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Mobile: 9841757884

Date : 07.07.2026

STRUCTURAL STABLITY CERTIFICATE

It is certified that the

PLAN SHOWING THE PROPOSED CONSTRUCTION OF GROUP DEVELOPMENT RESIDENTIAL CUM COMMERCIAL BUILDING WITH 2 BLOCKS - BLOCK A : GROUND FLOOR PART/STILT FLOOR PART +4 FLOORS COMMERCIAL BUILDING (OFFICE WITH HEIGHT-18.30M) AND BLOCK-B: STILT FLOOR + 5 FLOORS RESIDENTIAL BUILDING WITH 30 DWELLING UNITS (HEIGHT-18.30M) AVAILING PREMIUM FSI AT KOLAPAKKAM ANNA MAIN ROAD, KOLAPAKKAM, CHENNAI. COMPRISED IN S.NO: 24/1C OF KOLAPAKKAM VILLAGE WITHIN THE LIMITS OF KUNDRATHUR PANCHAYAT UNION.

is designed to resist for earthquake. Check has been made and found safe & sound and I hereby certify that

1. The minimum grade of concrete is M25
2. The design analysis using the code of practice for loading . standards as per BIS-875 and Seismic forces as per the latest code BIS-1893 & BIS-456
3. Least dimension of column is 300mm in stilt floor.
4. Proposed building will be structurally safe & sound.

J. Prabakaran

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TYPICAL STRUCTURAL DESIGN CALCULATION

1 **General:**

Proposed building is **Stilt + 5** upper floors for office cum residential purpose. Stilt is used for car parking. Typical calculation for residential building is attached.

2 **Design Basis:**

Latest Design codes of BIS-456, 875 and 1893 are followed with SP-16 Design Aid book. A typical 2-D Frame was taken for analysis to arrive at the bending moment for column design. Since the building is 6 stories, wind force is taken into account. And live load reduction factor is not applied
Strip foundation is proposed as per soil report recommendation.
Fe- 500D steel is used as main steel and M25 concrete adopted

3 **Earthquake consideration:**
For better stability during earhquake, the columns are tied with plinth beams. Continuous lintels are specified for outer walls and column ties are closely spaced for better ductility. For building on stilt, minimum size of column is taken as 300 mm

4 **WIND LOAD**

Vz	=	Vb x K1 x K2 x k3		
Vb	=	50 m/sec	in Chennai	
K1	=	Probability Factor	=	1
K2	=	Terrain, Height Factor =		1
K3	=	Topography Factor	=	1
p	=	0.6 x Vz x Vz		
	=	0.6 x 50 x 50		
	=	1500 N/Sq.m		
		150 Kg/Sq.m		

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5 **Design Loads:**

Slab	thk	150	avg		=	3.75	KN/sq.m	
Live load					=	2.00	KN/sq.m	
Finishes					=	1.50	KN/sq.m	
						7.25	KN/sq.m	
Applying live load reduction of =						0.4	,	
For column and foundation design,						6.05	Kn/sqm is taken.	
This value is also taken for frame analysis								

AAC Blcoks 200 thick for exterior walls

	0.2	x	3	x	7			=	4	KN/m/floor
	0.100	X	3	x	7			=	2.1	KN/m/floor
Beams	0.2	x	0.60	x	25			.=	3.0	KN/m/floor
Columns	0.3	x	0.60	x	3.00	x	25	.=	13.5	KN/floor

These are taken for analysis with WL+LL+DL combination.

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6 **SLAB DESIGN:** Refer drawing SLAB - S1

Thickness	=	130	mm	Concrete mix	Fck	= M	25	N/sq.mm
Cover	=	25	mm	Steel Grade	Fy	=Fe	500	N/sq.mm
Eff.Depth	=	100	mm					

Panel (3.4 x X 4.40) m

Twoway slab Ly / Lx = 4.40 / 3.40 = 1.3

Support condition - Two adjacent edges discontinuous

Designed for 0.065 co.efficient

Mu .= 0.065 x 7.3 x 1.5 x 3.40 x 3.40 = 8.2 KNm/m

Mu / b.d.d = $\frac{8.17}{1000}$ X $\frac{1000}{100}$ x $\frac{1000}{100}$ = 0.82 N/sq.mm

From Table-3 of SP-16, Pt .= 0.198 %

Minimum Pt = 0.12 % as per code,

At = 0.20 x 1000 x 100 ./ 100 = **198** sq.mm/m

Provide 8 dia @ 150 c/c = **335.1** sq.mm/m Short span

Provide 8 dia @ 200 c/c = **251.3** sq.mm/m Long span

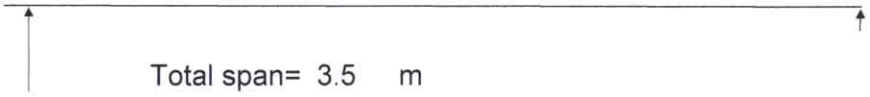
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7 **Beam design:** B1

Beam size 200 x 450

Fck = M 25 d = 410 mm

udl= **29** kn/m



Total span= 3.5 m

Max. UDL Bending Moment at support top w*l^2/12+ P*a^2*b/l^2= 29.6 Kn.m

Mu = 30 x 1.5 x 10-e6

44 x **10-e6** Nmm

Mu/b.d.d = 44 x 10-e6 = 1.3 N/sq.mm

200 x 410 x 410

From table 52,SP-16 for d'/d = 40 / 450 = 0.09

Pt = **0.320** % Pc = **0.20** %

At = 0.320 x 200 x 450 / 100 = **288** sq.mm

Ac = 0.200 x 200 x 450 / 100 = **180** sq.mm

provided 2 No 16 = 402 **sq.mm**

\+ 1 No 12 = 113

515 **sq.mm** at top

Shear Design:

Shear force 50.8 KN

Factored shear force = 1.5 x **50.75** = 76.1 KN

for 0.32 % steel Shear resisted by concrete section

from table-61 0.59 x 200 x 410 / 1000 = 48 KN

Balance shear (Vus) = 76 - 48 = 28 KN

Vus/d = 28 / 41 = 0.7 KN/cm

from table 62 of SP-16

Required 2 legged 8 stirrups @ 250 mm c/c

Provided 2 legged **8** stirrups @ **150** mm c/c

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8 **COLUMN DESIGN:** **COL-C1** **COL SIZE** **600** **X** **300**

Maximum load P = 115 t

Pu = 1.5 x 115 x10 = 1725 KN

Max.Bending Moment= 40 Kn.m Mu = 1.5 x 40.0 = 60 Kn.m

Cover = 40 mm

d'/d = 0.07

Fck = 35 N/sq.mm

Provide bars equaly all sides

Refer chart 48 of SP-16

$$\frac{Pu}{Fck\ b\ d^2} = \frac{1725 \times 1000}{35 \times 600 \times 300} = 0.274$$

$$\frac{Mu}{Fck\ b\ d^2} = \frac{60 \times 10^6}{35 \times 600 \times 300} = 0.032$$

$$\frac{p}{Fck} = \frac{p\%}{35} \times 300 = \frac{0.7}{0.02} \%$$

Minimum steel 0.8%

$$As = \frac{0.8}{100} \times 600 \times 300 = 1440 \text{ sq.mm}$$

Provided 10 Nos 20 dia = **3142** sq.mm

Ties 8 @ 100 c/c & 175 c/c

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9 **Strip Footing SF-1**

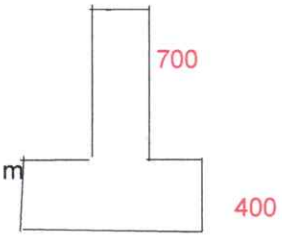
Load coming on column at foundation level is given below

1250 kN 1150 kN 1250 kN

2.3 3.3 3.3 m 2.3

11.2 m

SBC= 100 kn/sqm



Length of footing =		13.4	m	Width	=	3.35	m	
Raft slab width =		3.4	m					
Thickness	=	400	mm					
Concrete	Fck	= 30	N/sq.mm		Steel	=	500	N/sq.mm
Cover	=	50	mm					
Eff.Depth	=	345	mm					

Design of Raft slab

Cantilever projection = 1.25 m

Max. Bending Moment =wl^2/2 = $\frac{100 \times 1.25 \times 1.25}{2}$ = 78.1 kN-m

Mu .= 1.50 X 78.13 = 117.2 kN-m/m

Mu / b.d.d = $\frac{117.2 \times 10^{6}}{1000 \times 345.0 \times 345.0}$ = 1.0 N/sq.mm

From Table-3 of SP-16, pt = 0.242 %

At = 0.2 x 1000 x 345.0 / 100 = **834.9** sq.mm/m

Provide 12.0 dia @ 125 c/c = **905** 904.8 sq.mm/m

Provide 10.0 dia @ 175 c/c = **448.8** 448.8 sq.mm distributer

Strip Beam design

UDL on beam = 335 kN/m

Cantilever span = 2.3 m Between supports = 3.3 m

M= 886.1 Kn-m M= 261 Kn-m

Max Moment = 886 Kn-m

Beam Size = 900 mm X 1100.0 mm

Effective depth = 1050 mm

Mu = 886 x 1.5 = 10-e6 = **1329.1** x **10e^6** N/sqmm

Mu/b.d.d = $\frac{1329 \times 10^{6}}{900 \times 1050 \times 1050}$ = 1.34

From table-3 SP-16

Pt = **0.33** % Pc= **0.200** %

At = 0.003 x 900 x **1050** = 3118.50 sq.mm

Ac = 0.002 X 900 **1050** = 1890 sq.mm

Provide 11 No.s 20 **Dia** sq.mm at bottom = 3455.76 sq,mm

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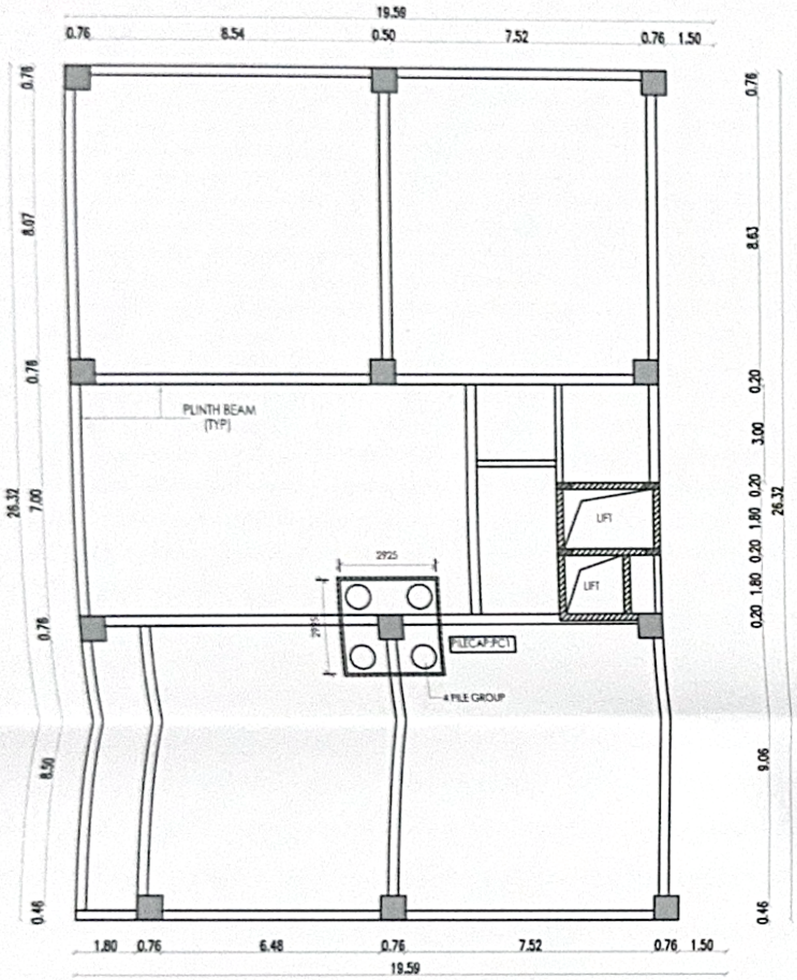
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Shear Design:

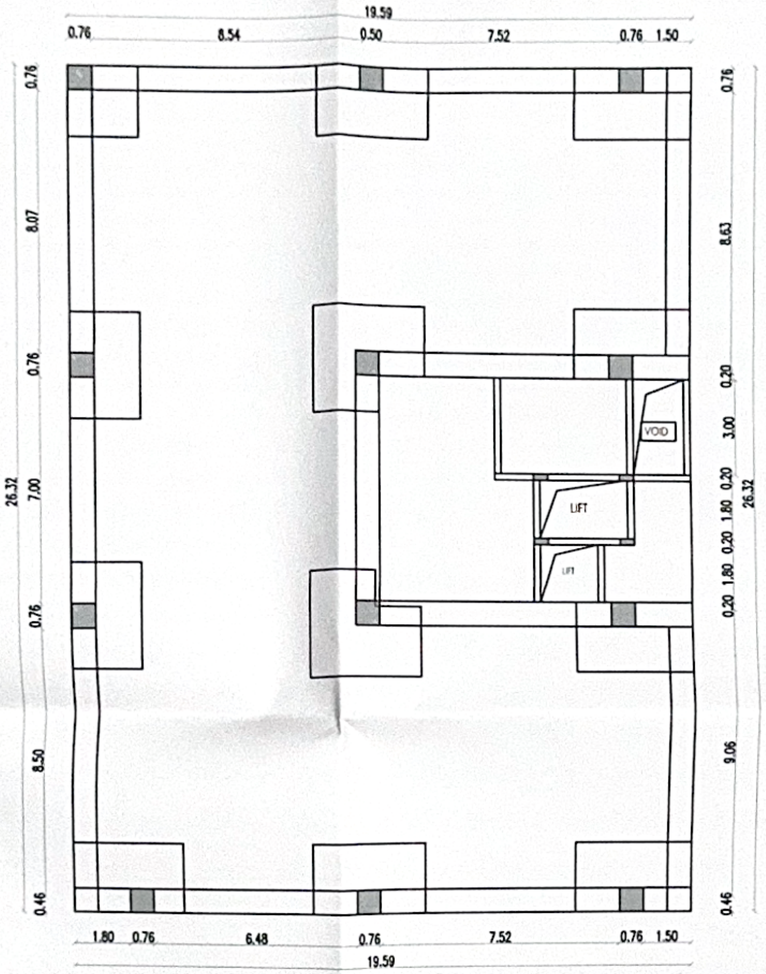
		Factored shear force =		Kn		829.1	kN			
for	0.33	%	steel	Shear resisted by concrete section is						
from table-61			0.5	X	900		X	1050	=	472.5 kN
Balance shear			(Vus)	=	357		kN			
Vus/d =						=	3.4	KN/cm		
from table 62 of SP-16							stirrups			
Required		4	Legged		10	mm	at	250	C/C	
Provided		4	Legged		10		at	125	C/C	

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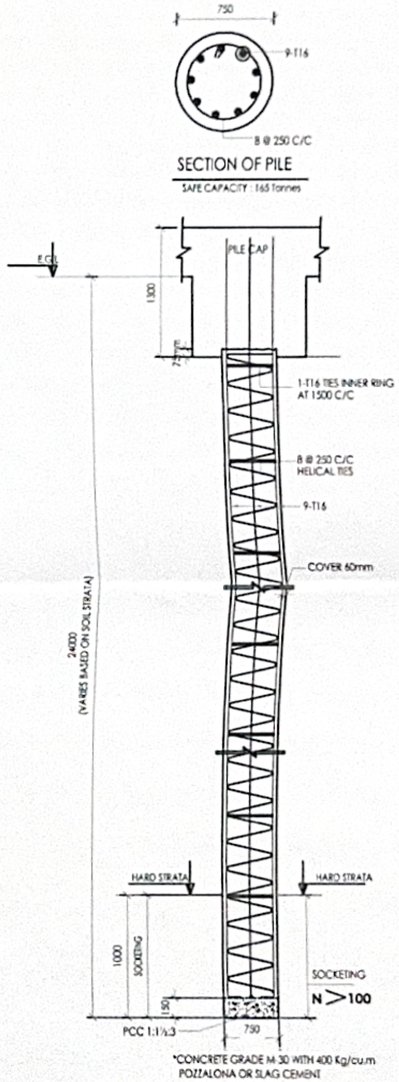
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FOUNDATION & PLINTH BEAM LAYOUT



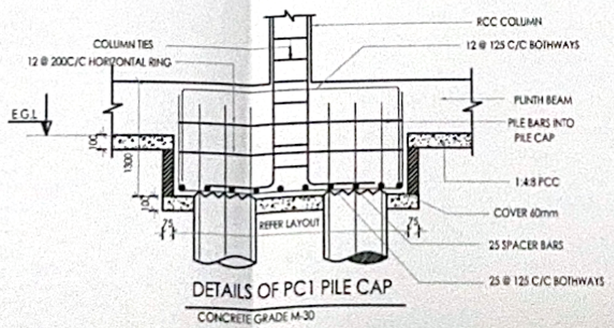
TYPICAL FLOOR ROOF LAYOUT



SECTION OF PILE

SAFE CAPACITY : 165 Tonnes

TYPICAL CROSS SECTION OF BORED CAST INSITU PILE



DETAILS OF PC1 PILE CAP

CONCRETE GRADE M-30

NOTES:

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6. STEEL REINFORCEMENT SHOULD BE Fe500
7. CONCRETE GRADE SHOULD BE AS SPECIFIED

MEMBER	CONCRETE GRADE	COVER
FOOTING	M-25	50mm
COLUMN	M-30	40mm
PLINTH BEAM	M-25	30mm
ROOF BEAM	M-25	30mm
ROOF SLAB	M-25	25mm

ABBREVIATION	DESCRIPTION
E.G.L	EXISTING/NATURAL GROUND LEVEL
F.G.L	FORMED GROUND LEVEL
S.F.L	STILT FLOOR LEVEL
G.F.L	GROUND FLOOR LEVEL
F.C	FLOATING COLUMN
Thk	THICKNESS
C/C	CENTRE TO CENTRE
Lvl	LEVEL
T.O.B	TOP OF BEAM
B.O.B	BOTTOM OF BEAM
T.O.S	TOP OF SLAB
B.O.S	BOTTOM OF SLAB
St	STRAIGHT/THROUGH

A. FOUNDATION DESIGNED FOR STILT + 5 UPPER FLOORS

B. DESIGNED FOR SEISMIC ZONE III

STRUCTURAL REFERENCE DRAWINGS:

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DRAWING TITLE:

FOUNDATION LAYOUT & TYPICAL LAYOUT WITH DETAILS

ISSUE: SUBMISSION DRAWING

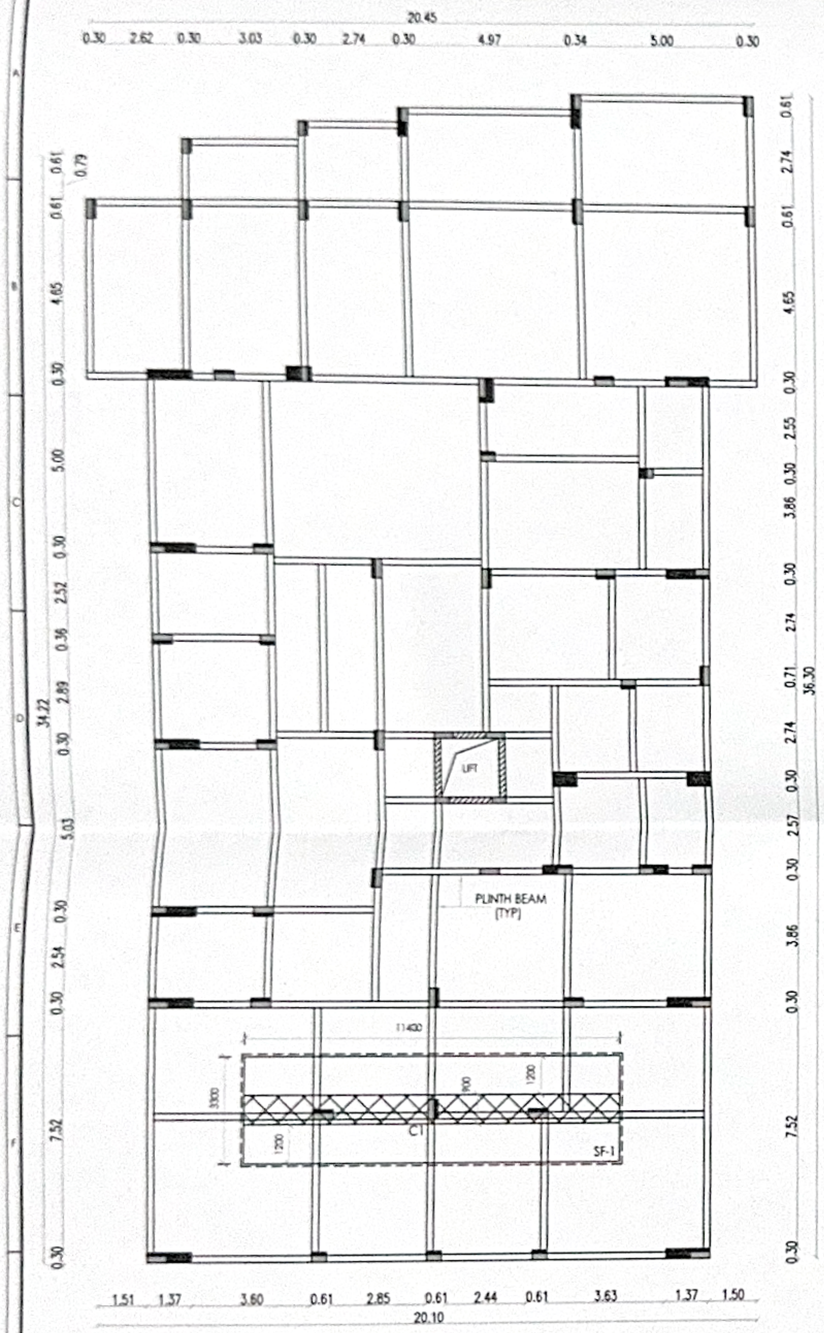
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		SHEET No	01
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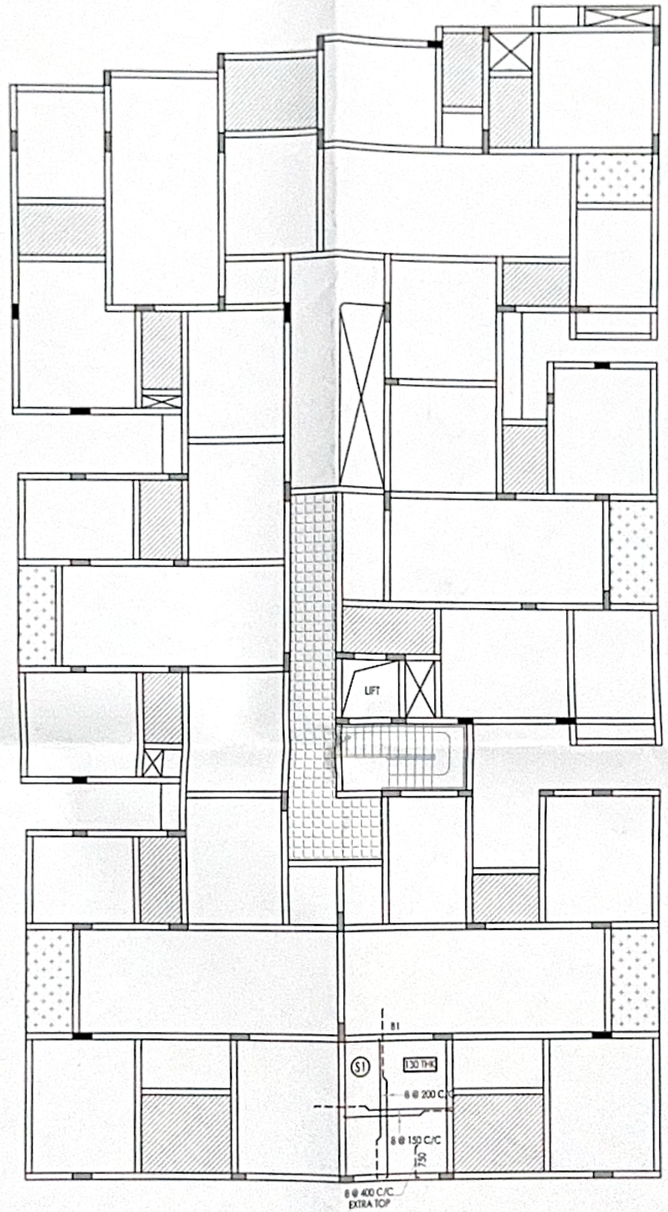
NORTH POINT:

STRUCTURAL ENGINEER:

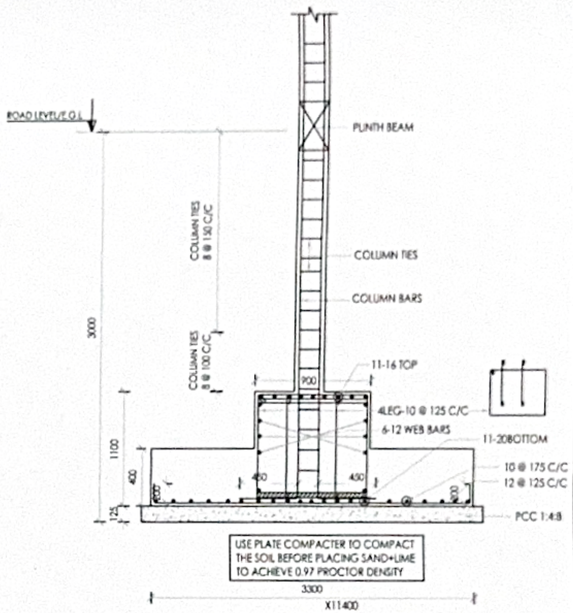
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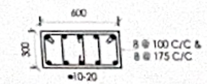
FOUNDATION & PLINTH BEAM LAYOUT



TYPICAL FLOOR ROOF LAYOUT

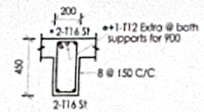


TYPICAL SECTION OF STRIP FOOTING



C1 COLUMN DETAILS

M30 CONCRETE GRADE



B1 BEAM DETAILS

M25 CONCRETE GRADE

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B.O.B	BOTTOM OF BEAM
T.O.S	TOP OF SLAB
B.O.S	BOTTOM OF SLAB
St	STRAIGHT/THROUGH

A. FOUNDATION DESIGNED FOR STILT + 5 UPPER FLOORS

B. DESIGNED FOR SEISMIC ZONE III

C. SAFE BEARING CAPACITY OF SOIL 105 kN/sq.m AT 3.0 m DEPTH FROM EGL.

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SCALE	1:125	SHEET SIZE	A2
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NORTH POINT:		CHECKED	-
		SHEET No	01
		DATE	06.07.2026
		REVISION	R0

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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

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The LandLens suite
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Verified RealEstate™

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- 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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