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DIGITALLY VERIFIED RECORD

CHAITANYA
FOUNDATIONS

Dated : 23.09.2025

To,

Dr.KP Jaya
Professor
Division of Structural Engineering
Anna University,
Chennai – 25.

Respected Sir/Madam,

SUB: Checking of structural design for proposed construction of high-rise commercial buildings-Regarding

It is proposed to construct at Proposed Construction of High Rise Residential Building Consisting of Stilt Floor + 8 Floors With 16 Dwelling Units at Door No - 74, Landons Road, Kilpauk, Chennai - 600 010. Greater Chennai Corporation and Comprised in R.S. No: 154/32, 154/226, 154/227, 154/228, Block No. 13 of Egmore (Part 1), Egmore Taluk and Within the Limits of Greater Chennai Corporation

We request you to verify the Structural Design and drawings pertaining to the proposed Towers.

We will pay the necessary proof checking charges.

Thanking you,

CHAITANYA FOUNDATIONS PVT. LTD. CHENNAI 600 020

Authorized Signatory

THE PROPOSED CONSTRUCTION OF S+8 RESIDENTIAL BUILDING IN CHENNAI

STRUCTURAL DESIGN BASIS REPORT

M/s. UNIVERSAL CONSULTANTS
2/4, First Cross Street, Indira Nagar
Adyar, Chennai - 20

8/10.25

Dr. K. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

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Structural Engineer

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Reg. No. RSE100382019
Reg. No. CGLDIST/SE/Gr-I/2024/07/005

PROJECT BRIEF

This Report sets out the Basic Parameters used for the PROPOSED CONSTRUCTION OF HIGH RISE RESIDENTIAL BUILDING CONSISTING OF STILT FLOOR + 8 FLOORS WITH 16 DWELLING AT R.S. NO: 154/32, 154/226, 154/227, 154/228, DOOR NO-74, LANDONS ROAD, KILPAUK, CHENNAI-600 010. GREATER CHENNAI CORPORATION.

A.1 STATUTORY REQUIREMENTS:

The design of structural and other building services will comply with the following requirements:

- National Building Code
- The Building Regulations Act
- The Environmental Protection Act in liaison with the Environmental Agency.
- Fire prevention and detection in compliance with the local Fire Regulation.
- ASHRAE.
- Any other applicable laws as advised by the client.
- Bureau of Indian Standard Codes.

B.0 DESIGN STANDARDS:

Specific applicable codes and standards will be identified and adopted in the design philosophies as appropriate to the structural elements. The latest editions of the Codes and Standards will be used in designs. All design work shall be based on Indian Standards and Codes with latest revision, with amendments if any, as on date.

Loads:

IS: 875	Code of Practice for design loads (other than earthquake) for Buildings and structure (part 1, 2, 3, 4&5)
IS: 1911	Schedule of unit weights of building materials

Foundations:

IS: 1080	Code of Practice for design and construction of shallow foundations on soils (other than raft, ring and shell)
IS: 1904	Code of Practice for design and construction of foundations in soils general requirement
IS: 2950	Code of Practice for design and construction of raft foundations
IS: 2974	Code of Practice for design and construction of machine foundations (All parts)
IS: 8009	Code of Practice for calculation of settlement of foundations (All parts)
IS: 11089	Code of Practice for design and construction of ring foundation

RCC:

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IS: 456	Code of Practice for plain and reinforced concrete
IS: 458	Specification for precast concrete pipes
IS: 3370	Code of Practice for concrete structures for the storage of liquids: (All parts)
IS: 3414	Code of Practice for design and installation of joints in buildings
IS: 3935	Code of Practice for composite construction
IS: 4326	Code of Practice for earthquake resistant design and construction of buildings
IS: 5525	Recommendation for detailing of reinforced concrete works
IS: 1786	Specification for high strength deformed steel bars and wires for concrete reinforcement
IS: 10262	Recommended guidelines for concrete mix design
IS: 11384	Code of Practice for composite construction in structural steel and concrete
IS: 1893 (Part-1)	Criteria for earthquake resistant design of structures (General provisions and building).
IS: 1893 (Part-4)	Criteria for earthquake resistant design of structures (Industrial structures including stack-like structures).
IS: 13920	Ductile Detailing of reinforced concrete structures subjected to seismic forces

Structural steel:

IS: 800	Code of Practice for general construction in steel
IS: 806	Code of Practice for use of steel tubes in general building construction
IS: 808	Dimensions for hot rolled steel beam, column channel and angle section
IS: 813	Scheme of symbols for welding
IS: 816	Code of Practice for use of metal arc welding for general construction in mild steel
IS: 1161	Steel tubes for structural purposes
IS: 2062	Structural steel (fusion welding quality)
IS: 4000	High Strength bolts in steel structures – Code of Practice
IS: 7215	Tolerances for fabrication of steel structures
IS: 9595	Recommendation for Metal arc welding of carbon and carbon manganese steel
IS: 12843	Tolerances for erection of steel structures

Miscellaneous:

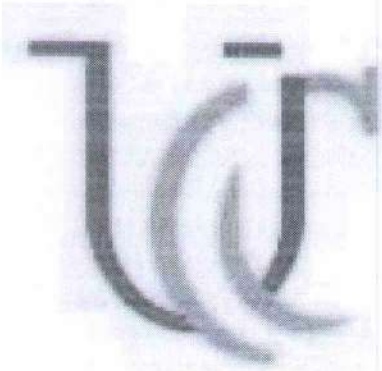
IS: 432(part 2)	Specification for mild steel and medium tensile steel bars and hard- drawn steel wire for concrete reinforcement
IS: 8112	43 grade Ordinary Portland cement specification.
IS: 6313(part II)	Standards for anti-termite treatment
IS: 2751	Code of practice for welding of mild steel bars used for reinforced concrete construction
IS: 1346	Code of Practice for water proofing of roofs with bitumen felts
IS: 1742	Code of Practice for building drainage
IS: 1905	Code of Practice for structural use of unreinforced masonry

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IS: 2470	Code of Practice for installation of septic tank:
(Part 1)	Design criteria and construction
(Part 2)	Secondary treatment and disposal of septic tank effluent
IS: 3067	Code of Practice for general design details and preparatory works for damp proofing and water proofing of buildings
SP: 6	Handbook for structural engineers (all parts)
SP: 7	National Building Code of India
SP: 16	Design Aids for reinforced concrete to IS: 456-1978
SP: 20	Handbook on masonry design and construction
SP: 22	Explanatory handbooks on codes for earthquake engineering (IS: 1983-1975 and IS: 4326-1976)
SP: 24	Explanatory handbook on Indian Standard code of Practice for plain and reinforced concrete
SP: 25	Handbook on causes and prevention of cracks in buildings
SP: 32	Handbook on functional requirements of industrial buildings
SP: 34	Handbook of concrete reinforcement and detailing (SCIP)



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C. STRUCTURAL SYSTEM

The structural system adopted is as below, based on preliminary analysis and design, which have been elucidated later in this report.

- The structure shall be analyzed as 3D frame using Analysis software and the structure design would be based on limit state design complying with Indian codes of practices
- The foundation system will be designed as PILE FOUNDATION as per soil test report.
- All water retaining structures shall be designed as 'un-cracked section' of concrete as per IS 3370
- Period of fire resistance considered is 1.5 hrs. Cover for fire resistance will be as per Table 16-A of IS: 456 – 2000.
- Grade of steel Fe 550

GRADE OF CONCRETE FOR ALL MEMBERS

- Pile – M30 with minimum cement content of 400kg/m^3
- Pile cap – M30
- Columns & Shear wall – M40
- Typical floor Beam, slab & Staircase – M30
- Water retaining structures – M30

D. LOAD DATA

(I) DEAD LOAD

Self-weight of the materials shall be calculated on the basis of unit weights given in IS: **875 (PART I)**

- Unit weight of reinforced cement concrete = 25 KN/m^3
- Unit weight of plain cement concrete = 24 KN/m^3
- Floor finishes considered = 2 KN/m^2
- Unit weight of Solid block = 20 KN/m^3
- Unit weight of steel = 78.5 KN/m^3

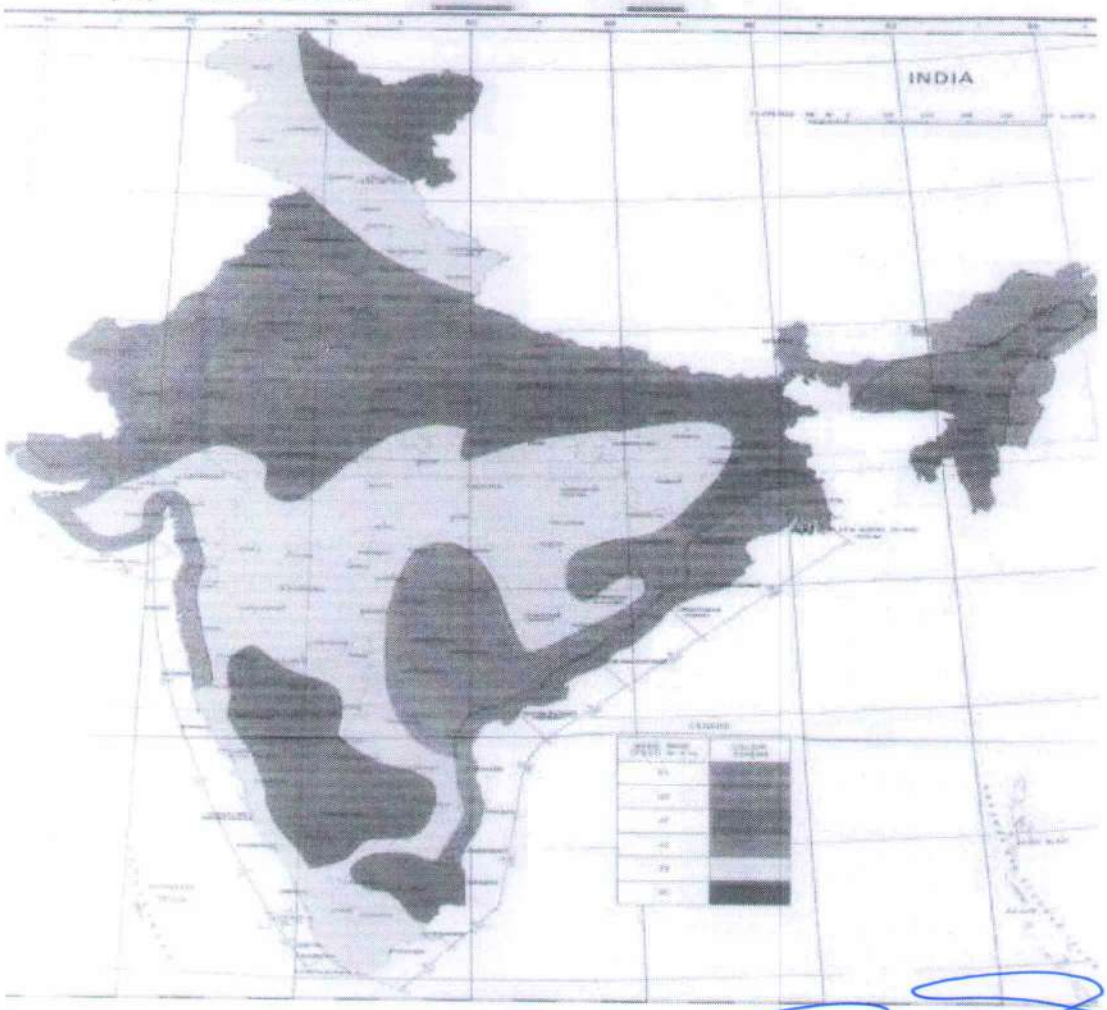
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(II) LIVE LOAD

1. Car Parking	:	500 Kg / Sqm
2. Kitchen	:	200 Kg / Sqm
3. Balcony	:	300 Kg / Sqm
4. Utility	:	200 Kg / Sqm
5. Toilets	:	200 Kg / Sqm
6.Living Room, Bed Room	:	200kg/Sqm
7. Terraces	:	200 Kg / Sqm
8. Corridors, passages, lobbies and staircases including fire escapes	:	300 Kg / Sqm
9. Gym Area	:	500 Kg / Sqm
14. Fire tender Load	:	1500kg/Sqm
30.Terrace floor (Access provided)	:	200 Kg / Sqm
31.Lift Machine Room slab	:	1000Kg / Sqm

(III) WIND LOADS



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Fig.2 Basic Wind Speed

The following parameters are considered for the calculation of wind pressure for the proposed residential apartment:

Basic Wind Speed (Vb)	: 50 m/sec
Risk Coefficient (k1)	: 1.0
Terrain, category and class	: Category 2 & Class C.
Size factor (k2)	: 1(Calculated by considering the actual height of the Structure)
Topography factor (k3)	: 1.00
Importance factor for Cyclonic Region(k4)	: 1.00
Design wind speed Vz	: ***Vb x k1 x k2 x k3 x k4***
Design wind pressure Pz	: ***0.6 x Vz²***

(IV) SEISMIC LOAD

Seismic loads for design of structure shall be considered as per **IS 1893-2016.**

Zone	: III
Zone factor	: 0.16
Importance factor	: 1.2
Response Reduction factor	: 4.0
Damping ratio	: 5%

The ductile detailing of the structure elements would be done as per IS 13920-2016, Confining Reinforcement will be designed as per IS 13920-2016.

E. ENVIRONMENTAL CONDITIONS, CORROSION AND FIRE PROTECTION FOR CONCRETE AND STRUCTURAL STEEL

- **Environment** : Moderate for all structures other than water retaining structure
- **Exposure conditions** : Concrete surfaces protected against weather or aggressive condition except those situated in coastal area

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- **Fire protection** : Thickness of the structural elements as per cl.21.0 of IS456:2000

Fire Resistance h	Minimum Beam Width b	Rib Width of Slabs b_w	Minimum Thickness of Floors D	Column Dimension (b or D)			Minimum Wall Thickness		
				Fully Exposed	50% Exposed	One Face Exposed	$p<0.4\%$	$0.4\% \le p \le 1\%$	$p>1\%$
	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.5	200	125	75	150	125	100	150	100	100
1	200	125	95	200	160	120	150	120	100
1.5	200	125	110	250	200	140	175	140	100
2	200	125	125	300	200	160	–	160	100
3	240	150	150	400	300	200	–	200	150
4	280	175	170	450	350	240	–	240	180

NOTES

1 These minimum dimensions relate specifically to the covers given in Table 16A.

2 p is the percentage of steel reinforcement.

FIG. 1 MINIMUM DIMENSIONS OF REINFORCED CONCRETE MEMBERS FOR FIRE RESISTANCE

- **Minimum grade of concrete** : Moderate exposure – M30
- **Nominal cover to reinforcement** : For Moderate Exposure Nominal cover should not be less than 30 mm.

Type of Structural element	Min. Cover to reinforcement
Retaining wall	30 mm
Pile & Pile cap	50 mm

For 1.5 hr Fire Resistance Beams , Slabs and Columns Shall have the min Cover as Specified below: Ref: (Table 16A of IS456:2000)

Type of Structural element	Min. Cover to reinforcement
Beams	30 mm
Slabs	25 mm
Columns	40 mm

F. TEMPERATURE AND SHRINKAGE EFFECT:

Horizontal floor displacement due to differential temperatures and shrinkage is of importance in long concrete buildings. It can be taken care of by either providing expansion joints at an appropriate spacing or designing structural members for the additional moments caused by the temperature and shrinkage effects.

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TEMPERATURE LOADS:

The effect of temperature will be considered wherever applicable in accordance with relevant Indian Codes. The coefficient for thermal expansion and contraction will be in accordance with IS: 456 and IS: 800 for concrete and steel respectively.

G. EXCEPTIONAL LOADS:

- Loads due to the following catastrophe scenarios are not considered in the design.
- Exceptional loads due to terrorist attacks (Explosions)
- Accidental loads (Falling of aircraft on the building)
- Accidental hitting of vehicle on the facade
- Snow Load

G. DESIGN LOAD COMBINATION

The proposed building is designed using the limit state method with appropriate factors as per **IS: 456,** The load combinations are as follows

Load Combination

- 1.5(DL+LL)
- 1.5(DL+EQX)
- 1.5(DL-EQX)
- 1.5(DL+EQY)
- 1.5(DL-EQY)
- 1.5(DL+WLX)
- 1.5(DL-WLX)
- 1.5(DL+WLY)
- 1.5(DL-WLY)
- 1.2(DL+LL+EQX)
- 1.2(DL+LL-EQX)
- 1.2(DL+LL+EQY)
- 1.2(DL+LL-EQY)
- 1.2(DL+LL+WLX)
- 1.2(DL+LL-WLX)
- 1.2(DL+LL+WLY)
- 1.2(DL+LL-WLY)
- 0.9DL+1.5EQX
- 0.9DL-1.5EQX
- 0.9DL+1.5EQY
- 0.9DL-1.5EQY
- 0.9DL+1.5WLX

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- 0.9DL-1.5WLX
- 0.9DL+1.5WLY
- 0.9DL-1.5WLY
- 0.9DL-1.5RSX-0.45RY-0.45RSZ
- 0.9DL-1.5RSX-0.45RY-0.45RSZ+1.5TEMP
- 0.9DL-1.5RSY-0.45RX-0.45RSZ
- 0.9DL-1.5RSY-0.45RX-0.45RSZ+1.5TEMP
- 0.9DL+1.5RSX+0.45RY+0.45RSZ
- 0.9DL+1.5RSX+0.45RY+0.45RSZ+1.5TEMP
- 0.9DL+1.5RSY+0.45RX+0.45RSZ
- 1.5(DL+LL+TEMP)
- 1.5(DL+EQX+TEMP)
- 1.5(DL+TEMP-EQX)
- 1.5(DL+TEMP-EQY)
- 1.5(DL+TEMP+EQY)
- 1.5(DL+TEMP+WLX)
- 1.5(DL+TEMP-WLX)
- 1.5(DL+TEMP+WLY)
- 1.5(DL+TEMP-WLY)
- 1.2(DL+LL+TEMP+EQX)
- 1.2(DL+LL+TEMP-EQX)
- 1.2(DL+LL+TEMP+EQY)
- 1.2(DL+LL+TEMP-EQY)
- 1.2(DL+LL+TEMP+WLX)
- 1.2(DL+LL+TEMP-WLX)
- 1.2(DL+LL+TEMP+WLY)
- 1.2(DL+LL+TEMP-WLY)
- 0.9DL+1.5EQX+1.5TEMP
- 0.9DL-1.5EQX+1.5TEMP
- 0.9DL+1.5EQY+1.5TEMP
- 0.9DL-1.5EQY+1.5TEMP
- 0.9DL+1.5WLX+1.5TEMP
- 0.9DL-1.5WLX+1.5TEMP
- 0.9DL+1.5WLY+1.5TEMP
- 0.9DL-1.5WLY+1.5TEMP

Where

DL - Dead load

LL - Live load

WLX, WLY - Wind load in X and Y direction

EQX, EQY - Seismic load in X and Y direction.

RSX,RSY, - Response spectrum in X &Y direction.

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H. REINFORCEMENT STEEL:

- All reinforcement shall confirm to IS: 1786 – 2008 having minimum yield strength of 550 N/sq-mm.(Fe550)

I. STRUCTURAL STEEL

- All structural steel shall confirm to IS: 226 – 1975 with minimum yield strength of 250 N/sq.mm (Fe 250)

J. DEFLECTION LIMITS

For Reinforced concrete works:

- Limiting values of deflection (Short and Long term) as per **cl. 35.3and 23.2 of IS: 456-2000** is followed in the design.
- Limiting value for short term deflection is considered as span/250 and for the long-term deflection is considered as span/350 or 20mm whichever less as per IS 456 – 2000.
- The vertical deflection limits may generally be assumed to be satisfied provided that the span to depth ratios is not greater than the values obtained as below:

  Continuous..... 26
  Simply Supported..... 20
  Cantilever..... 7

- As per IS1893 (Part1):2002, Story drift in any storey due to minimum specified design seismic lateral force shall not exceed 0.004 times the storey height.

K. CRACKING LIMITS

- Limiting values of crack width as per cl. 35.3 of IS: 456-2000 is followed in the design.
- In general, for slabs and beams, the crack width is limited to 0.3mm.
- For water retaining structures, the water retaining portion of the structure will be designed as uncracked section.

F. FOUNDATION SYSTEM:

Foundation system of the structure is designed considering the recommendation from the Geotechnical report.

- The foundation System shall be PILE FOUNDATION as per soil test report.
- Safe load for different dia of pile, Upto 29m depth

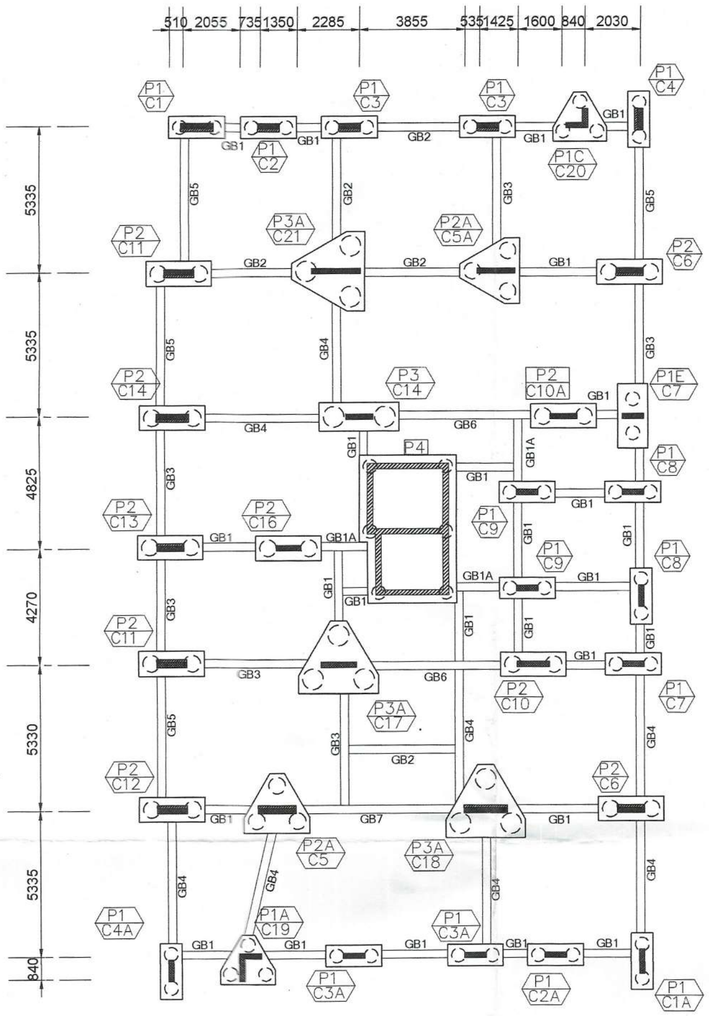
  500 dia – 110T
  600 dia – 150T
  750 dia – 190T

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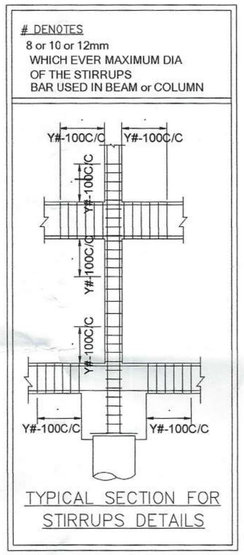
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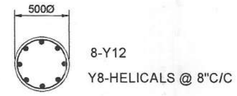
PILE FOUNDATION LAYOUT

GRADE BEAM DETAIL

BEAM NUMBER	BEAM SIZE	TOP BAR	BOTTOM BAR	EXTRA LEFT	EXTRA RIGHT	STIRRUPS
GB1	300x500	2-Y16	2-Y16	-	-	Y8@200C/C
GB1A	300x500	2-Y16	2-Y16	-	-	Y8@150C/C
GB2	300x500	2-Y16	3-Y16	-	-	Y8@200C/C
GB3	300x500	2-Y16	3-Y16	1-Y16	1-Y16	Y8@200C/C
GB4	300x500	2-Y16	4-Y16	2-Y16	2-Y16	Y8@200C/C
GB5	300x500	2-Y16	4-Y16	2-Y16	2-Y16	Y8@200C/C
GB6	300x500	2-Y16	3-Y20	1-Y20	1-Y20	Y10@150C/C
GB7	300x500	2-Y16	4-Y20	2-Y20	2-Y20	Y10@150C/C

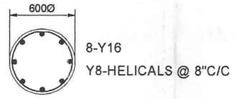


TYPICAL SECTION FOR STIRRUPS DETAILS



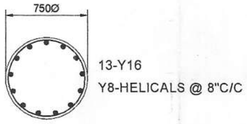
500ø PILE

(SAFE LOAD 110 TONNES)



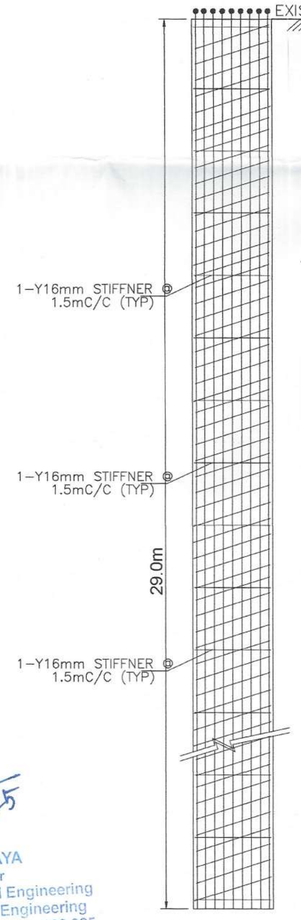
600ø PILE

(SAFE LOAD 150 TONNES)



750ø PILE

(SAFE LOAD 190 TONNES)



TYPICAL SECTION OF PILE

(BORED CAST IN-SITU PILE)

GENERAL NOTE:

(1) PILE TERMINATION SHOULD STRICTLY FOLLOWED AS PER SOIL TEST REPORT & SOIL TEST CONSULTANT RECOMMENDATIONS.

(2) PILE ROD LAPPING ZONE SHOULD BE TOWARDS NEAR TO BOTTOM OF PILE AS MUCH AS POSSIBLE.

(3) PILE SAFE LOAD MENTIONED AS PER SOIL TEST REPORT AND TO BE CONFIRM WITH INITIAL PILE LOAD TEST AND ROUTINE LOAD TEST AS PER I.S CODE AND PILE LOAD TEST SHOULD COMPLETE BEFORE DOING PILE CAP.

(4) INCASE OF LOOSE SOIL PRESENT, PILE CASING SHOULD BE PROVIDED UPTO A DEPTH OF LOOSE SOIL.

(5) MINIMUM CEMENT CONTENT TO BE FOLLOWED AS PER I.S 456.

(6) PILE LOAD TEST SHOULD BE DONE WITH THIRD PARTY TESTING VENDOR ONLY, NOT PILLING CONTRACTOR.

(7) BEFORE DOING PILE CAP, PILE ECCENTRICITY DRAWING SHOULD BE SUBMITTED FOR OUR APPROVAL.

(8) INTEGRITY PILE TEST SHOULD BE DONE MINIMUM 50% OF TOTAL PILE.

(9) RANDOM SPT TEST SHOULD BE DONE DURING THE PILING WORK.

(10) ROCK SOCKETING SHOULD BE FOLLOW AS PER SOIL TEST REPORT AND I.S WHICHEVER IS MAXIMUM.

(11) SUITABLE BORING SYSTEM SHOULD BE CONFIRMED WITH SOIL TEST CONSULTANT BEFORE STARTING PILING WORK.

(12) ALL THE PROCEDURE AND PRECAUTION TO BE FOLLOW AS PER SOIL TEST REPORT.

8/10/25

Dr. K. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

NOTE

S+8 FLOORS

1. REFER ARCHITECTURAL DRAWING FOR CENTER LINE DIMENSION
2. ONLY WRITTEN DIMENSION TO BE FOLLOWED.
3. ANY DISCREPENCIES NOTICED IN THE DRG. SHALL BE BROUGHT TO OUR NOTICE IMMEDIATELY.
4. THIS DRAWING SHOULD BE READ ALONG WITH ARCHITECTURAL DRAWINGS.
5. GRADE OF CONCRETE SHALL CONFIRM TO IS 456
   - (i) M40 FOR COLUMN & SHEAR WALL
   - (ii) M30 FOR ALL OTHER R.C.C WORKS
   - (iii) M30 FOR PILE WITH MINIMUM CEMENT CONTENT OF 400KG/m^3 (IF RMC M30 GRADE SHOULD USE)
   - (iv) GRADE OF CONCRETE FOR P.T BEAM AND P.T SLAB REFER P.T VENDOR DRAWING
6. "Y" DENOTES HIGH STRENGTH DEFORMED BARS OF GRADEFE550 CONFORMING TO IS 1786
7. CLEAR COVER TO THE MAIN STEEL
   - 50 FOR PILE
   - 60 FOR PILE CAP
   - 50 FOR FOOTINGS , RAFT SLABS & RAFT BEAMS.
   - 40 FOR COLUMNS.
   - 30 FOR BEAMS
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   - 30 FOR R.C.C WALL(INNER SIDE)
   - (a)ALL LAPS IN PILE REINFORCEMENT SHALL BE WELDED TO AN EXTENT OF 10 DIA OF THE BAR (i.e 10 DIA WELD ,10DIA GAP AND 10 DIA WELD) OR LAPPED WITH TAC WELDING.
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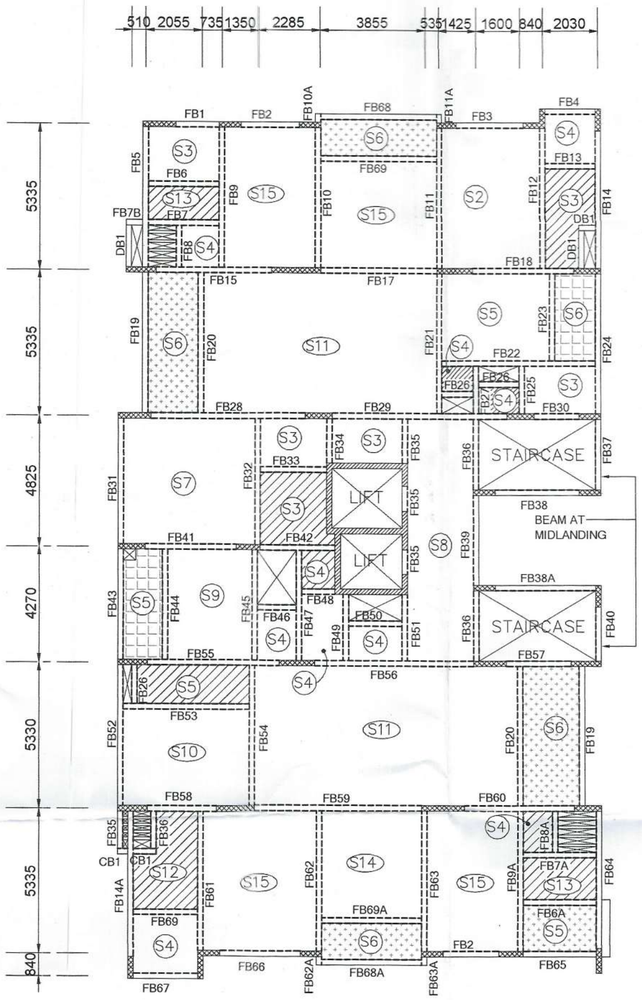
PROJECT NAME:

PROPOSED CONSTRUCTION OF HIGH RISE RESIDENTIAL BUILDING CONSISTING OF STILT FLOOR + 8 FLOORS WITH 16 DWELLING AT R.S. NO: 154/32, 154/226, 154/227, 154/228, DOOR NO-74, LANDONS ROAD, KILPAUK, CHENNAI-600 010. GREATER CHENNAI CORPORATION

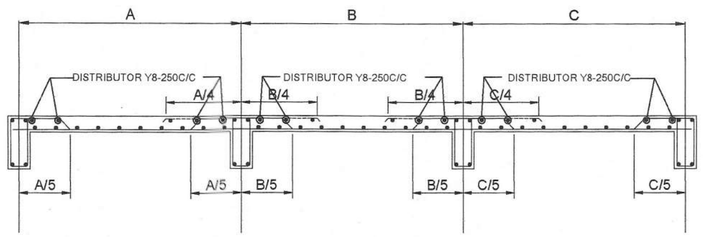
DRAWING TITLE :

PILE FOUNDATION LAYOUT AND GRADE BEAM DETAIL

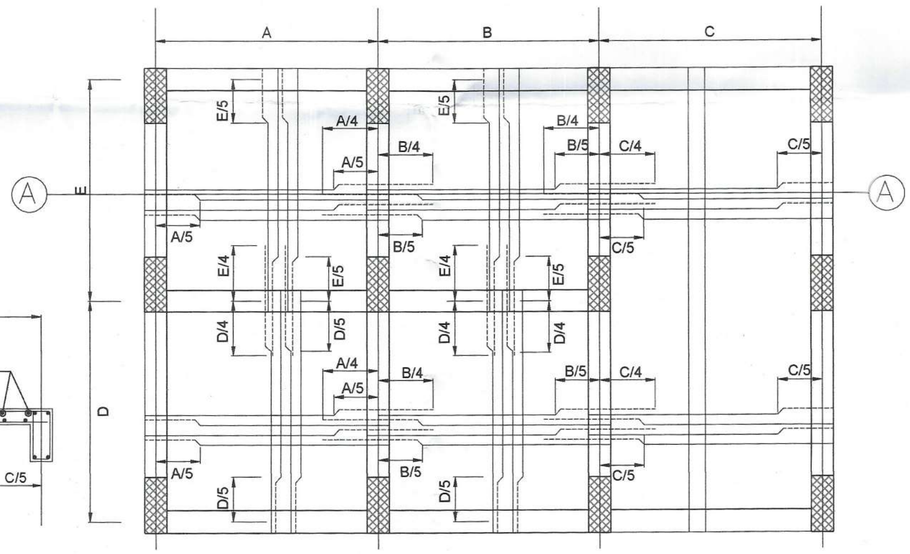
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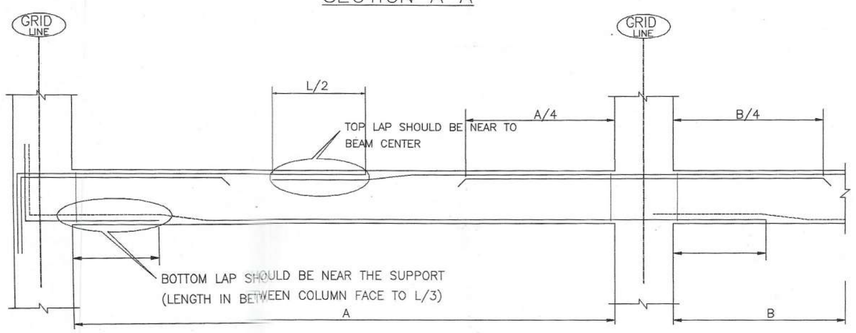
SLAB NO	SHORTER DIRECTION REINFORMENT	LONGER DIRECTION REINFORMENT	SLAB THICKNESS	TYPES OF SLAB
S1	Y8–150C/C	Y8–200C/C	150TK	TWOWAY SLAB
S2	Y8–150C/C	Y8–200C/C	150TK	TWOWAY SLAB
S3	Y8–180C/C	Y8–200C/C	125TK	TWOWAY SLAB
S4	Y8–200C/C	Y8–200C/C	125TK	TWOWAY SLAB
S5	Y8–150C/C	Y8–200C/C	125TK	TWOWAY SLAB
S6	Y8–150C/C	Y8–200C/C	125TK	ONEWAY SLAB
S7	Y10–150C/C	Y8–150C/C	180TK	TWOWAY SLAB
S8	Y8–150C/C	Y8–150C/C	150TK	ONEWAY SLAB
S9	Y8–150C/C	Y8–200C/C	125TK	TWOWAY SLAB
S10	Y8–150C/C	Y8–200C/C	150TK	TWOWAY SLAB
S11	Y12–150C/C	Y10–200C/C	200TK	TWOWAY SLAB
S12	Y8–200C/C	Y8–200C/C	125TK	TWOWAY SLAB
S13	Y8–200C/C	Y8–200C/C	125TK	TWOWAY SLAB
S14	Y8–150C/C	Y8–200C/C	150TK	TWOWAY SLAB



SECTION A A



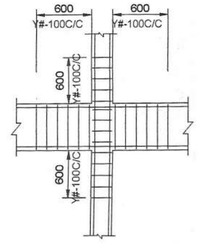
TYPICAL CRANK LENGTH IN SLAB



TYPICAL BEAM LAP

8/10/25
Dr. K. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

DENOTES
8 or 10 or 12mm
WHICH EVER MAXIMUM DIA OF THE STRIUPPS BAR USED IN BEAM or COLUMN



TYPICAL SECTION FOR STIRRUPS DETAILS

S+8 FLOORS

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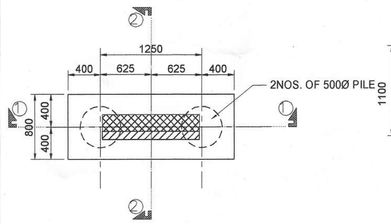
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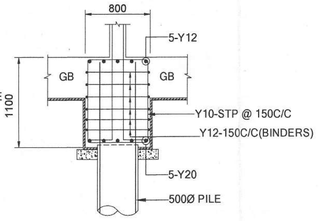
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TYPICAL FLOOR ROOF BEAM AND SLAB LAYOUT

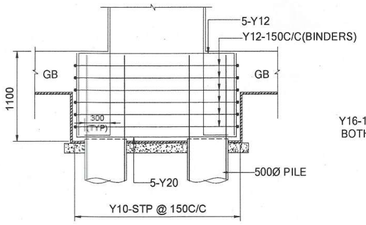
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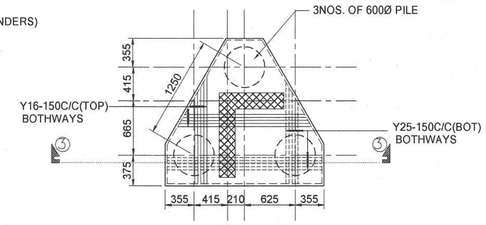
PILE–P1



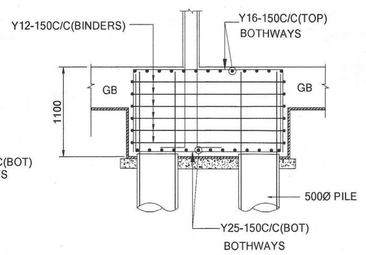
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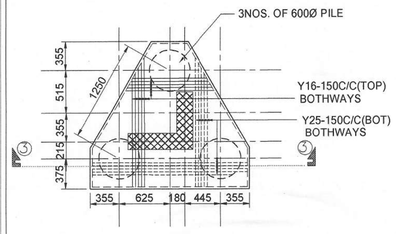
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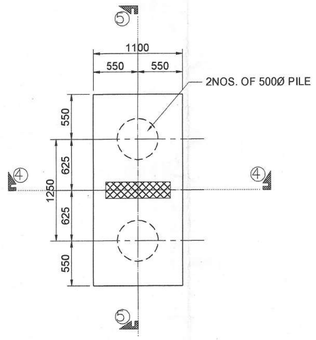
PILE–P1A



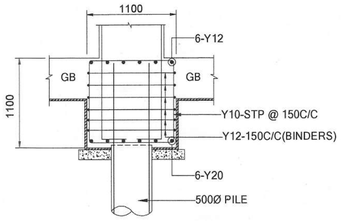
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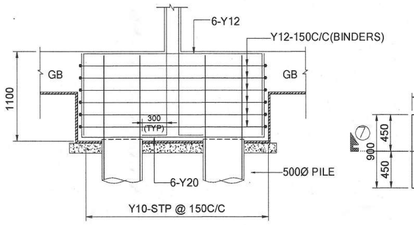
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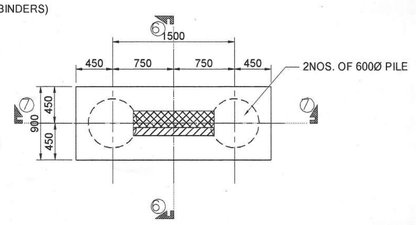
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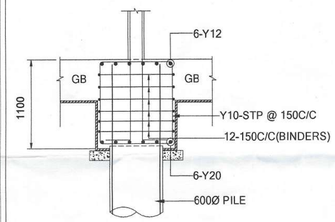
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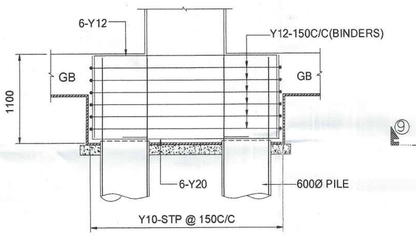
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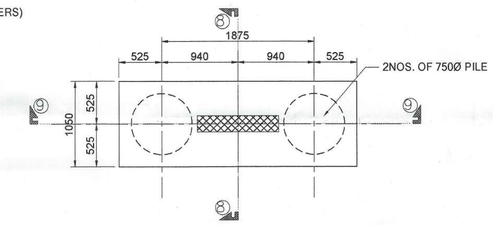
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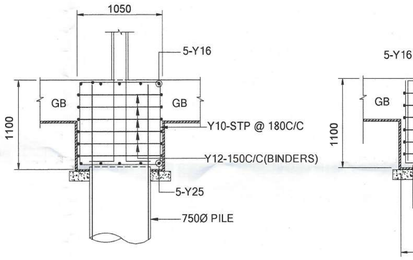
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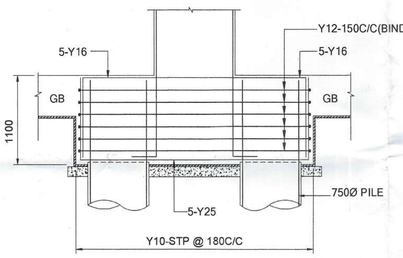
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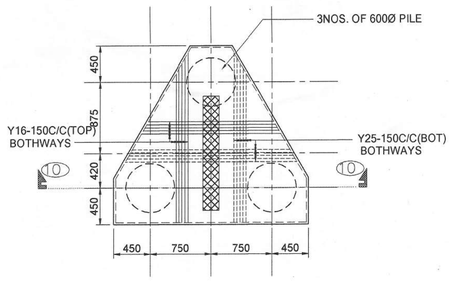
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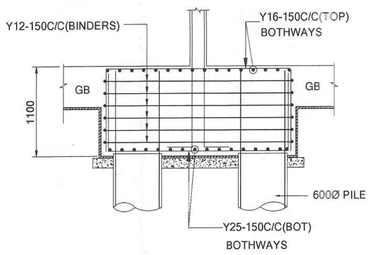
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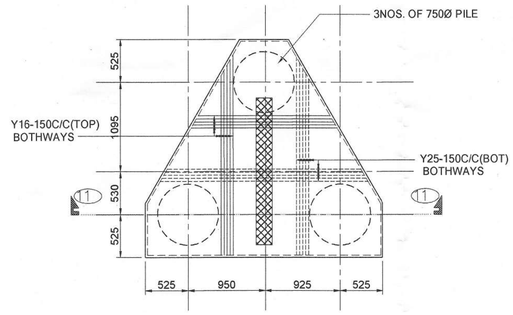
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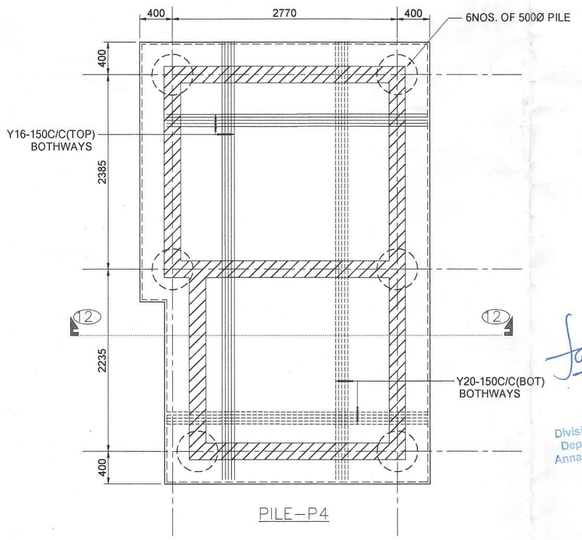
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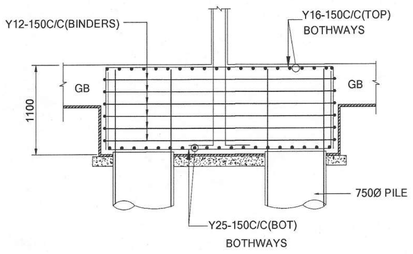
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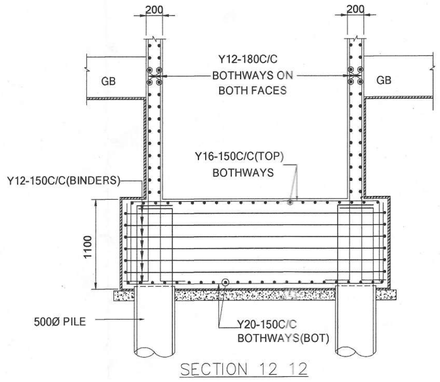
PILE–P3A



PILE–P4



SECTION 11 11



SECTION 12 12

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DRAWING TITLE :

FOUNDATION DETAIL

SHEET NO : 02

BEAM NUMBER	BEAM SIZE	TOP BAR	BOTTOM BAR	EXTRA LEFT	EXTRA RIGHT	WEB BAR	STIRRUPS
FB1	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB2	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB3	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB4	200x500	2-Y12	2-Y12	-	-	-	Y8@200C/C
FB5	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB6	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB6A	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB7	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB7A	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB7B	200x500	2-Y12+1-Y16	2-Y12	-	-	-	Y8@100C/C
FB8	200x500	2-Y12	2-Y12	-	-	-	Y8@200C/C
FB8A	200x500	2-Y12	2-Y16	-	-	-	Y8@200C/C
FB9	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y10@150C/C
FB9A	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y10@150C/C
FB10	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y10@150C/C
FB10A	200x500	2-Y16+1-Y25	2-Y16	-	-	-	Y8@100C/C
FB11	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y8@150C/C
FB11A	200x500	2-Y16+1-Y25	2-Y16	-	-	-	Y8@100C/C
FB12	200x500	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB13	200x500	2-Y12	2-Y12	-	-	-	Y8@200C/C
FB14	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB15	200x600	2-Y16	3-Y25	1-Y25	1-Y25	-	Y10@150C/C
FB17	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB18	200x600	2-Y16	3-Y25	1-Y25	1-Y25	-	Y10@150C/C
FB19	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB20	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB21	200x600	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB22	200x600	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB23	200x500	2-Y16	3-Y16	1-Y16	1-Y16	-	Y8@200C/C
FB24	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB25	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB26	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB27	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB28	200x600	2-Y20	4-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB29	200x650	2-Y20	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB30	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB31	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB32	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB33	200x500	2-Y16	3-Y16	1-Y16	1-Y16	-	Y8@200C/C
FB34	200x500	2-Y12	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB35	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB36	200x500	2-Y16	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB37 BEAM @ MIDLANDING	200x500	2-Y16	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB38	200x500	2-Y16	2-Y16	-	-	-	Y8@150C/C
FB38A	200x500	2-Y16	2-Y16	-	-	-	Y8@150C/C
FB39	200x500	2-Y16	2-Y16	1-Y16	1-Y16	-	Y8@150C/C

BEAM NUMBER	BEAM SIZE	TOP BAR	BOTTOM BAR	EXTRA LEFT	EXTRA RIGHT	WEB BAR	STIRRUPS
FB40 BEAM @ MIDLANDING	200x500	2-Y16	2-Y16	1-Y16	1-Y16	-	Y8@150C/C
FB41	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB42	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB43	200x500	2-Y16	3-Y16	1-Y16	1-Y16	-	Y8@200C/C
FB44	200x500	2-Y16	2-Y20	1-Y20	1-Y20	-	Y8@200C/C
FB45	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB46	200x500	2-Y12	2-Y12	-	-	-	Y8@150C/C
FB47	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB48	200x500	2-Y12	2-Y12	-	-	-	Y8@150C/C
FB49	200x500	2-Y12	2-Y16	-	-	-	Y8@200C/C
FB50	200x500	2-Y12	2-Y12	-	-	-	Y8@150C/C
FB51	200x500	2-Y12	2-Y16	-	-	-	Y8@200C/C
FB52	200x500	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB53	200x500	2-Y16	2-Y20	1-Y20	1-Y20	-	Y8@200C/C
FB54	200x600	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB55	200x600	2-Y20	4-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB56	200x650	2-Y20	4-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB57	200x500	2-Y16	2-Y25	1-Y25	1-Y25	-	Y8@150C/C
FB58	200x500	2-Y16	2-Y25	1-Y25	1-Y25	-	Y8@150C/C
FB59	200x650	2-Y20	4-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB60	200x600	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB61	200x500	2-Y16	3-Y25	2-Y25	2-Y25	-	Y10@150C/C
FB62	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y8@150C/C
FB62A	200x500	2-Y16+1-Y25	2-Y16	-	-	-	Y8@100C/C
FB63	200x500	2-Y16	3-Y25	1-Y25	1-Y25	-	Y8@150C/C
FB63A	200x500	2-Y16+1-Y25	2-Y16	-	-	-	Y8@100C/C
FB64	200x500	2-Y16	3-Y20	1-Y20	1-Y20	-	Y8@150C/C
FB65	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB66	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB67	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB68	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB68A	200x500	2-Y16	2-Y16	-	-	-	Y8@200C/C
FB69	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
FB69A	200x500	2-Y16	2-Y20+2-Y16	1-Y20	1-Y20	-	Y8@150C/C
CB1	200x500	4-Y20	2-Y16	-	-	-	Y10@150C/C
DB1	200x500	2-Y16	2-Y16	-	-	-	Y8@150C/C

S+8 FLOORS

NOTE

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ARCHITECT

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Reg. No. SE/I/2024/2/0014
Reg. No. RSE100382019
Reg. No. CGLDIST/SE/Gr-I/2024/07/005

8.10.25
Dr. K. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

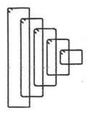
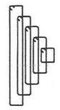
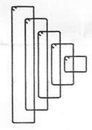
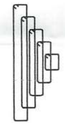
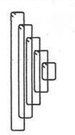
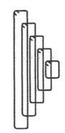
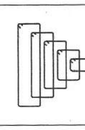
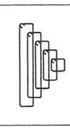
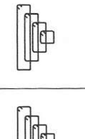
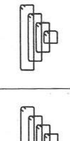
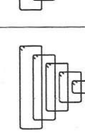
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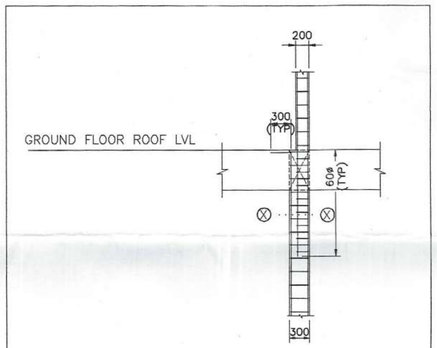
PROPOSED CONSTRUCTION OF HIGH RISE RESIDENTIAL BUILDING CONSISTING OF STILT FLOOR + 8 FLOORS WITH 16 DWELLING AT R.S. NO: 154/32, 154/226, 154/227, 154/228, DOOR NO-74, LANDONS ROAD, KILPAUK, CHENNAI-600 010. GREATER CHENNAI CORPORATION

DRAWING TITLE :

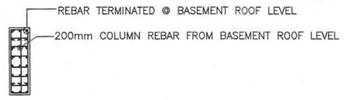
TYPICAL FLOOR ROOF DETAIL

SHEET NO : 06

COL-NO	SIZE	STILT FLOOR	SHAPE OF TIES	SIZE	TYPICAL FLOOR	SHAPE OF TIES
COL-C1	300 x 1200	20-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1200	20-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C1A	200 x 900	8-Y20(b)+ 8-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 900	8-Y20(b)+ 8-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C2 & COL-C3	300 x 800	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C2A & COL-C3A	200 x 800	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C4	300 x 800	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C4A	200 x 800	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C5	300 x 1400	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1400	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C5A	200 x 1400	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1400	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C6	300 x 1000	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1000	4-Y25(a)+ 16-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C7	200 x 800	16-Y20 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	16-Y20 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C8 & COL-C9	200 x 800	16-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 800	16-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C10 & COL-C14	300 x 1200	4-Y20(b)+ 18-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1200	4-Y20(b)+ 18-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL-C10A	200 x 1000	8-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1000	8-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	



TYPICAL COLUMN CHANGE OVER
300 TO 200mm DETAIL
(FOR ONE SIDE REDUCTION)



SECTION X X

8/10/25
Dr. K. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

S+8 FLOORS

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UNIVERSAL CONSULTANTS
CIVIL & STRUCTURAL CONSULTING ENGINEERS
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Dr. J. SURESH, M.E., MIE., Ph.D.
Structural Engineer
Plot No. 555, VGP Layout, Mullai Street,
Uthandi, Chennai - 600 119.
Reg. No. SE/I/2024/2/0014
Reg. No. RSE100382019
Reg. No. CCLDIST/SE/Gr-I/2024/07/005

PROJECT NAME:

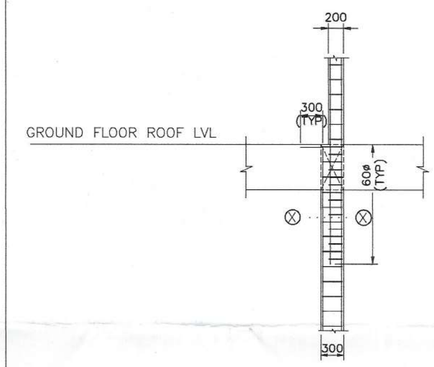
PROPOSED CONSTRUCTION OF HIGH RISE RESIDENTIAL BUILDING CONSISTING OF STILT FLOOR + 8 FLOORS WITH 16 DWELLING AT R.S. NO: 154/32, 154/226, 154/227, 154/228, DOOR NO-74, LANDONS ROAD, KILPAUK, CHENNAI-600 010. GREATER CHENNAI CORPORATION

DRAWING TITLE :

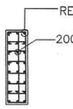
COLUMN CURTAILMENT DETAIL

SHEET NO : 03

COL–NO	SIZE	STILT FLOOR	SHAPE OF TIES	SIZE	TYPICAL FLOOR	SHAPE OF TIES
COL–C11	300 x 1100	4-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1100	4-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C12	300 x 1100	22-Y20 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1100	22-Y20 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C13	300 x 1000	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1000	4-Y20(b)+ 12-Y16(c) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C15	200 x 1000	16-Y25 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1000	16-Y25 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C16	200 x 900	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 900	4-Y25(a)+ 12-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C17	200 x 1300	8-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1300	8-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C18	200 x 1600	24-Y25 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1300	24-Y25 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C21	200 x 1800	4-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C		200 x 1800	4-Y25(a)+ 18-Y20(b) MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C19		800, 1040, 200, 200 — 22-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C			800, 1040 — 22-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	
COL–C20		200, 200, 710, 800 — 24-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C			200, 200, 710, 800 — 24-Y16 MASTER RING (Y10-200C/C) Y8-TIES @ 200C/C	



TYPICAL COLUMN CHANGE OVER 300 TO 200mm DETAIL
(FOR ONE SIDE REDUCTION)



SECTION X X

8/10.25
Dr. R. P. JAYA
Professor
Division of Structural Engineering
Department of Civil Engineering
Anna University, Chennai - 600 025.

S+8 FLOORS

NOTE

1. REFER ARCHITECTURAL DRAWING FOR CENTER LINE DIMENSION
2. ONLY WRITTEN DIMENSION TO BE FOLLOWED.
3. ANY DISCREPENCIES NOTICED IN THE DRG. SHALL BE BROUGHT TO OUR NOTICE IMMEDIATELY.
4. THIS DRAWING SHOULD BE READ ALONG WITH ARCHITECTURAL DRAWINGS.
5. GRADE OF CONCRETE SHALL CONFIRM TO IS 456
   - (i) M40 FOR COLUMN & SHEAR WALL
   - (ii) M30 FOR ALL OTHER R.C.C WORKS
   - (iii) M30 FOR PILE WITH MINIMUM CEMENT CONTENT OF 400KG/m^3 (IF RMC M30 GRADE SHOULD USE)
   - (iv) GRADE OF CONCRETE FOR P.T BEAM AND P.T SLAB REFER P.T VENDOR DRAWING
6. "Y" DENOTES HIGH STRENGTH DEFORMED BARS OF GRADEFE550 CONFORMING TO IS 1786
7. CLEAR COVER TO THE MAIN STEEL
   - 50 FOR PILE
   - 60 FOR PILE CAP
   - 50 FOR FOOTINGS , RAFT SLABS & RAFT BEAMS.
   - 40 FOR COLUMNS.
   - 30 FOR BEAMS
   - 25 FOR SLAB
   - 50 FOR R.C.C WALL(SOIL SIDE)
   - 30 FOR R.C.C WALL(INNER SIDE)
   - (a)ALL LAPS IN PILE REINFORCEMENT SHALL BE WELDED TO AN EXTENT OF 10 DIA OF THE BAR (i.e 10 DIA WELD ,10DIA GAP AND 10 DIA WELD) OR LAPPED WITH TAC WELDING.
8. SPACER BAR TO BE PROVIDED IN BETWEEN TWO LAYERS OF REINFORCEMENT OF SAME DIA AT EVERY 1000 C/ C.
9. CHAIR ROD SHOULD BE EVERY 1.5m INTERVALS.
10. FOR EARTHQUAKE ANALYSIS IS TAKEN AS PER IS : 1893
11. LAP JOINTS FOR REINFORCEMENT BARS :
    - (i) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED.
    - (ii) LAPS SHALL BE STAGGERED WITH A MINIMUM LAP CENTRE TO LAP CENTRE DISTANCE SHALL BE 1.3Ld
    - (iii) LAP LENGTH SHALL BE 50 TIMES DIA OF THE BAR FOR TENSION AND COMPRESSION MEMBERS .
    - (iv) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT BEAM, COLUMN JUNCTION
    - (v) LAPS IN BEAMS AND SLABS SHALL BE PROVIDED PREFERABLY AT POINT OF CONTRAFLEXURE .
12. HOOK LENGTH OF STIRRUPS 8d or 75mm WHICHEVER IS MAX., WITH HOOK ANGLE SHOULD BE 135 DEGREE.
13. BEAM, COLUMN JUNCTION STIRRUPS SPACING SHOULD BE 100mm AT DISTANCE OF 600mm FROM THE COLUMN FACING UNLESS OTHERWISE SPECIFIED IN THE DRAWING
14. COLUMN, BEAM JUNCTION SHOULD BE COLUMN CONCRETE GRADE, WHATEVER MENTIONED IN IN THE DRAWING.

Revision No	Description of Revision		Date
Date	04-10-25	Drawn By:	SANKAR

CLIENT

ARCHITECT

STRUCTURAL CONSULTANT

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DRAWING TITLE :

COLUMN CURTAILMENT DETAIL

SHEET NO : 04

```
**************************************************
*                                                *
*          STAAD.Pro CONNECT Edition             *
*          Version  22.00.00.15                  *
*          Proprietary Program of                *
*          Bentley Systems, Inc.                 *
*          Date=    APR 30, 2026                 *
*          Time=    12:16:39                     *
*                                                *
*  Licensed to: only @ ::LAVTeam:: (R)           *
**************************************************
```

```
    1. STAAD SPACE
INPUT FILE: I:\1.MISCELLANEOUS\STABILITY CERTIFICATE\UC-LANDONS ROAD\LANDONS ROAD.STD
    2. START JOB INFORMATION
    3. JOB NAME THE PROPOSED CONSTRUCTION OF STILT FLOOR + 8 FLOORS
    4. *(HEIGHT ? 29.7M HEIGHT) RESIDENTIAL BUILDING WITH 16 DWELLING UNITS AVAILING
    5. *PREMIUM FSI AT OLD DOOR NO.37/1, 2, 3, 4 & 5 NEW DOOR NO.74, 76, 78, 80 & 82,
    6. *LANDON?S ROAD,  KILPAUK, CHENNAI-600010.COMPRISED IN OLD S.NO.272 & R.S.NO.154
    7. *PART AS PER DOCUMENTS, NEW R.S.NO.154/32, 154/226, 154/227,
    8. *154/228 AS PER PATTA, BLOCK NO.13, EGMORE VILLAGE WITHIN THE LIMITS OF GREATER
    9. *CHENNAI CORPORATION
   10. ENGINEER NAME SURESH
   11. CHECKER NAME SURESH
   12. APPROVED NAME SURESH
   13. ENGINEER DATE 4/30/2026
   14. CHECKER DATE 4/30/2026
   15. APPROVED DATE 4/30/2026
   16. END JOB INFORMATION
   17. INPUT WIDTH 79
   18. UNIT METER KN
   19. JOINT COORDINATES
   20. 1 -11 -1 0; 25 -11 -4 0; 26 -4.5 -1 0; 27 -4.5 -4 0; 28 2.2 -1 0; 29 2.2 -4 0
   21. 36 -11 2 0; 37 -4.5 2 0; 38 2.2 2 0; 42 -11 5 0; 43 -4.5 5 0; 44 2.2 5 0
   22. 57 6.9 -1 0; 58 6.9 -4 0; 59 6.9 2 0; 60 6.9 5 0; 63 13.6 -1 0; 64 13.6 -4 0
   23. 65 13.6 2 0; 66 13.6 5 0; 67 -11 8 0; 68 -4.5 8 0; 69 2.2 8 0; 70 6.9 8 0
   24. 71 13.6 8 0; 72 -11 11 0; 73 -4.5 11 0; 74 2.2 11 0; 75 6.9 11 0; 76 13.6 11 0
   25. 77 -11 14 0; 78 -4.5 14 0; 79 2.2 14 0; 80 6.9 14 0; 81 13.6 14 0
   26. MEMBER INCIDENCES
   27. 39 1 25; 40 1 26; 41 25 27; 42 26 27; 43 26 28; 44 27 29; 45 28 29; 55 1 36
   28. 56 26 37; 57 28 38; 61 36 37; 62 37 38; 66 36 42; 67 37 43; 68 38 44; 72 42 43
   29. 73 43 44; 96 28 57; 97 29 58; 98 57 58; 99 57 59; 100 38 59; 101 59 60
   30. 102 44 60; 107 57 63; 108 58 64; 109 63 64; 110 63 65; 111 59 65; 112 65 66
   31. 113 60 66; 114 42 67; 115 43 68; 116 44 69; 117 67 68; 118 68 69; 119 60 70
   32. 120 69 70; 121 66 71; 122 70 71; 123 67 72; 124 68 73; 125 69 74; 126 72 73
   33. 127 73 74; 128 70 75; 129 74 75; 130 71 76; 131 75 76; 132 72 77; 133 73 78
   34. 134 74 79; 135 77 78; 136 78 79; 137 75 80; 138 79 80; 139 76 81; 140 80 81
   35. DEFINE MATERIAL START
   36. ISOTROPIC CONCRETE
   37. E 2.17185E+07
   38. POISSON 0.17
```



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```
39. DENSITY 23.5616
40. ALPHA 1E-05
41. DAMP 0.05
42. END DEFINE MATERIAL
43. MEMBER PROPERTY INDIAN
44. 39 42 45 55 TO 57 66 TO 68 98 99 101 109 110 112 114 TO 116 119 121 -
45. 123 TO 125 128 130 132 TO 134 137 139 PRIS YD 0.8 ZD 0.3
46. 40 41 43 44 61 62 72 73 96 97 100 102 107 108 111 113 117 118 120 122 126 -
47. 127 129 131 135 136 138 140 PRIS YD 0.6 ZD 0.2
48. CONSTANTS
49. MATERIAL CONCRETE ALL
50. SUPPORTS
51. 25 27 29 58 64 FIXED
52. DEFINE 1893 LOAD
53. ZONE 0.16 RF 3 I 1 SS 2 ST 1 DM 0.5
54. MEMBER WEIGHT
55. 39 TO 45 55 TO 57 61 62 66 TO 68 72 73 96 TO 102 107 TO 140 UNI -14.5
56. DEFINE WIND LOAD

** NOTE: If any floor diaphragm is present in the model Wind load definition
         should be defined after Floor Diaphragm definition. Otherwise wind
         load generation may be unsuccessful during analysis.

57. TYPE 1
58. INT 0.673 1.03335 1.3537 1.65375 HEIG  10  30  50  100
59. EXP 1 JOINT 1 25 TO 29 36 TO 38 42 TO 44 57 TO 60 63 TO 81
60. LOAD 1 LOADTYPE NONE  TITLE SLX1
61. 1893 LOAD X 1
62. LOAD 2 LOADTYPE NONE  TITLE SLZ1
63. 1893 LOAD Z 1
64. LOAD 3 LOADTYPE DEAD  TITLE DL
65. SELFWEIGHT Y -1
66. MEMBER LOAD
67. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
68. 136 138 140 UNI GY -25
69. LOAD 4 LOADTYPE LIVE  TITLE LL
70. MEMBER LOAD
71. 40 43 61 62 72 73 96 100 102 107 111 113 117 118 120 122 126 127 129 131 135 -
72. 136 138 140 UNI GY -15
73. LOAD 7 LOADTYPE WIND  TITLE WLZ1
74. WIND LOAD Z 1 TYPE 1
75. LOAD 8 LOADTYPE WIND  TITLE WLZ2
76. WIND LOAD Z -1 TYPE 1
77. LOAD COMB 9 1.5(DL+LL)
```

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```
 78. 3 1.5 4 1.5
 79. LOAD COMB 10 1.2(DL+LL+SLX)
 80. 3 1.2 4 1.2 1 1.2
 81. LOAD COMB 11 1.2(DL+LL+SLZ)
 82. 3 1.2 4 1.2 2 1.2
 83. LOAD COMB 14 1.2(DL+LL+WLZ1)
 84. 3 1.2 4 1.2 7 1.2
 85. LOAD COMB 15 1.2(DL+LL+WLZ2)
 86. 3 1.2 4 1.2 8 1.2
 87. LOAD COMB 16 1.5(DL+SLX)
 88. 3 1.5 1 1.5
 89. LOAD COMB 17 1.5(DL+SLZ)
 90. 3 1.5 2 1.5
 91. LOAD COMB 20 1.5(DL+WLZ1)
 92. 3 1.5 7 1.5
 93. LOAD COMB 21 1.5(DL+WLZ2)
 94. 3 1.5 8 1.5
 95. LOAD COMB 22 0.9DL+1.5SLX
 96. 3 0.9 1 1.5
 97. LOAD COMB 23 0.9DL+1.5SLZ
 98. 3 0.9 2 1.5
 99. LOAD COMB 26 0.9DL+1.5WLZ1
100. 3 0.9 7 1.5
101. LOAD COMB 27 0.9DL+1.5WLZ2
102. 3 0.9 8 1.5
103. PERFORM ANALYSIS


         P R O B L E M   S T A T I S T I C S
         -----------------------------------

  NUMBER OF JOINTS          35  NUMBER OF MEMBERS      58
  NUMBER OF PLATES           0  NUMBER OF SOLIDS        0
  NUMBER OF SURFACES         0  NUMBER OF SUPPORTS      5

        Using 64-bit analysis engine.

        SOLVER USED IS THE OUT-OF-CORE BASIC SOLVER

  ORIGINAL/FINAL BAND-WIDTH=    11/     5/     36 DOF
TOTAL       PRIMARY LOAD CASES =      6, TOTAL DEGREES OF FREEDOM =     180
TOTAL LOAD COMBINATION  CASES =     13  SO FAR.
  SIZE OF STIFFNESS MATRIX =         7 DOUBLE  KILO-WORDS
  REQRD/AVAIL. DISK SPACE  =      12.2/ 320870.4 MB


**WARNING: IF THIS UBC/IBC ANALYSIS HAS TENSION/COMPRESSION
OR REPEAT LOAD OR RE-ANALYSIS OR SELECT OPTIMIZE, THEN EACH
UBC/IBC CASE SHOULD BE FOLLOWED BY PERFORM ANALYSIS & CHANGE.
```



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```
*********************************************************
* UNITS - KN     METE                                   *
* TIME PERIOD FOR X 1893 LOADING =     0.65541 SEC      *
* SA/G PER 1893=     1.038, LOAD FACTOR= 1.000          *
* VB PER 1893=     0.0277 X      3801.90=      105.19 KN  *
*                                                       *
*********************************************************


*********************************************************
* UNITS - KN     METE                                   *
* TIME PERIOD FOR Z 1893 LOADING =     0.65541 SEC      *
* SA/G PER 1893=     1.038, LOAD FACTOR= 1.000          *
* VB PER 1893=     0.0277 X      3801.90=      105.19 KN  *
*                                                       *
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104. FINISH

          ********** END OF THE STAAD.Pro RUN **********

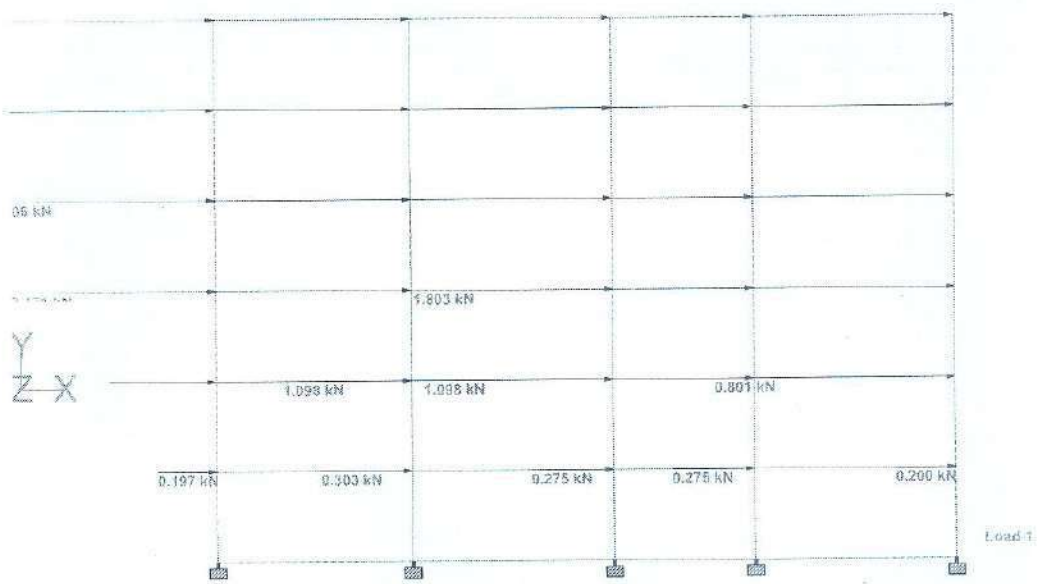
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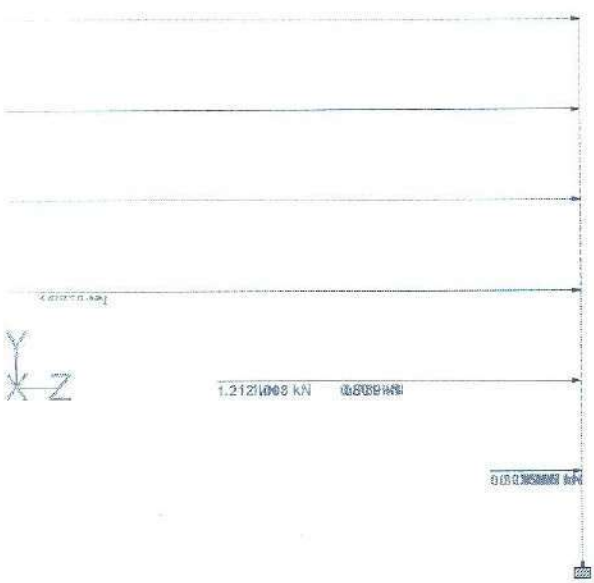
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*************************************************************
*   For technical assistance on STAAD.Pro, please visit     *
*   http://www.bentley.com/en/support/                      *
*                                                           *
*   Details about additional assistance from                *
*   Bentley and Partners can be found at program menu       *
*   Help->Technical Support                                 *
*                                                           *
*      Copyright (c) 1997-2017 Bentley Systems, Inc.        *
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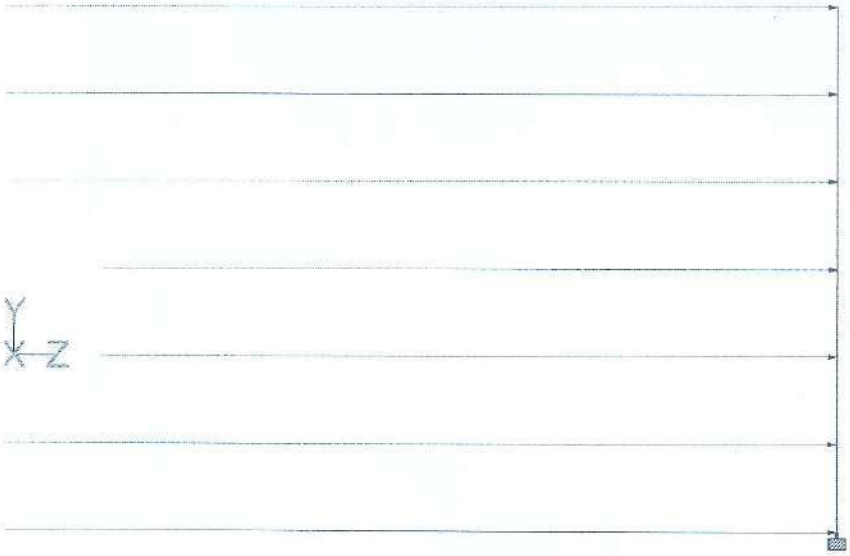
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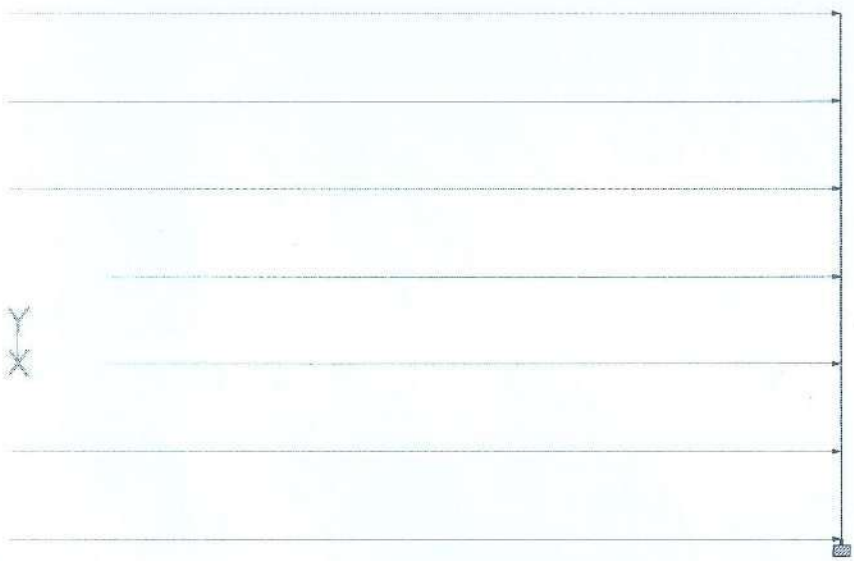
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THE LANDLENS SUITE

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
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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.