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DIGITALLY VERIFIED RECORD

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STRUCTURAL STABILITY CERTIFICATE

Name of work: PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT BUILDING IN S.NO: 98/85A1 OF KANATHDUR REDDYKUPPAM VILLAGE AND PANCHAYAT, THIRUPORUR TALUK, CHENGALPATTU DISTRICT.THIRUPORUR PANCHAYAT UNION LIMIT.

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.

ADDITIONAL CRITERIA

1. The structure is idealized as Special RC-Moment Resisting Frame (SMRF) and analyzed using software package (STAAD PRO) for both vertical and lateral loads.
2. The lateral load includes wind load and earthquake load, Seismic load of medium and moderate intensity of ZONE-III considered is for design and analysis purpose.
3. The Foundation is designed for critical un-Factored load combinations.
4. The Superstructure members are designed for actual flexure, shear and forces.
5. The structure is analyzed for specific loads (Dead and Live Loads) and for the load combinations given in relevant loads.
6. The design of the structure is **structurally sound and safe.**

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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 =0.655sec.
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	: Isolated 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)	=3.125kN/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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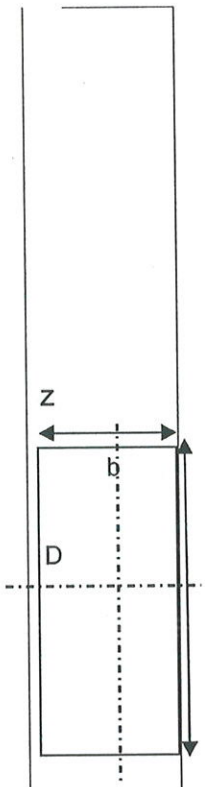
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3 DESIGN:

3.1 COLUMN DESIGN

Grade of Concrete			M 30	
Characteristic Strength of Reinf.		N/mm^2	500	
Width of Column	b	mm	300	
Depth of Column	D	mm	530	
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	893.000	1
Factored Moment	M_{ux}	kN.m	96.000	1
Factored Moment	M_{uz}	kN.m	47.000	1
Effective Length of Column	l_{ex}	mm	3600	1.2
	l_{ez}	mm	3600	1.2
	l_{ex}/D		6.7924528 <12- Short Column	0
	l_{ey}/b		12 <12- Short Column	0
Additional Moment due to slender	M_{ax}	kN.m	0	
Additional Moment due to slender	M_{az}	kN.m	0	
Percentage of Reinf.	p		1.9	
Gross Area of Cross Section	A_g	mm^2	159000	
Ultimate Axial Load	P_{uz}	kN	3238.5915	
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	1086.479	
	k1		0.184	
	k2		0.028	
	P_{bz}	kN	886.139	
	k_x		1.000	
	k_y		0.997	
Minimum Eccentricity	e_x	mm	23.666667	
	e_y	mm	16	
Moments due to min. eccentricity	M_{ex}	kN.m	21.13 < 96.000 kN.m	
Moments due to min. eccentricity	M_{ez}	kN.m	14.29 < 47.000 kN.m	
Total Moments for which the column is to be designed are				
	M_{ux}	kN.m	96.000	
	M_{uz}	kN.m	47.000	
The section is to be checked for biaxial bending				
	$P_u/f_{ck}bD$		0.187	
	p/f_{ck}		0.0633333	
Referring (d'/D is 0.1)	$M_u/f_{ck}bD^2$		0.120	
	M_{ux1}	kN.m	303.372	
Referring to (d'/D = 0.2)	$M_u/f_{ck}bD^2$		0.100	
	M_{uy1}	kN.m	143.100	
	M_{ux}/M_{ux1}		0.316	
	M_{uy}/M_{uy1}		0.328	
	P_u/P_{uz}		0.276	
		a	1 1.1267 < 1	
Mux/Mux1 + Muy/Muy1			0.559 K	
Area of Reinforcement	As	mm^2	3021	
Minimum no of to be provided			6	
No of Bars to be provided	Nos.		10	
Provide 10 Nos of 20 Diameter				

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3.2 FOUNDATION DESIGN

3.2.1 ISOLATED FOOTING DESIGN

1 Footing Size Design

Load	Pu	1573 KN
Design Load	P	1154 KN
Moment in x dir	Mux	10 KN-m
Moment in y dir	Muy	6 KN-m
Column size	cx	230 mm
	cy	530 mm
SBC	q	24 KN/sqm
Footing Size required	A req	57.68 sqmm
Footing Size Provided	L	**2.40 meters**
	B	**2.40 meters**
Area Provided	A prvd	5.76 meters
	Zx	2.30
	Zx	2.30
Net upward pressure	Nup	205 KNm2

Change Footing Dimensions

2 Slab Design

	lx	1.085
	ly	0.935
Bending Moment in x dir	Mx	181 KN-m
Bending Moment in y dir	My	134 KN-m
Concrete	fck	30 MPa
Steel	fy	500 MPa
Minimum Depth Required	dmin	213
Depth Provided	D	**600 mm**

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Clear Cover	c	75 mm
Effective Cover	d'	83 mm
Effective Depth	d'	517 mm

Area of Steel	Spacing c/c in mm				
	10#	12#	16#	20#	25#
827 sqmm	95 c/c	137 c/c	243 c/c	380 c/c	594 c/c
620 sqmm	127 c/c	182 c/c	324 c/c	506 c/c	791 c/c

Minimum Ast required across y direcion

Ast across x direction	**12 mm dia**	**@ 100 mm c/c**	**2011 sqmm**
Ast across y direction	**12 mm dia**	**@ 100 mm c/c**	**2011 sqmm**

3 **One Way Shear along x direction**

Vu1	419 KN
ζv	0.338 MPa
ζc	0.302 MPa
Vc1	375 KN

Increase Depth

4 **One Way Shear along y direction**

Vu1	308 KN
ζv	0.248 MPa
ζc	0.265 MPa
Vc1	329 KN

One Way Shear Check OK

5 **Two Way Shear**

Vu2	1530 KN
ζv	0.825 MPa
ks*ζc	1.279 MPa
Vc1	2372 KN

Two Way Shear Check OK

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3.3 BEAM DESIGN

Beam Design

Beam Data

width	230 mm
depth	600 mm
clear cover to main reinf.	25 mm
Slab Thickness	150 mm

d' 43 mm .= cc+ sdia + mdia/2
eff depth 557 mm .= d - d'

Material Grades

Concrete	30 MPa
Steel	500 MPa

				Span Moment	Support Moment
Span Moment	178 KN-m		Mu/bd^2	2.49	1.54
			xumax	254	254
			Mulim	285	285
Support Moment	110 KN-m	110 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	0.643 %	-------
Area of Steel	823 sqmm	

Refer Table 2 SP 16 pg 48

288 KN-m

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	20 mm	5	1571 sqmm
Layer 2	25 mm	0	0 sqmm
Layer 3	25 mm	0	0 sqmm
	Total Steel Provided		1571 sqmm

1415 sqmm

1.226 %

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Provided Steel OK

Compression Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	16 mm	0	
Layer 2	25 mm	0	
Layer 3			
Total Steel Provided			#VALUE!

Support Reinforcement
Beam is designed as Singly Reinforced Beam

Area of Steel	Tension (Ast)	Compr (Asc)	
Percentage	0.378 %	------	*Refer Table 2 SP 16 pg 48*
Area of Steel	485 sqmm		

2.45226184809132
-0.583514917480440

Tension Reinforcement

Type	Bar dia	Nos	Area of Steel
Layer 1	20 mm	5	1571 sqmm
Layer 2	25 mm	0	0 sqmm
Layer 3	12 mm		0 sqmm
Total Steel Provided			1571 sqmm
Provided Steel OK			1.226 %

0.264261259403378

1205 sqmm
846 sqmm

1887 sqmm

Compression Reinforcement

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	0.681	*.=Vu / (b * d)*	
ζc	0.708	*Refer Table 61 SP 16 pg*	*or*

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		179	=(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	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 Check OK

Provide Nominal Shear Reinforcement

Steel	**415 MPa**
Type of stirrup	**2 legged**
Stirrup diameter	**8 mm**
Spacing	300 c/c

Safe

Vus/d -0.013 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	4.000 KN/m
Finishes Load	WL	1.000 KN/m
Total Load	Ws	8.125 KN/m
Factored Load	Wsu	12 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	Wsku	12

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Load	KN/m

Slab Data

Slab Type	Regular
Load	12 KN/m
Longer Span (ly)	4.90 m
Shorter Span (lx)	3.10 m

ly/lx ratio	1.58
Slab type	+

Loading on edges		*one way*	*two way*
W_{longer}	**16 KN/m**	*.=w*lx/2*	*.=(w*lx/2) + (1-(1/3)*(lx/ly)^2)*
$W_{shorter}$	**13 KN/m**		*.=w*lx/3*

Moments		*one way*	*two way*
Mx	10 KN-m	*.=w*lx^2/ 8*	*.=ax * w*lx^2*
My	7 KN-m		*.=ay * w*lx^2*

Thickness Check	OK	*.=Mulim > Mux or Muy*
Deflection	21 mm	*.= 5*W*l^4/(384EI)*

Area of Steel	Astx	Asty	*Refer Chart 4 SP 16 pg 21*
	237 sqmm	**147 sqmm**	*Refer Table 5-44 SP 16 pg 51-80*

or

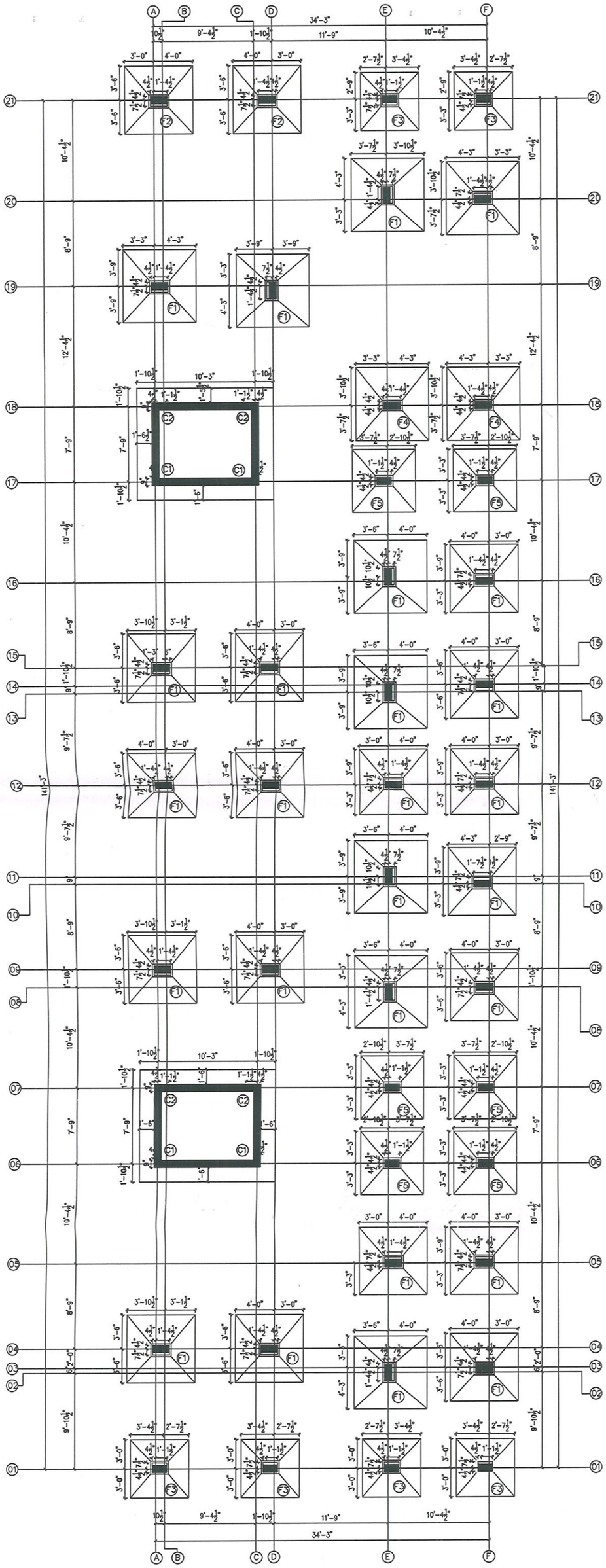
Spacing required in mm

8#		10#		12#		16#	
x	y	x	y	x	y	x	x
212 c/c	**342 c/c**	**331 c/c**	**534 c/c**	**477 c/c**	**769 c/c**	**848 c/c**	**1367 c/c**

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

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

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FOUNDATION LAYOUT

NOTES:

1. ALL DIMENSIONS ARE IN INCESS
2. THIS DRG SHALL BE READ IN CONJUNCTION WIT RELEVANT ARCHITECTURAL DRAWIGSS
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE EXECUTION OF WORK.
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 /CONTRACTRR SHALL CAST CONCRETE CUBES INDEPENDENTLY AT SITE AND SEND CUBE RESULTS THUS OBTAINED TO US.
5. MAXIMUM WATER CEMENT RATI ::
   for 1:2· 4 – 0.50
   for 1:1 1/2:3 – 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 PLINTH BEAM : 25MM,
   FOR FOOTING : 50MM ,FOR BEAM : 25MM, SLAB :20MM
8. USE STONE AGGREGATES AND SAND CONFORMING To IS 383 (LATEST REVSION)
   STONE AGGREGATES SIZE – 20MM AND DOWN GRDEE
9. USE GOOD WATER FOR CONCRETE MIXING AND CURING CONFORMING TO IS 456 (LATEST REVSIO))
10. USE ORDINARY PORTLAND CEMENT CONFORMING T IS 8112 (LATEST REVISION) FOR 43 GRADE CEMENT & IS 12269 FOR 53 GRADE CEMENT.
11. S.B.C OF SOIL IS ASSUMED AS 24T/SQ.M
12. FOUNDATION IS DESIGNED FOR STILT+5FLOORS.
13. THE CENTERING AND SHUTTERING TO SUPPORT STRUCTURAL CONCRETE MUST BE SUFFICIENTLY STRONG AND RIGIDLY BRACED.HORIZONTAL TIES SHALL BE PROVIDED AT EVER 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
–	–	–	–

FOUNDATION LAYOUT

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

PROJECT :

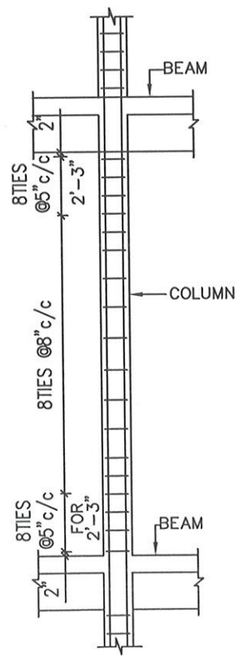
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STRUCTURAL CONSULTANT

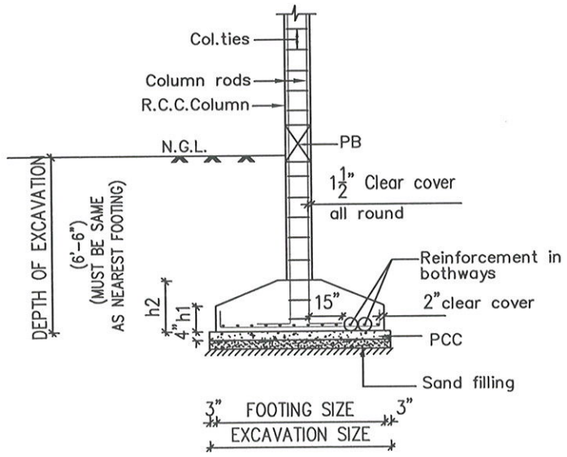
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SCHEDULE OF FOOTING & SCHEDULE OF COLUMNS (MIX:30)

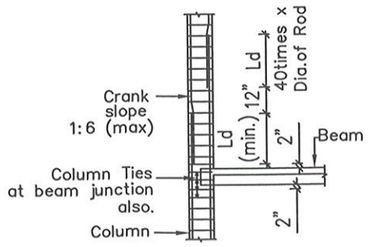
TYPE	FOOTING SIZE	DEPTH		FOOTING REINFORCEMENT		COLUMN REINFORCEMENT						
		h1	h2	L	B	GROUND FLOOR	FIRST FLOOR	SECOND FLOOR	THIRD FLOOR	FOURTH FLOOR	FIFTH FLOOR	STIRRUPS
F1	7'–6"X7'–6"	9"	24"	ø12Tor@4"	ø12Tor@4"	10ø20 12" 21"	10ø20 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	ø8TOR
F2	7'–0"X7'–0"	9"	24"	ø12Tor@4"	ø12Tor@4"	10ø20 12" 21"	10ø20 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	ø8TOR
F3	6'–6"X6'–6"	9"	24"	ø12Tor@4"	ø12Tor@4"	8ø20 12" 18"	8ø20 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	ø8TOR
F4	7'–6"X7–6"	9"	24"	ø12Tor@4"	ø12Tor@4"	10ø20 9" 21"	10ø20 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	ø8TOR
F5	6'–6"X6'–6"	9"	24"	ø12Tor@4"	ø12Tor@4"	8ø20 9" 18"	8ø20 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	ø8TOR
C1	LIFT & COMBINED FOOTING					10ø20 9" 21"	10ø20 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	8ø20–2ø16 9" 21"	ø8TOR
C2						8ø20 9" 18"	8ø20 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	4ø20–4ø16 9" 18"	ø8TOR



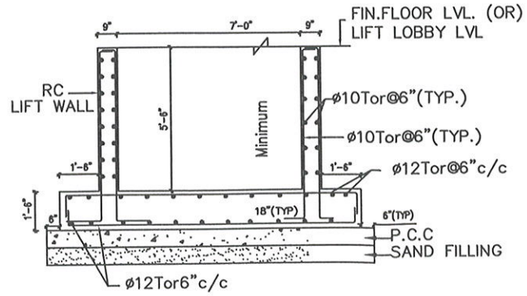
TYPICAL TIES ARRANGEMENT IN COLUMN



VERTICAL SECTION THROUGH COLUMN FOOTING FOR TAPPER



SPLICE WITH UPPER BARS CRANKED INTO POSITION INSIDE LOWER BARS



TYPICAL DETAILS OF LIFT PIT COMBINED FOOTING–CF1

NOTES:

1. ALL DIMENSIONS ARE IN INCESS
2. THIS DRG SHALL BE READ IN CONJUNCTION WIT RELEVANT ARCHITECTURAL DRAWIGSS
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE EXECUTION OF WORK.
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 /CONTRACTRR SHALL CAST CONCRETE CUBES INDEPENDENTLY AT SITE AND SEND CUBE RESULTS THUS OBTAINED TO US.
5. MAXIMUM WATER CEMENT RATI ::
   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 PLINTH BEAM : 25MM,
   FOR FOOTING : 50MM ,FOR BEAM : 25MM, SLAB :20MM
8. USE STONE AGGREGATES AND SAND CONFORMING To IS 383 (LATEST REVISION)
   STONE AGGREGATES SIZE – 20MM AND DOWN GRDEE
9. USE GOOD WATER FOR CONCRETE MIXING AND CURING CONFORMING TO IS 456 (LATEST REVISIO))
10. USE ORDINARY PORTLAND CEMENT CONFORMING T IS 8112 (LATEST REVISION) FOR 43 GRADE CEMENT & IS 12269 FOR 53 GRADE CEMENT.
11. S.B.C OF SOIL IS ASSUMED AS 24T/SQ.M
12. FOUNDATION IS DESIGNED FOR STILT+5FLOORS.
13. THE CENTERING AND SHUTTERING TO SUPPORT STRUCTURAL CONCRETE MUST BE SUFFICIENTLY STRONG AND RIGIDLY BRACED.HORIZONTAL TIES SHALL BE PROVIDED AT EVER 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
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COLUMN SCHEDULE AND FOOTING DETAILS.

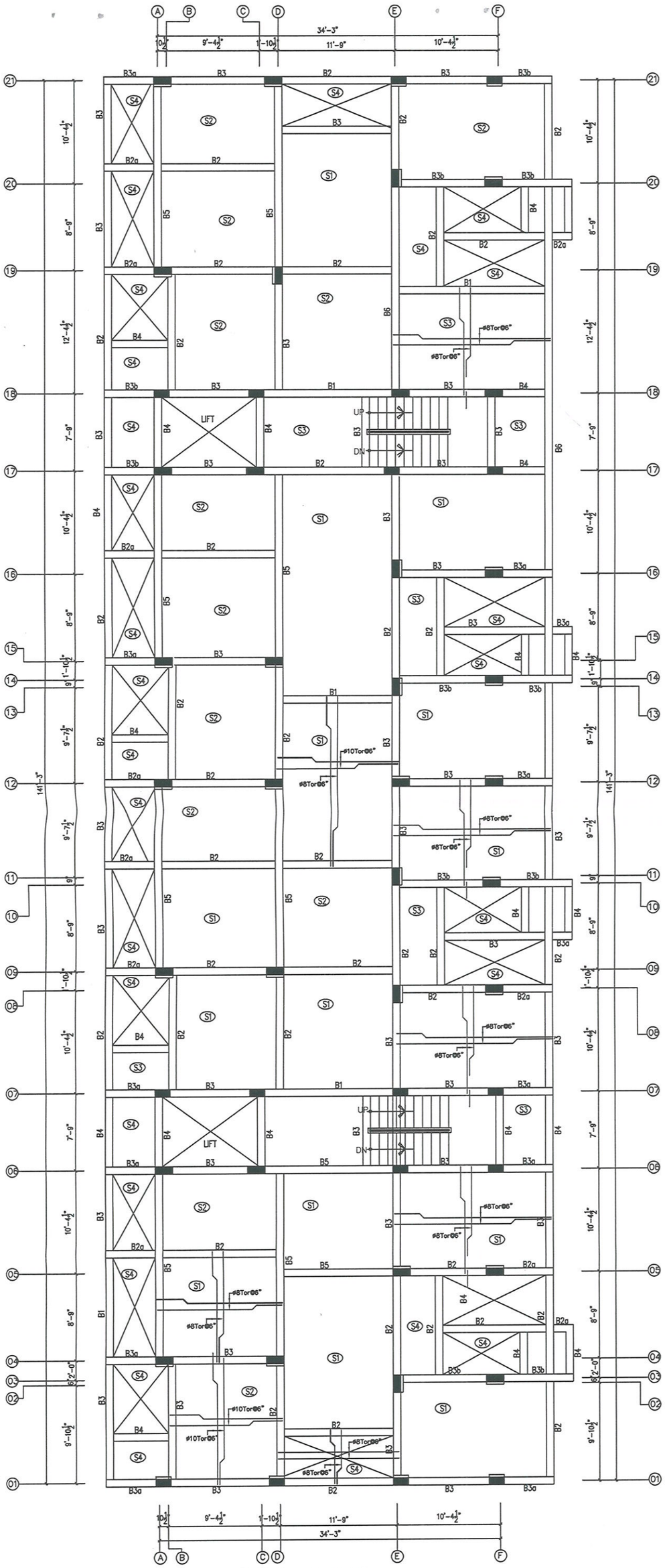
JOB NO : 01	DRAWN : -
DRG.NO: S-02	DESIGNED : -
DATE : -	

PROJECT :

PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT BUILDING IN S.NO: 98/85A1 OF KANATHDUR REDDYKUPPAM VILLAGE AND PANCHAYAT, THIRUPORUR TALUK, CHENGALPATTU DISTRICT. THIRUPORUR PANCHAYAT UNION LIMIT.

STRUCTURAL CONSULTANT

Er. P. RAMAN, M.E (Struct), M.I.E., C.Eng
Registered Structural Engineer Grade - I (SE)
CMDA Registration No: SE/GR - I/19/02/006
S.S Manjans Apartments,
No.5/13, Nambiah Road Extn.,
West Mambalam, Chennai-600 033.



SLAB BEAM LAYOUT
(ALL SLAB THICKNESS IS-5",UNLESS SPECIFIED.)

NOTES:

1. ALL DIMENSIONS ARE IN INCESS
2. THIS DRG SHALL BE READ IN CONJUNCTION WIT RELEVANT ARCHITECTURAL DRAWGSS
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   (CEMENT CONTENT –360 KG/M3)
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   - IF READY MIXED CONCRETE IS BEING USED, CLIENT /CONTRACTRR SHALL CAST CONCRETE CUBES INDEPENDENTLY AT SITE AND SEND CUBE RESULTS THUS OBTAINED TO US.
5. MAXIMUM WATER CEMENT RATI ::
   for 1:2 :4 – 0.50
   for 1:1 1/2:3 – 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 PLINTH BEAM : 25MM,
   FOR FOOTING : 50MM ,FOR BEAM : 25MM, SLAB :20MM
8. USE STONE AGGREGATES AND SAND CONFORMING To IS 383 (LATEST REVISON)
   STONE AGGREGATES SIZE – 20MM AND DOWN GRDEE
9. USE GOOD WATER FOR CONCRETE MIXING AND CURING CONFORMING TO IS 456 (LATEST REVSIO))
10. USE ORDINARY PORTLAND CEMENT CONFORMING T IS 8112 (LATEST REVISION) FOR 43 GRADE CEMENT & IS 12269 FOR 53 GRADE CEMENT.
11. S.B.C OF SOIL IS ASSUMED AS 24T/SQ.M
12. FOUNDATION IS DESIGNED FOR STILT+5FLOORS.
13. THE CENTERING AND SHUTTERING TO SUPPORT STRUCTURAL CONCRETE MUST BE SUFFICIENTLY STRONG AND RIGIDLY BRACED.HORIZONTAL TIES SHALL BE PROVIDED AT EVER 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
–	–	–	–

SLAB BEAM LAYOUT

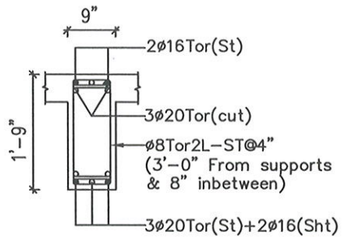
JOB NO : -	DRAWN : -
DRG.NO: S-03	DESIGNED : -
DATE : -	

PROJECT :

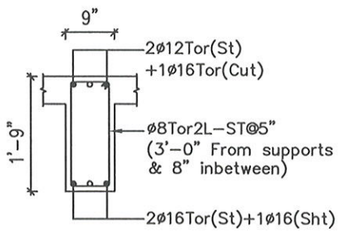
PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT BUILDING IN S.NO: 98/85A1 OF KANATHDUR REDDYKUPPAM VILLAGE AND PANCHAYAT, THIRUPORUR TALUK, CHENGALPATTU DISTRICT. THIRUPORUR PANCHAYAT UNION LIMIT.

STRUCTURAL CONSULTANT

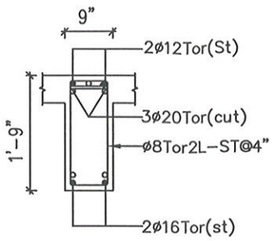
Er. P. RAMA... B.E.(Civil), M.I.E (Struct), M.I.E., C.Engg.,
Registered Structural Engineer Grade - I (SE)
CMDA Registration No: SE/GR - I/19/02/006
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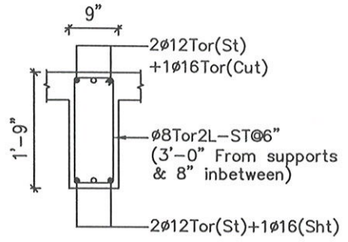
C.S OF BEAM–B1



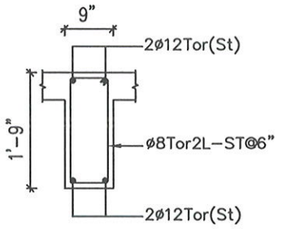
C.S OF BEAM–B2



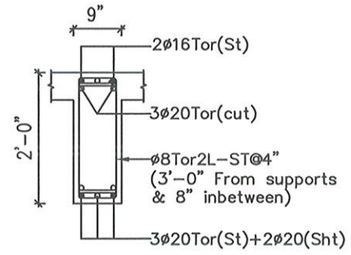
C.S OF BEAM–B2a



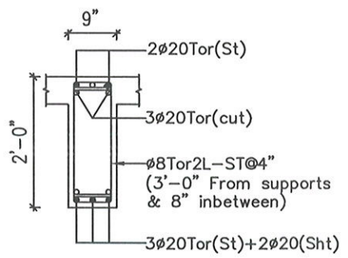
C.S OF BEAM–B3



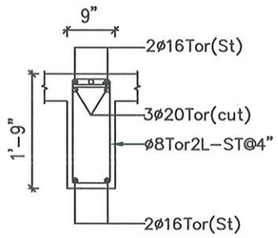
C.S OF BEAM–B4



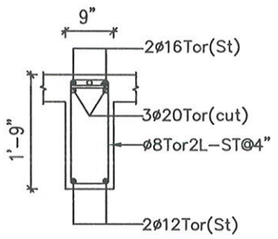
C.S OF BEAM–B5



C.S OF BEAM–B6

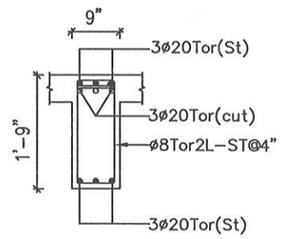


C.S OF BEAM–B2a



C.S OF BEAM–B3a

TYPICAL SLAB ROD BENDING DETAILS.



C.S OF BEAM–B3b

NOTES:

1. ALL DIMENSIONS ARE IN INCESS
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   (CEMENT CONTENT –380 KG/M3)
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7. CLEAR CONCRETE COVER TO MAIN BARS :
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   FOR FOOTING : 50MM ,FOR BEAM : 25MM, SLAB :20MM
8. USE STONE AGGREGATES AND SAND CONFORMING To IS 383 (LATEST REVISION)
   STONE AGGREGATES SIZE – 20MM AND DOWN GRDEE
9. USE GOOD WATER FOR CONCRETE MIXING AND CURING CONFORMING TO IS 456 (LATEST REVISIO))
10. USE ORDINARY PORTLAND CEMENT CONFORMING T IS 8112 (LATEST REVISION) FOR 43 GRADE CEMENT & IS 12269 FOR 53 GRADE CEMENT.
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REV.	DATE	REVISION NOTE NO	SIGN
–	–	–	–

RCC DETAILS OF BEAM

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

PROJECT :

PLAN SHOWING THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT BUILDING IN S.NO: 98/85A1 OF KANATHDUR REDDYKUPPAM VILLAGE AND PANCHAYAT, THIRUPORUR TALUK, CHENGALPATTU DISTRICT. THIRUPORUR PANCHAYAT UNION LIMIT.

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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

Verified RealEstate
3/350/2 Mettukuppam,
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.