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RE REGULATORY RECORD

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DIGITALLY VERIFIED RECORD

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GCC Reg.No.RSE 101062019
A20, 100 Feet Road, Hindu Colony,
Nanganallur, Chennai-600 061

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Date: 25-03-2025

STABILITY CERTIFICATE

1. The detailed engineering and structure design of the proposed building comprising of Double Basement floor (parking)+ Stilt floor(double height lobby), open DG, caretaker booth, electrical transformer room + 1st floor to 12 floors Residential Building with 79 Dwelling Units, at Luz Church Road, Mylapore, Chennai 600004. Mylapore Village, R.S.No.1693/1 has been done by me/us based on the report of geotechnical investigation (soil test) done by M/s. Prasad Armstrong Yen Geotech Engineering Consultants (P) Ltd., No.821, (Old No.439/4), Poonamallee High Road, Arumbakkam, Chennai, Report No.349/GI/ 18 -19, dated 06.05.2019

2. It is certified that among other factors, the proposed building has been designed to resist earthquake. I/We have checked various parameters and found that the proposed building would be safe.

3. I/We further certify that:
   (i) The minimum grade of concrete is M-25.
   (ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No.IS 875 (Part 2)-1987 and design of earthquake resistant structure as per IS Code No. IS-1893 (Part 1):2016

4. The building will be safe and sound when used for the purpose for which it is designed.

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Encl: Structural Design Calculation

CONSTRUCTION OF DOUBLE BASEMENT+STILT+ 12 FLOORS RESIDENTIAL BUILDING AT R.S.No:1693/1, AT LUZ Church Road, Mylapore , Chennai-600004.

TYPICAL STRUCTURAL DESIGN CALCULATION

1 **General:**

Building construction is 2B + S+12 FLOOR for residential use.

2Basement and stilt is used for vehicular parking. Upper floors are for residential use.

2 **Design Basis:**

Latest Design codes of BIS-456, 875 and 1893 are followed with SP-16 Design Aid book.

Since the building is 15 stories, wind force is taken into account

Live load reduction factor is applied in design.

Pile foundation is proposed in soil report of depth 23.5 m below EGL.

Fe-500 steel is used as main steel and minimum grade of concrete is M25

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3 **Earthquake consideration:**

For better stability during earhquake, the columns are braced in both direction with beams. Continuous lintels are specified for outer walls and column ties are closely spaced for better ductility. For building on stilt, minimum size is taken as 300 mm(12")

EARTHQUAKE LOAD

Design horizontal Seismic coeff. Ag = $\frac{Z}{2} \times \frac{I}{R} \times \frac{Sa}{g}$

Z = Zone Factor = 0.16 for Chennai

I = Importance Factor = 1.2

R = Response reduction Factor = 5

$\frac{Sa}{g}$ = Avg. response acc.coeff. Depends on Ta

Ta = Fundamental natural period

= $\frac{0.09\ h}{\sqrt{d}}$ for infill walls
h = height of the building
d = Width of the building

= $0.075\ h^{0.75}$ for office building

W = seismic weight of building
= 100% D.L + 25% L.L for residential <=300
= 100% D.L + 50% L.L for residential >300

Base Seismic Shear Vb = Ag x W

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4

WIND LOAD

Vz = Vb x K1 x K2 x k3 = 50

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 50.0 x 50

= 1500 N/Sq.m

150 Kg/Sq.m

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5 **Design Loads:**

Slab	150 mm thick 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 = 0.2 ,
For column and foundation design, 6.9 Kn/sqm is taken.

This value is also taken for frame analysis

Block work 200 thick for exterior walls, AAC blocks

	0.2	x	3.06	x	7	=	4	KN/m/floor
Beams	0.2	x	0.60	x	25	.=	3.00	KN/m/floor
Columns	0.3	x	1.25	x	3.00 x 25	.=	28.13	KN/floor

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

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6 **SLAB DESIGN:**

Thickness = 130 mm Fck = M 30 N/sq.mm
Cover = 25 mm Fy =Fe 500 N/sq.mm
Eff.Depth = 100 mm

Effective slab size (3.85 X 4.9) m ratio = 1.3

Support condition - TWO WAY SLAB, 2 sides discontinuous

short span= α x = 0.065 (- BM at continuous edge) Table:26
= 0.049 (+ BM at midspan) in IS-456-2000
Long span= α y = 0.047 (- BM at continuous edge)
= 0.035 (+ BM at midspan)

Designed for **0.065**
Mu= 10.5 Knm
Mu/bd^2= 1.05 n/sqmm

From Table- 3, of SP-16, Pt 0.26 %
Minimum Pt = 0.12 % as per code, for Fe-500

At = 0.255 x 1000 100.0 ./ 100 = **255** sq.mm/m

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

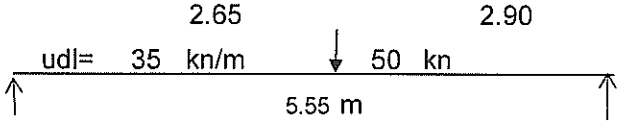
Provide 8 dia @ 200 = **251.3** sq.mm/m Long span

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7 **Beam design:**

span = **5.55** m Beam size 200 x 600

Fck = M 30 d = 560 mm



Max. Bending Moment occurs at top of support

Max. B.M = 143.99 Knm (top of support)

Mu = 144.0 x 1.5 x 10-e6

216.0 x **10-e6** Nmm

Mu/b.d.d = $\frac{216.0 \times 10\text{-e6}}{200 \times 560 \times 560}$ = 3.44 N/sq.mm

From table- 56, SP-16 for d'/d = 40 / 560 = 0.07

Pt = **1.135** % Pc = **0.058** %

At = 0.002 x 200 x 560 / 100 = **2.24** sq.mm (top)

Ac = 0.058 x 200 x 560 / 100 = **65** sq.mm (bot)

provided 2 No 16 = 402 sq.mm

\+

extra 2 No 16 = 402 sq.mm

804 sq.mm AT TOP OF SUPPORT

Actual % = 0.72

Shear Design:

Shear force 123.3 Kn

Factored shear force = 1.5 x 123 = 185 KN

for 1.14 % steel Shear resisted by concrete section

from table-61 0.57 x 200 x 560 / 1000 = 64 KN

Balance shear (Vus) = 185 - 64 = 121 KN

Vus/d = 121 / 56 = 2.16 KN/cm

from table 62 of SP-16

Required 2 legged 8 stirrups @ 160 mm c/c

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

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8 **COLUMN DESIGN:** **COL-A** **COL SIZE** **300** **X** **1250**

Maximum load is with wind force P = **450** t

Pu = 1.5 x 450 x10 = 6750 KN

Max.Bending Moment = 5 t.m Mu = 1.5 x 5.0 x10= 75 Kn.m

Cover = 40 mm

d'/d = 0.03

Fck = 50 N/sq.mm

Provide bars equaly all sides

Refer chart 47 of SP-16

$$\frac{Pu}{Fck\ b\ d^2} = \frac{6750 \times 1000}{50 \times 300 \times 1250} = 0.36$$

$$\frac{Mu}{Fck\ b\ d^{\wedge}2} = \frac{75 \times 10^{\wedge}6}{50.00 \times 1250 \times 300} = 0.013$$

$$\frac{p}{Fck} = \frac{0.01}{} \quad p\% = 0.01 \times 50 = 0.5\ \%$$

min % = 0.8

As = 0.8 x 300 x 1250 /100

= 3000 sq.mm

Provided 11 Nos 25 dia = 5400 sq.mm

\+ 11 Nos 25 dia = 5400 sq.mm

10799 sq.mm

Ties 8 @ 130c/c and 8 @ 200c/c

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9 **Pile cap and pile** Refer sheet 1 of drawing

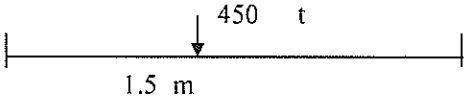
27.6 m bored cast-in-situ pile is adopted, as per soil report

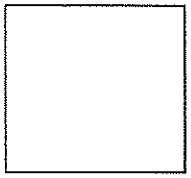
600 dia pile safe capacity	=	184	t	
Col-A carries a maximum load	=	450	t	
So No of piles provided	=	3	Nos	

Pile cap size = 2400 x 2199 x 1500 thick

M-30 grade = 30 N/sq.mm

Centr to centre of pile = 1.5 m





Section of pile cap

Pile to pile distance = 1.50 m

Tensile Force = $= \frac{450 \times 1.50}{9 \times 1.41} = 53.19$ t

Tensile stress in steel = 2.5 t/sq.cm

Area of steel = = **21** Sq.cm

Provided at bottom bothways

20 @ 150 c/c 20 dia=> **21** sq cm safe

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10 **RAFT SLAB DESIGN** refer sheet - 1 of drawing

Net upward thrust on raft slab= 6.35 x 10 = 63.50 Kn/Sq.m

Thickness	=	600 mm	Concrete mix	Fck	= M	30 N/sq.mm
Cover	=	50 mm	Steel Grade	Fy	=Fe	500 N/sq.mm
Eff.Depth	=	544 mm				63.5
Eff span	=	5.45 m	raft slab			15
			finish			4
			Net upward pressure =			44.5

Bending Moment = 110.3 Kn.m

Mu/b.d.d= 0.559

%of steel = 0.135

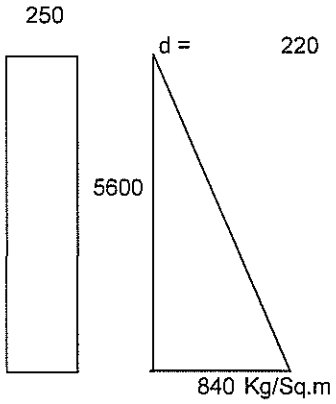
Ast = 734.4

Provide 12 dia @ 150 c/c for Short span = **754** sq.mm/m

12 dia @ 150 c/c for long span = **754** sq.mm/m

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11 **Design as a R.C.Wall**



Pressure at the base = Kr x r x h

Kr = 0.3

= 0.3 x 2000 x5.6*.25

= 840 Kg/Sq.m

we are provide contiguous pile So 25% of soil pressure taken

Bending Moment = 1/2 x 840 x5.6 x 5.6 / 3

= 4390.4 Kg.m

= 43.904 Kn.m

$$\frac{Mu}{b \times d \times d} = \frac{1.5 \times 43.90 \times 1E+06}{1000 \times 220 \times 220}$$

= 1.36 N/Sq.mm

From table-4 SP-16

Pt = **0.340** %

At = 0.340 x 1000 x 220 / 100 = **748** sq.mm

Provide 12 dia @ 150 c/c for earth side = **754** sq.mm/m

Provide on both face and both ways

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March 24, 2025

Stability Certificate

It is certified that
CONSTRUCTION OF DOUBLE BASEMENT+STILT+ 12 FLOORS RESIDENTIAL BUILDING AT R.S.No:1693/1, AT LUZ Church Road, Mylapore , Chennai-600004.

is designed to resist for earthquake. Check has been made and I 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.

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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

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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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