Verified RealEstate™

Your trusted partner for buying, selling, and managing property, ensuring hassle-free service with 100% transparency.

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
+91 9996 12 9996

Official Property Record

Digitally Verified Record - Powered by Verified RealEstate™



CHERALATHAN ASSOCIATES
Architecture Interiors Landscape

Flat No. 13, Shanti Enclave,
Old No. 25, New No. 71,
Venkatakrishna Road,
R. A. Puram,
Chennai 600 028 TN India

T + 91 44 2495 7991 / 93
F + 91 44 2461 6398
E1 admin.ca@carch.in
E2 carch@carch.in

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building named as "LML THE LUXE ONE " APARTMENT, Group Housing Development consisting 5 Blocks; Block 1 – Basement Floor (Part) (Pump Room) + Stilt Floor Part/Ground Floor Part + 5 Floors (Height 18.30 m) Residential Building with 100 dwelling units with (Association Room, Library, Gym, Indoor Games Room & Kids Play); Block 2 – Basement Floor+ Stilt Floor Part/ Ground Floor Part + 5 Floors (Height 18.30m) Residential Building with 120 dwelling units with Swimming Pool; Block 3 – Stilt Floor + 5 Floors (Height 18.30 m) Residential Building with 30 dwelling units; Block 4 – Stilt Floor + 5 Floors (Height 18.30 m) Residential Building with 30 dwelling units; Block 5 – Stilt Floor + 5 Floors (Height 18.30 m) Residential Building with 70 dwelling units Totally 350 dwelling units for Affordable Housing at Goparasanallur Main Road/Noombal Salai, Goparasanallur, Chennai 600056 comprising of Bearing Survey Nos 23/1A, 23/1B, 48/1B2, 49/1A, 49/1B, 49/1C2, 49/1D, 50/1A1B, 52/1B & 52/2A2, of Goparasanallur village within the limits of Poonamallee Panchayat Union has been done by us based on the report of geotechnical investigation (soil test Report No. GN/ M/s . LML HOMES LLP /M-111/2023 Date 10-07-2023) done by M/s GEONIX(A. NIVEDHITHA , Geotechnical Engineer) and considering the functional requirement of the building,

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 M35

(ji) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456-2000, design loads as per IS Codes No and design of earthquake resistant structure as per IS Code No.IS-13920-2016

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

R . DEENAGOPALAN

CMDA REG.NO - SE/GR-II/2019/04/045

EMAIL – structural@carch.in

MOB NO. - 7299911063

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
13 Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
structural@carch.in
Mobile : 7299911063

PLAN SHOWING THE PROPOSED CONSTRUCTION OF GROUP DEVELOPMENT CONSISTING OF BLOCK 1 , BLOCK 3, BLOCK 4 & BLOCK 5, WITH STILT + 5 FLOORS RESIDENTIAL BUILDING IN SURVEY NOS 23/1A, 23/1B, 48/1B2 , 49/1B, 49/1C2, 49/1D & 52/2A2 OF GOPARASANALLUR VILLAGE , POONAMALLEE TALUK TIRUVALLUR DISTRICT, TAMILNADU

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
13 Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
structural@carch.in
Mobile : 7299911063

LOAD CALCULATION FOR RESIDENTIAL APARTMENT

FOR STILT + FIVE FLOORS

The Load Calculation is done for the Proposed Construction for LML Homes LLP of residential Building – Non high rise group Development in Survey Nos 23/1a, 23/1b, 48/1b2 , 49/1b, 49/1c2, 49/1d & 52/2a2 of Goparasanallur village , Poonamallee Taluk Tiruvallur District, Tamilnadu

The load coming over the individual column is distributed through Pile Foundations

Codes Referred:-

- **I.S. 875-1987** CODE OF PRACTICES for design loads (part 1,2 & 3)
- **I.S. 456-2000 & SP – 16** CODE OF PRACTICES for Plan and Reinforced Concrete
- **I.S. 1786-1985** CODE OF PRACTICES specified for high strength deformed steel bars & wires for concrete reinforcement.
- **I.S. 1904-1986** CODE OF PRACTICES for design of construction of foundation in soils.

Concrete Strength assumed	- M-25 for Pile & Pile Cap foundation
Concrete Strength assumed	- M-35 for column , Roof slab & Roof Beams
Steel	- Fe500
Zone	- III
Live Load for Residential	- 200 kg/Sqm
Depth of Pile Foundation	- 40Mts.
Capacity of Pile	- 2500 KN (500 Dia Pile for Depth of 40 M)

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
13 Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
structural@carch.in
Mobile : 7299911063

DESIGN CONCEPT

Limit state concept of design will be used as per IS : 456-2000 & SP– 16.

The detailing of reinforcement shall be done satisfying the requirements of IS 456-2000,

SP-16 , IS :13920, IS 4326-1993 and SP-34

The slabs and beams are checked for deflection as per IS 456-2000

LOAD CASES

1. Dead load (DL)
2. Live load (LL)
3. Earthquake Load (EQ)

LOAD COMBINATIONS

The following combinations of loads as per IS 1893 is considered in the analysis

1. DL+LL
2. 1.5DL+1.5LL
3. 1.2DL+1.2LL +1.2 EQX
4. 1.2DL+1.2LL -1.2 EQX
5. 1.2DL+1.2LL +1.2 EQZ
6. 1.2DL+1.2LL -1.2 EQZ
7. 0.9DL+0.9EQX
8. 0.9DL-0.9EQX
9. 0.9DL+0.9EQZ
10. 0.9DL-0.9EQZ

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
13 Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
structural@carch.in
Mobile : 7299911063

MATERIALS USED

Following materials are generally used in the design of the various components of the structure

1. M 25 grade concrete for Foundation .
2. M 35 grade concrete for Roof Slabs & Roof beams.
3. Fe 500 grade reinforcement steel for all reinforced concrete members

COVER FOR REINFORCEMENT

Cover for reinforcement is considered as per table 16A of NBC , for a fire resistance of 2 hrs

1. Pile foundation = Not less then 50 mm
2. Columns = 40 mm
3. Roof slabs = 20 mm
4. Roof Beams = 25 mm

DEAD LOAD, LIVE LOAD AND FLOOR FINISH LOADS FOR RESIDENCE

Self weight of 125 thk slab = 12.5 x 25 = 312.5 Kg / M^2

Live load = 200 .00Kg / M^2

Floor finish = 120 .00 Kg / M^2

= **632.5 Kg / M^2**

Say = 6.302 KN/ M^2

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
13 Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
structur[illegible]rch.in
Mob[illegible]

DESIGN OF PILE

Load carrying capacity of 500mm dia pile = 2500 KN

Pu = 0.4 fck Ac + 0.67 fy Ast

$2500x1.5x10^3 = 0.4x25x[\pi \times 500^2/4]+0.67x500$ Ast

$3750x10^3 = 7853981.6 + 335$ Ast

Ast $= 3750x10^3 - 7853981.6$

Ast $= (-4103981.6) / 335$

Ast $= -12250.69$ mm^2

For pile minimum percentage 0.4%

$0.4/100 = 0.4 \times (\pi \times 50^2)/100$

$= 7.85$ cm^2

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
Enclave, 25 Venkatakrishna Road,
Puram, Chennai - 600 028.
structural@carch.in
Mobile : 7299911063

Provide 8 Nos. of 16 mm dia bar .

Provide 8mm dia elliptical binder .

DESIGN OF PILE CAP IN FOUNDATION

Load on column = 4500 KN

Size of pile = 500 dia

Structural capacity of pile of 500 dia = 2500 KN

Numbers of pile required for column = 5000/2500

=2

Say 2 number of piles

Spacing of piles 2.5 times of dia =2.5 x 500 = 1250 mm

Load on each side of pile cap = 4500/2 =2250

Moment on pile cap = wl/4

= 4500x 1.5/4

= 1687.5 KN-m

Effective Size of pile cap = 1250x1000x1200mm

Mu /bd^2 =1687.5x1.5x10^6 / 1000x1150^2

=1.91

Pt =0.50

Ast =0.50x100x115 /100

=57.5 cm^2

Provide 25 dia bar 80 mm spacing @ Bottom

(Top) 0.17X100X120 = 2040/100 = 20.4/2=10.2

Provide 16 dia bar 100mm spacing @ Top

Check for shear

Shear force = 4500/2 = 2250 KN

Shear stress = 2250x1.5x1000 /1000x1150

= 2.93 < 3.1 (For M25 Concrete)

Provided 6L 12 Tor @ 100 c/c as beam shear bar

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
Enclave, 25 Venkatakrishna Road,
Puram, Chennai - 600 028.

DESIGN OF COLUMN

Size of Column	= 300 x 700 mm
Axial load	= 800.3 KN
Addition load for earthquake	= 544.8KN
Total	**= 1345.1 KN**
Moment	= **156KN-m**

Pu/FckBd = $1345.10x10^3$ / 35 x 300 x700 = 0.18

Mu/FckBd^2 =$156 x10^6$ / 35 x 300 x 700^2 = 0.03

From SP 16 Chart 47 P/Fck = 0.02

P = 0.02 x 35 =0.7%

Ast = 0.8x 30x 75 / 100 = 18.00Cm^2

Provide 4 Nos. of 20mm dia bar+4 nos.of 16 dia bar 20.56) Hence ok.

Provided 8L 8Tor @ 200 c/c as Column ties

DESIGN OF BEAMS

Span of Beam 3.14 **M**

Load from Slab = 1.24 x 3.14 x 1	= 3.89 KN/m
Load from Slab =0.69 x 3.14 x 1	= 2.17 KN/m
Self weight of Beam = 0.20 x 0.450 x 25x1	= 2.25 KN/m
Wall load = 2.74 x0.10x0.65x1	= 0.174 KN/m
Total	**= 8.48 KN/m**
Maximum BM = WL^2/8= 8.48X 3.14^2/8	= 10.45 KN – m
Mu/Bd^2 = 10.45 X 1.5 X 10^6 / 200 X 400^2	= 0.48
Pt = 0.17 % minimum for Fy500	
Ast = 0.17x 20x 40/ 100	=1.36 Cm^2

Area of steel provided 2-12Tor @ Bottom

Area of steel provided 2–12 Tor @ Top

Shear force at each support = 8.48 x3.14/2 = 13.31KN

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
Enclave, 25 Venkatakrishna Road,
Puram, Chennai - 600 028.
structural@carch.in
le : 7299911063

Shear stress = 13.31x 1.5x 1000/(200x400) =0.24<3.7

Hence ok.

Vertical stirrups for shear = 13.31X1.5/40= 0.499 KN/cm

Provided 2 Legged 8Tor@ 150MM c/c

Hence Ok.

DESIGN OF SLABS

Panel size of Slab **3.099m x 2.947m**

Ly / Lx = 3.099 / 2.947 = 1 (Two way Slab)

W = 6.302 KN/M^2

Lx/35 = 2.947*1000/35 = 84.2 Lx = 2.947 M α_x = 0.062 α_y = 0.062

Provide Slab thickness = 125mm

$M=\alpha_x WL_x^2$ =0.062x6.302x3.55^2 = 3.39 kN-m

Mu/Bd^2 = 3.39 X 1.5 X 10^6 / 1000 X 105^2 = 0.461

Minimum percentage 0.17

Pt = 0.17

Ast = 0.17X100X11.5/100 =1.955 Cm^2

Area of steel required 8 Tor @ 200mm C/C as Main reinforcement

$M=\alpha_y WL_x^2$ =0.062x6.302x3.099^2 = 3.752 kN-m

Mu/Bd^2 = 3.752X 1.5 X 10^6 / 1000 X 130^2 = 0.333

Minimum percentage 0.17

Pt = 0.17

Ast = 0.17X100X11.5/100 = 1.955 Cm^2

Area of steel required 8 Tor @ 200 mm C/C as Main reinforcement

Hence Ok.

R. DEENAGOPALAN B.E., Civil
SE/GR-II/19/04/045 (CMDA)
Cheralathan Associates
Shanti Enclave, 25 Venkatakrishna Road,
R.A. Puram, Chennai - 600 028.
str[illegible]earch.in
M[illegible]11063



our services doesn't just end there

Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.

Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.

Property Development & Approvals

Building plan approvals, construction, layout and sub-division approvals, zone conversion, and occupancy certification.

NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management

Compliance & Special Services

Demolition, Vaasthu checks, regularization of unauthorized buildings, and office space solutions.



empowering your real estate decisions with smart tools

Property Valuation & Cost Estimation

Guideline Value, Apartment Composite Value, Stamp Duty & Registration Fees Calculator, Building Value Calculator, Capital Gains Calculator, Area Unit Converter, Length Unit Converter

Ownership, Compliance & Legal Verification

Encumbrance Certificate (EC) Search, Find Your SRO, Temple Property Check, WAQF Property Check, View Patta/Chitta, View FMB, Patta Analyzer, EC Analyzer

Zoning & Land Use Analysis

Land Use Zone Finder, CRZ Zone Check, Aquifer Zone Check, CBA Check, EWS Check, Road Width Check, Proposed Road Widening Check, FSI Calculator

Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

Verified RealEstate™

We're honored to be part of your real estate journey

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
+91 9996 12 9996
www.verified.realestate