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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.

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	: Open Foundation

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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

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)	=3.75kN/m^2
Dead load	=5.75kN/m^2	
Live load	=1.50kN/m^2	
Total load on Roof	= 7.25kN/m^2	

2.2 Loading on Floor slabs:

Floor finish	= 1.00kN/m^2
S/w of slab 125mm thick	= 3.75kN/m^2
Dead load	=4.75kN/m^2
Live load	=2.00kN/m^2
Total load on Roof	= 6.75kN/m^2

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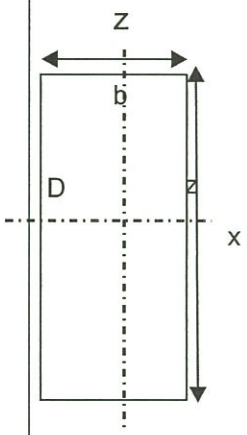
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3 DESIGN:

3.1 COLUMN DESIGN

Grade of Concrete			M 30	
Characteristic Strength of Reinf.		N/mm^2	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	950.000	1
Factored Moment	M_{ux}	kN.m	11.000	1
Factored Moment	M_{uz}	kN.m	56.000	1
Effective Length of Column	l_{ex}	mm	3600	1.2
	l_{ez}	mm	3600	1.2
	l_{ex}/D		6.7924528	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		2	
Gross Area of Cross Section	A_g	mm^2	159000	
Ultimate Axial Load	P_{uz}	kN	3181.113	
d'/D (about x-x axis)			0.095	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	1081.264	
	k1		0.184	
	k2		0.028	
	P_{bz}	kN	885.694	
	k_x		0.735	
	k_y		0.673	
Minimum Eccentricity	e_x	mm	23.666667	
	e_y	mm	16	
Moments due to min. eccentricity	M_{ex}	kN.m	38.74 > 11.000	kN.m
Moments due to min. eccentricity	M_{ez}	kN.m	26.19 < 56.000	kN.m
Total Moments for which the column is to be designed are				
	M_{ux}	kN.m	38.742	
	M_{uz}	kN.m	56.000	
The section is to be checked for biaxial bending				
	$P_u/f_{ck}bD$		0.343	
	p/f_{ck}		0.06	
Referring (d'/D is0.1)	$M_u/f_{ck}bD^2$		0.11	
	M_{ux1}	kN.m	278.091	
Referring to (d'/D = 0.2)	$M_u/f_{ck}bD^2$		0.100	
	M_{uy1}	kN.m	143.100	
	M_{ux}/M_{ux1}		0.139	
	M_{uy}/M_{uy1}		0.391	
	P_u/P_{uz}		0.515	
		a	1	1.525
Mux/Mux1 + Muy/Muy1			0.289	< 1 OK
Area of Reinforcement	As	mm^2	2862	
Minimum no of to be provided			6	
No of Bars to be provided	Nos.		10	
Provide 12 Nos of 20 Diameter				

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3.2 FOUNDATION DESIGN

3.2.1 ISOLATED FOOTING DESIGN

1 **Footing Size Design**

Load	Pu	950 KN
Design Load	P	697 KN
Moment in x dir	Mux	10 KN-m
Moment in y dir	Muy	6 KN-m
Column size	cx	600 mm
	cy	450 mm
SBC	q	110 KN/sqm
Footing Size required	A req	6.33 sqmm
Footing Size Provided	L	**2.70 meters**
	B	**2.70 meters**
Area Provided	A prvd	7.29 meters
	Zx	3.28
	Zx	3.28
Net upward pressure	Nup	99 KNm2

Footing Size OK

2 **Slab Design**

	lx	1.050
	ly	1.125
Bending Moment in x dir	Mx	82 KN-m
Bending Moment in y dir	My	94 KN-m
Concrete	fck	30 MPa
Steel	fy	500 MPa
Minimum Depth Required	dmin	153
Depth Provided	D	**680 mm**

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Clear Cover	c	50 mm
Effective Cover	d'	56 mm
Effective Depth	d'	624 mm

Area of Steel	Spacing c/c in mm		
	12#	16#	20#
749 sqmm	151 c/c	269 c/c	420 c/c
749 sqmm	151 c/c	269 c/c	420 c/c

Minimum Ast required across x direcion

Minimum Ast required across y direcion

Ast across x direction	**12 mm dia**	**@ 100 mm c/c**	**1131 sqmm**
Ast across y direction	**12 mm dia**	**@ 100 mm c/c**	**1131 sqmm**

3 **One Way Shear along x direction**

Vu1	170 KN
ζv	0.101 MPa
ζc	0.265 MPa
Vc1	447 KN

One Way Shear Check OK

4 **One Way Shear along y direction**

Vu1	201 KN
ζv	0.119 MPa
ζc	0.265 MPa
Vc1	447 KN

One Way Shear Check OK

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5 **Two Way Shear**

Vu2	886 KN
ζv	0.309 MPa
ks*ζc	1.369 MPa
Vc1	3927 KN

Two Way Shear Check OK

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3.3 BEAM DESIGN

Beam Design

Beam Data

width	200 mm
depth	600 mm
clear cover to main reinf.	30 mm
Slab Thickness	125 mm

d'	46 mm	.= cc+ sdia + mdia/2
eff depth	554 mm	.= d - d'

Material Grades

Concrete	30 MPa
Steel	500 MPa

				Span Moment	Support Moment
Span Moment	240 KN-m		Mu/bd^2	3.91	3.45
			xumax	253	253
			Mulim	245	245
Support Moment	212 KN-m	212 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	1.102 %	------
Area of Steel	1221 sqmm	

Refer Table 2 SP 16 pg 48

452 KN-m

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	16 mm	2	402 sqmm
Layer 2	20 mm	4	1257 sqmm
Layer 3	-		
		Total Steel Provided	1659 sqmm

1975 sqmm

1.497 %

Provided Steel OK

Compression Reinforcement

Type	Bar dia	Nos	Area of

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			Steel
Layer 1	-		
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	0.943 %	------
Area of Steel	1045 sqmm	

Refer Table 2 SP 16 pg 48

3.19830010221055
-0.598855469970699

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

0.159504829905755

1.701 %

Provided Steel OK

1765 sqmm
1406 sqmm

Compression Reinforcement

2447 sqmm

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

#VALUE!

Shear Force (Vu)	85 KN	
ζv	0.767	*.=Vu / (b * d)*
ζc	0.762	*Refer Table 61 SP 16 pg 179*
ζcmax	3.5	*Refer Table J SP 16 pg 175*

or
=(0.85√(0.8*fck)*√(1+5β) -1)) / (6β)*

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Type	Bar Dia	Nos	Area of Steel
Layer 1	8 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**
Type of stirrup	**2 legged**
Stirrup diameter	**8 mm**
Spacing	300 c/c

Safe

Vus/d 0.010 kN/cm 1.458

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

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Longer Span (ly)	4.84 m
Shorter Span (lx)	3.24 m

ly/lx ratio	1.49
Slab type	+

Loading on edges		*one way*	*two way*
W_{longer}	**13 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	9 KN-m	*.=w*lx^2/ 8*	*.=ax * w*lx^2*
My	5 KN-m		*.=ay * w*lx^2*

Thickness Check	OK	*.=Mulim > Mux or Muy*
Deflection	15 mm	*.= 5*W*l^4/(384EI)*

Area of Steel	Astx	Asty	*Refer Chart 4 SP 16 pg 21* *Refer Table 5-44 SP 16 pg 51-80*	*or*
	193 sqmm	**150 sqmm**		

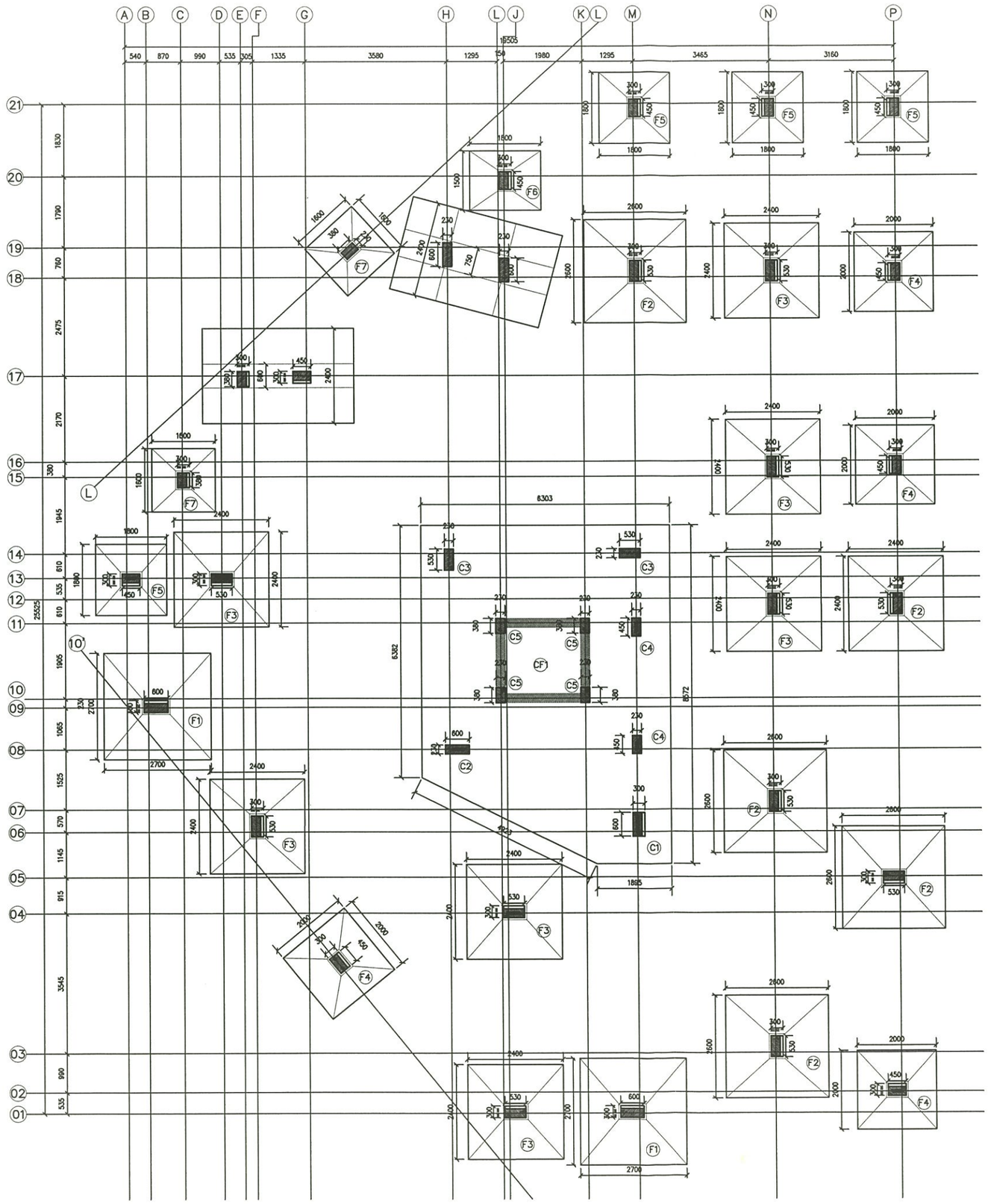
Spacing required in mm

8#		10#		12#		16#	
x	y	x	y	x	y	x	x
260 c/c	**335 c/c**	**406 c/c**	**524 c/c**	**585 c/c**	**754 c/c**	**#######**	**1340 c/c**

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

Final Ast provided	x	y
	10# @ 125c/c	**10# @ 150c/c**

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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,beam,slab : 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 1:2:4 – 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
   for footing : 50mm ,for raft beam : 50mm
   for RCC WALL : 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. S.B.C of soil as per soil test report 11t/sq.m
12. Foundation is designed for Ground+3floors.
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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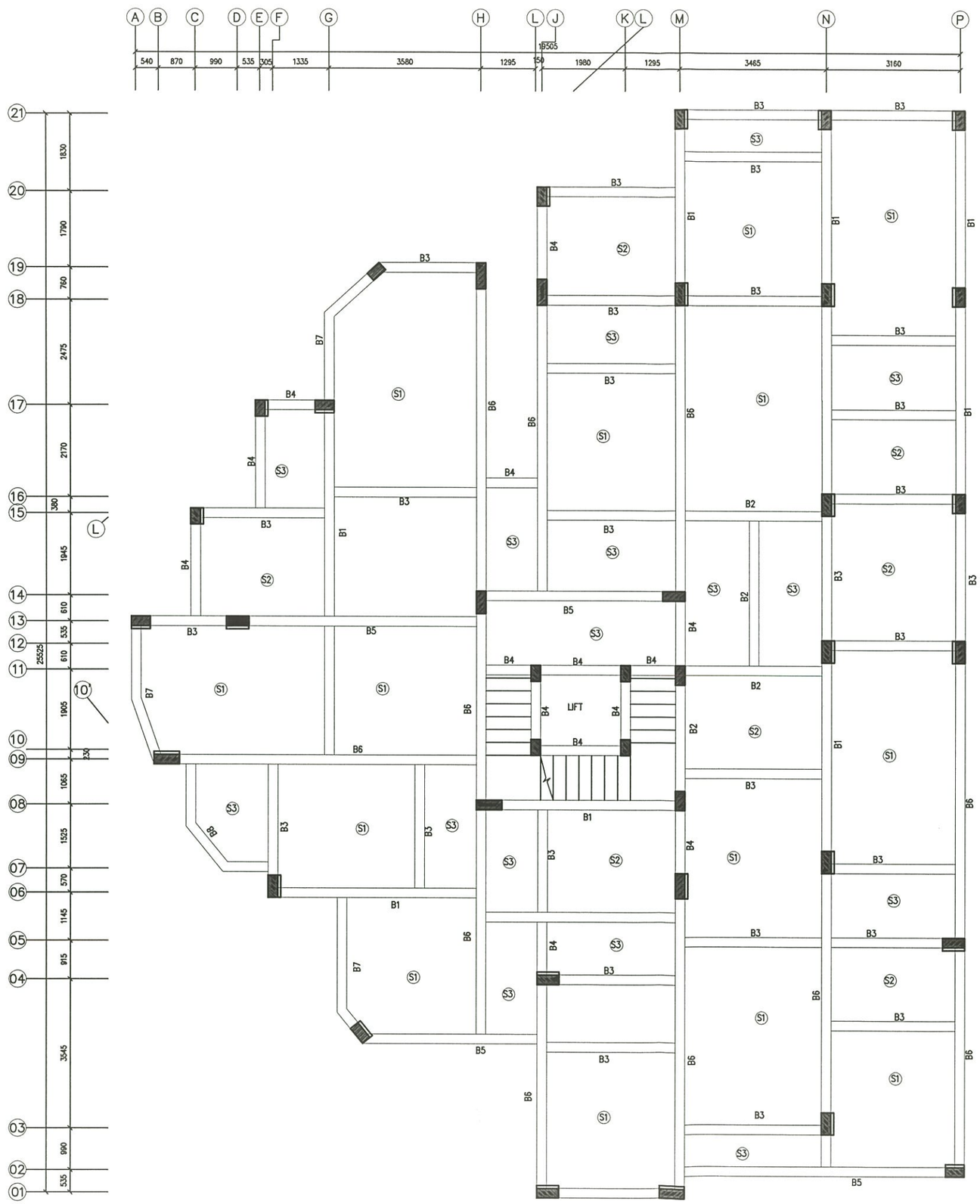
FOUNDATION LAYOUT

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

PROJECT :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR (PARKING) + 3 FLOORS RESIDENTIAL BUILDING (HEIGHT –12.00M) WITH 9 DWELLING UNITS AT PLOT NO: 26, PANCHAYAT ROAD, GOLDEN GEORGE NAGAR, CHENNAI – 600037, COMPRISED IN T.S.NO: 41 [OLD S.NO : 358 / 21 PT] BLOCK NO: 60 OF MOGAPPAIR VILLAGE IN GREATER CHENNAI CORPORATION DIVISION NO – 93, ZONE – VIII.

STRUCTURAL CONSULTANT

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SLAB BEAM LAYOUT

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,beam,slab : 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 1:2:4 – 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
   for footing : 50mm ,for raft beam : 50mm
   for RCC WALL : 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. S.B.C of soil as per soil test report 11t/sq.m
12. Foundation is designed for Ground+3floors.
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.

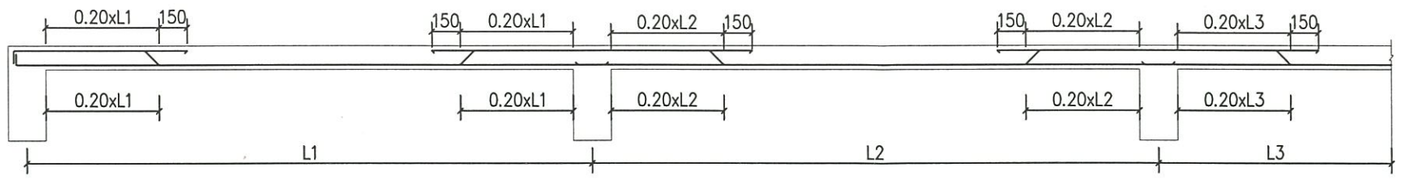
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SLAB BEAM LAYOUT

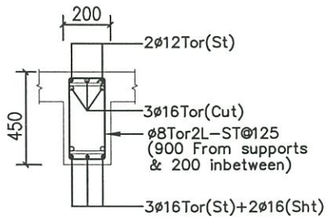
JOB NO : -	DRAWN : -
DRG.NO: 03	DESIGNED : -
DATE : -	

PROJECT :
PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR (PARKING) + 3 FLOORS RESIDENTIAL BUILDING (HEIGHT –12.00M) WITH 9 DWELLING UNITS AT PLOT NO: 26, PANCHAYAT ROAD, GOLDEN GEORGE NAGAR, CHENNAI – 600037, COMPRISED IN T.S.NO: 41 [OLD S.NO : 358 / 21 PT] BLOCK NO: 60 OF MOGAPPAIR VILLAGE IN GREATER CHENNAI CORPORATION DIVISION NO – 93, ZONE – VIII.

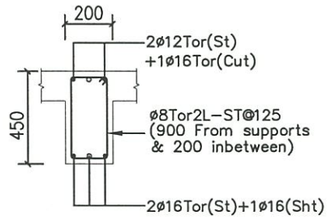
STRUCTURAL CONSULTANT
Er. P. RAMAN, B.E.(Civil), M.E.(Struct)., MIE., C.Eng.,
Registered Structural Engineer Grade-1(SE)
CMDA Reg. No.: SE/GR-1/2024/02/006
No.24, Ground Floor, CRR Puram Phase-3,
Manapakkam, Chennai - 600 125.



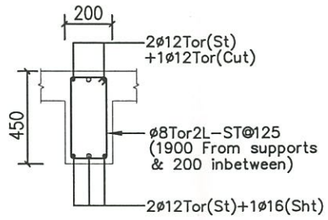
TYPICAL SLAB ROD BENDING DETAILS.



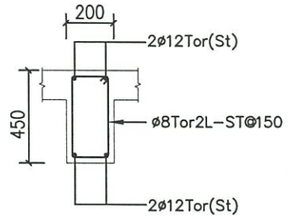
C.S OF BEAM–B1



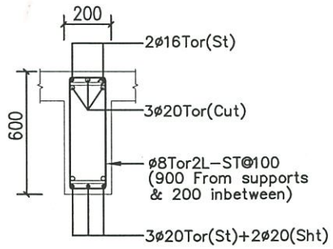
C.S OF BEAM–B2



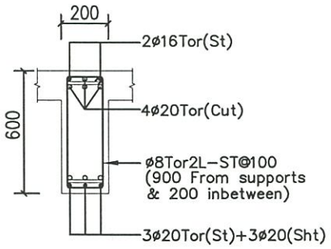
C.S OF BEAM–B3



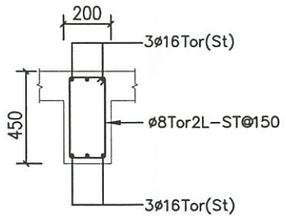
C.S OF BEAM–B4



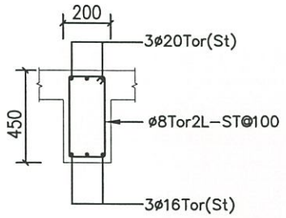
C.S OF BEAM–B5



C.S OF BEAM–B6



C.S OF BEAM–B7



C.S OF BEAM–B8

SLAB REINFORCEMENT

TYPE	SLAB THICKNESS	REINFORCEMENT		REMARKS
		L	B	
S1	125	ø10Tor@125	ø10Tor@150	TWOWAY
S2	125	ø10Tor@150	ø8Tor@150	TWOWAY
S3	125	ø8Tor@125	ø8Tor@150	TWOWAY

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,beam,slab : 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 1:2:4 – 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
   for footing : 50mm ,for raft beam : 50mm
   for RCC WALL : 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. S.B.C of soil as per soil test report 11t/sq.m
12. Foundation is designed for Ground+3floors.
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
-	-	-	-	-

RCC DETAILS OF BEAM

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

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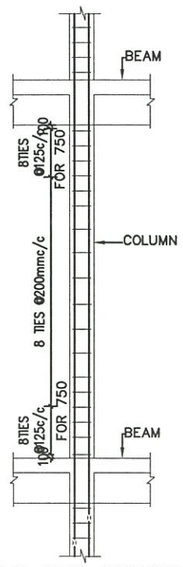
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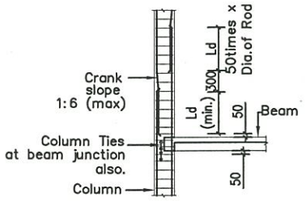
SCHEDULE OF FOOTING & SCHEDULE OF COLUMNS (MIX: 25)

TYPE	FOOTING SIZE	DEPTH		FOOTING REINFORCEMENT		COLUMN REINFORCEMENT				
		h1	h2	L	B	GROUND FLOOR	1st FLOOR	2nd FLOOR	3rd FLOOR	STIRRUPS
F1	2700x2700	230	680	ø12Tor@100	ø12Tor@100	12–ø20 (600 x 300)	12–ø20 (600 x 230)	12–ø20 (600 x 230)	12–ø20 (600 x 230)	ø8TOR
F2	2600x2600	230	680	ø12Tor@100	ø12Tor@100	10–ø20 (530 x 300)	10–ø20 (530 x 230)	10–ø20 (530 x 230)	10–ø20 (530 x 230)	ø8TOR
F3	2400x2400	230	600	ø12Tor@125	ø12Tor@125	10–ø20 (530 x 300)	10–ø20 (530 x 230)	10–ø20 (530 x 230)	10–ø20 (530 x 230)	ø8TOR
F4	2000x2000	230	600	ø12Tor@150	ø12Tor@150	10–ø16 (450 x 300)	10–ø16 (450 x 230)	10–ø16 (450 x 230)	10–ø16 (450 x 230)	ø8TOR
F5/ F6	1800x1800 1500x1800	230	600	ø12Tor@150	ø12Tor@150	8–ø16+2–ø16 (450 x 300)	8–ø16+2–ø16 (450 x 230)	8–ø16+2–ø16 (450 x 230)	8–ø16+2–ø16 (450 x 230)	ø8TOR
F7	1600x1600	230	600	ø12Tor@150	ø12Tor@150	4–ø16+4–ø12 (380 x 300)	4–ø16+4–ø12 (380 x 200)	4–ø16+4–ø12 (380 x 200)	4–ø16+4–ø12 (380 x 200)	ø8TOR

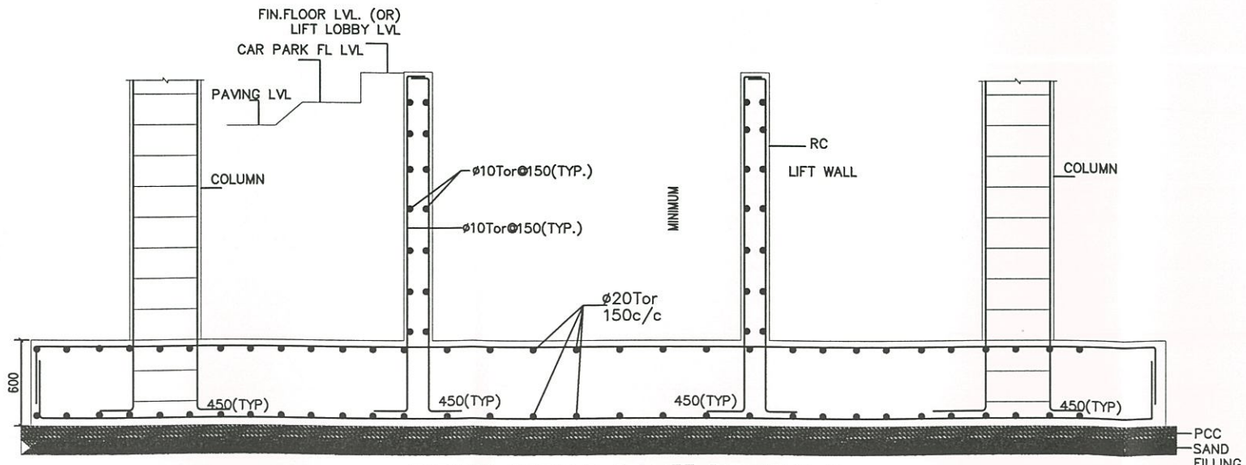
VERTICAL SECTION THROUGH
COLUMN FOOTING FOR TAPPER



TYPICAL TIES ARRANGEMENT
IN COLUMN



SPLICE WITH UPPER BARS
CRANKED INTO POSITION
INSIDE LOWER BARS



TYPICAL DETAILS OF LIFT PIT AT X–X
COMBINED FOOTING (CF1)

NOTES:

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-	-	-	-	-

COLUMN SCHEDULE AND FOOTING DETAILS.

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

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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

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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.