRES.
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3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE EXECUTION OF WORKS.
4. CONCRETE MIX :–
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   FOR COLUMNS : M30/M25 (CEMENT CONTENT –340 KG/M3)
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   * 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 1:1½:3 - 0.45
   FOR 1:1:2 - 0.45
6. REINFORCEMENT :
   TOR STEEL FOR 8MM & ABOVE CONFORMING TO IS 1786 (LATEST REVISION)
7. CLEAR CONCRETE COVER TO MAIN BARS :
   FOR COLUMNS : 40MM, FOR RC WALL : 25MM
   FOR PILE – 50MM , FOR PILE CAP – 75MM, BEAM–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. PILES ARE DESIGNED FOR LOADS FROM GROUND + 2 FLOORS + WEIGHT OF PILECAP.
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13. ALL STRUCTURAL MEMBER DESIGNED FOR SEISMIC ZONE–III.
14. THE CENTERING AND SHUTTERING TO SUPPORT STRUCTURAL CONCRETE MUST BE SUFFICIENTLY STRONG AND RIGIDLY BRACED HORIZONTAL TIES SHALL BE PROVIDED AT EVERY 1.8M HEIGHT.
15. THE STABILITY OF SUPPORTS AND STRENGTH OF THE CENTERING AND FORMWORK SHOULD BE ENSURED BY THE CONTRACTOR AND SITE ENGINEER BEFORE PLACING CONCRETE.

DRAWING NO : 506

DRAWING NAME :
RCC DETAILS OF BEAM CROSS SECTION.

PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENDIAL BUILDING AT PLOT NO : 7A, COMPRISED IN T.S.NO:102/3, BLOCK NO:23, WARD -B, OF MADHAVARAM VILLAGE, MADHAVARAM TALUK, GREATER CHENNAI CORPORATION, DIVISION :25, ZONE -03.

STRUCTURAL ENGINEER

Er. T. PARAMASIVAN, B.E(Civil)., M.E(Struct)., MIE., C.Eng.,
GREATER CHENNAI CORPORATION
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Plot-12, Ramamoorthy Avenue,
Mugalivakkam, Chennai - 600 125.
PH: 99414 17702

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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OMR Thoraipakkam,
Chennai 600 097, India
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.