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DIGITALLY VERIFIED RECORD

PROPOSED RESIDENTIAL BUILDING AT RAMAPURAM, VAKKIL THOTTAM, THIRUVALLUR ROAD, SRIPERUMBUDUR, KANCHEEPURAM-602105.

STRUCTURAL DESIGN BRIEF

Introduction

The Residential Building referred to above is a framed structure with Stilt and Five Upper Floors. The building is analysed and designed conforming to loading standards IS: 875 (Part II) and to seismic forces as per IS 1893: 2002, the revised Indian Code for Earthquake Resistant Design of Structures.

a. Loads considered in the design

Live Load on roof	**1.5 kN/m^2**
Live Load on floors	**2 kN/m^2**
Weathering course on roof	**3 kN/m^2**
Floor Finish	**1 kN/m^2**
Unit weight of brickwork	**20 kN/m^3**
Unit weight of concrete	**25 kN/m^3**

04.10.2024
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No. 54, MOUNT ROAD, GUINDY,
CHENNAI-600 032. PH: 9940388755

b. Design Details

Design Method	**LIMIT STATE DESIGN**
Codes & Special Publications used	**IS 800-2007 , SP : 6(1)—1964, IS 456: 2000, IS 875(Part III):2015,IS 1893:2002(Part 1), SP 16, IS 1893 Part 1:2016**
Concrete Grade	**M 25**
Steel Grade	**Fe 500**

c. Foundation Details

Type of foundation	**Bored Cast-in-situ Piles**
Safe load carrying capacity 500mm dia pile	**800kN as per soil test report**
Depth of foundation	**10m below existing ground level**
Diameter of main bars	**20mm,16mm**

d. Slab Details

Type of slab	**Two Way Slab**
Thickness of the slab provided	**125mm,150mm**
Steel cover to slab	**25mm**
Diameter of main bars used	**8mm,10mm**

e. Beam Details

Size of the beam provided	**300mm x 750mm,300mm x 800mm,200mm x 450mm, 300mm x 450mm**
Bottom steel cover to beam	**25mm**
Diameter of main bars used	**25mm, 20mm, 12mm**
Stirrups used	**2,4 legged stirrups 8mm dia,10mmdia**

f. Column Details

Size of the columns provided	**300mmx 600mm, 200mm x 600mm, 30mm x 750mm**
Steel cover to column	**40mm**
Diameter of main bars used	**25mm,20mm,16mm**
Binder diameter	**8mm**

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1. LOADINGS

a. Dead and Live Loads

Gravity load on roof : 6.125kN/m^2

Gravity load on floors : 4.125kN/m^2

Live load on roof : 1.5kN/m^2

Live load on floors : 2 kN/m^2

b. Wind Loads

Wind loads for design of structures shall be based on the design wind speeds arrived on the basis of **IS: 875 (PART III).**

The parameters for calculation of design wind speed as per **IS: 875 (PART III)** are as follows:

Basic wind speed (V_b) : 50 m/sec.

Height : 18.3m

From Table 1, IS 875 (Part 3), for Mean probable design life of Structure as 50 yrs and wind speed of 50m/sec, Risk coefficient, K_1 : 1.0

From Table 2, terrain category 3 and for a height of 18.3m and plan dimensions 71.4 x 61.35, Terrain, Height, Structure size factor, **K2** : 1.0032

Topography factor, K_3 : 1.0

Importance Factor for cyclonic region, K_4 : 1.0

Design wind speed (V_z) : Vb x K1 x K2 x K3 x K4

Design wind pressure (P_z) : $0.6Vz^2$

: 0.6×50.16^2 : 1509.61N/m^2.

: 1.50961kN/m^2

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c. Determination of Earthquake Parameters and Loadings

Zone Factor, **Z** for Chennai Seismic **Zone III** : 0.16, (Table 2, Clause 6.4.2)

I, Importance Factor : 1, (From Table 6)

R, Response Reduction Factor : 5 for OMRF(Special Moment resisting Frame, Table 7)

Fundamental Natural Period along X direction, T_x : **0.09xh / $\sqrt{d_x}$** : 0.09 x 18.3/$\sqrt{71.4}$

: 0.19 (Clause 7.6.2)

The soil at the site is soft S_a/g : 2.5 as $0.1 \leq T \leq 0.67$:2.5(Clause 6.4.2)

Fundamental Natural Period along Z direction, T_z : **0.09xh / $\sqrt{d_z}$** : 0.09 x 18.3 /$\sqrt{61.35}$

: 0.21(Clause 7.6.2)

The soil at the site is soft S_a/g : 2.5 as $0.1 \leq T \leq 0.67$:2.5(Clause 6.4.2)

Design Horizontal Seismic Coefficient

$$A_h : \frac{Z\,I\,S_a}{2Rg} \quad \text{(Clause 6.4.2)}$$

$$: \frac{0.16 \times 1 \times 2.5}{2 \times 5} : 0.04$$

Seismic Weight of the Building : Total Gravity Load + 0.25 Superimposed Load

W : 200020kN

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Design Seismic Base Shear

V_B : $A_h W$ (Clause 7.2.1)

: 0.04 x 200020 : 8000.8kN

Shear per column : 8000.8 / 217: 36.87kN

Seismic Moment per column : 36.87 x 3.05/2 : 56.23kNm.

2. LOAD CALCULATION FOR COLUMN WITH MAXIMUM MOMENT

Loading area for the column	: 1.2 x 8.4	: 10.08m^2
Gravity Load Reaction from the roof	: 6.125 x 10.08	: 61.74kN
Self Weight of the beams	: 0.3 x 0.475 x 25 x 9.6	: 34.2kN
Weight of the parapet wall	: 0.20 x 1.2 x 20 x 9.6	: 46.08kN
Total Gravity Load		: 142.02kN
Superimposed Load Reaction from roof	: 1.5 x 10.08	: 15.12kN
Superimposed Load Reaction from floor	: 2 x 10.08	: 20.16kN
Gravity Load Reaction from the floor	: 4.125 x 10.08	: 41.58kN
Self Weight of the beams	: 0.3 x 0.475x 25 x 9.6	: 34.2kN
Weight of the 200 mm thick wall	: 0.2 x 2.6 x 20 x 9.6	: 99.84kN
Weight of sinking filling	: 1.6 x 2.74 x20 x 0.25 /2	: 9.9kN
Total Gravity Load		: 185.52kN
Self Weight of the column	: 0.3 x 0.6x 18.3 x 25	: 82.35kN
Total Gravity Load at the foundation *level, kN*	**: 142.02+ 185.52 x 5 + 82.35**	**: 1337.47kN**
Total Superimposed Load at the foundation *level, kN*	**: (15.12 + (20.16 x 6)) x 0.5**	**: 68.04kN**
Total Load	**: 1337.47 + 68.04**	**: 1405.51kN**

The loads for the other columns are calculated in a similar way.

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3. COLUMN DESIGN

Column Size

b	300 mm		fck	25	
D	750 mm		fy	500	
Cover	40 mm	Effect.Length ratio		0.65	IS 456:2000
Ground Floor Height,L	3050 mm	L_{eff1}	0.65 x L		1983 pg.9
First Floor Height,L	3050 mm	L_{eff2}	0.65 x L		1983

Check for slenderness

L_{eff1}/D	3.25	L_{eff1}/b	6.50
L_{eff2}/D	3.25	L_{eff2}/b	6.50

All columns are short about both axis

Size of column and check e_{min}

e_{min} : Leff/500 + D/30 :	28.97				
Find Mmin	0.028966	x	1405.51	:	40.71 kNm
Design Axial Load, P_u :	1405.51 kN				
Design Moment,M_x :	M_{min}:	40.71	kNm		

Designing the column as an axially loaded column with uniaxial moment

Calculation of Area of Steel

Cover	40 mm			
Design Axial Load, Pu :	1405.51 kN			
Design Moment,Mx :	Pu x emin	40.71 kNm		

D	750 mm	fck	25
b	300 mm	fy	500
Cover	40 mm		

Moment from STAAD :168.9kNm

Diameter of rod assumed 25 mm

d' : 40 + 25/2: 52.5 mm

d'/D : 52.5/750 :0.07

$Mz/fckbD^2$: 168.9 x 1.5 x 10^6 / 25 x 300 X 750 750 : 0.06

Pu/fck bD : 1405.51 x 1.5 x 10^3/ 25 x 300 X 750 : 0.40

From SP16 Chart 48

p/fck : 0.04

A_{st} : 0.04 x 25 x 300 x 750/100 : 2250mm^2

However 8 Nos of Y25(3928mm^2) rods are provided.

Also binders Y8 @ 200mm are provided.

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CHECK FOR COLUMN STEEL FOR EARTHQUAKE LOAD

As per Clause 7.10.3 the partial safety factor for limit state design of reinforced concrete is given by **1.2 (DL +IL +EL).**

The load coming on the column: P_u : 1.2(1405.51+(2.5x 0.7x36.87): 1764.039kN

Moment on column: M_u :1.2(168.9+(2.5x0.7x56.23)):320.763kNm

Refer page4,6 for P_u & M_u

30% makes up for the in filled walls, hence the factor 0.7 and 2.5 as per clause 7.10.3 .

$P_u/ f_{ck}\, bd$: 1764.039 x 10^3 /25 x 300 x 750 : 0.32

$M_u/ f_{ck}\, bd^2$: 320.763 x 10^6/25x 300 x 750^2 : 0.08

From chart 48 of SP16 p/f_{ck} : 0.04

A_{st} : 0.04x 25 x 300 x 750/ 100 : 2250mm^2

However 8 Nos Y25 (3928mm^2) rods are provided which is found to be safe for the requirement of steel. Other columns are also designed in a similar way.

Hence the design satisfies the requirements of extra steel for earthquake Loads.

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4. DESIGN OF FOUNDATION

Design of Pile Foundation

Maximum Load on column	: 1568.82kN
Add 10% for self weight of foundation	: 156.882kN
Total Load	: 1725.702kN

Load carrying capacity of 500 dia. pile as per soil test report: 800kN

No : of piles required : 1725.02/800 : 2.16

Provide three piles of 500mm diameter

Providing 0.4% steel

Area of reinforcement required : $\Pi/4 \times 500 \times 500 \times 0.4/100 : 785.39mm^2$

Provide 6Nos of Y16, Area provided : 1206 mm^2

Design of Three Pile Cap

Depth : 750mm, effective depth : 665mm

Along YY, Tension : $P/36Ld\ (4L^2 + b^2 - 3a^2) : 1.5 \times (1725.702/36x1250x665)x$

$(4 \times 1250^2 + 600^2 - 3x300^2)$

: 548.41kN

Along XX,Tension : $P/18Ld\ (2L^2 - b^2) : 1.5 \times (1725.702/18x1250x665)x$

$(2 \times 1250^2 - 600^2)$

: 478.35kN

For Max.Tension, A_{st} : $548.41 \times 10^3 / 0.87 \times 500 : 1260.71mm^2$

However **7 Nos Y16 (A_{st} : 1407mm^2)** rods are provided at the bottom in a width of 1100.

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5. DESIGN OF PLINTH BEAM

Assuming a plinth beam of size 200mm x 375mm.

Self weight of the plinth beam : 0.20 x 0.375 x 25 : 1.875kN/m

Weight of the 200 mm wall : 0.20 x 2.6 x 20 : 10.4kN/m

Total Load on the plinth beam : 1.875 + 10.4 : 12.275kN/m

Maximum Moment for a span of 5m : 12.275 x 1.5 x 5^2 /16 : 28.76kNm

Mu/bd^2 : 28.76 x 10^6 / 200 x 319^2 : 1.45

From Table 3 of SP16 p_t = 0.359, **A_{st} : 0.359x 200 x 319/100 : 229.042mm²**

Top and bottom steel of 3 Nos. of Y12 is provided. Area of steel provided : 339mm²

6. DESIGN OF FLOOR BEAM

Self weight of the beam 300 x 800 : 0.30x0.675x25 : 5.0625kN/m

Weight of 200mm wall : 0.20 x 20 x 2.6 : 10.4kN/m

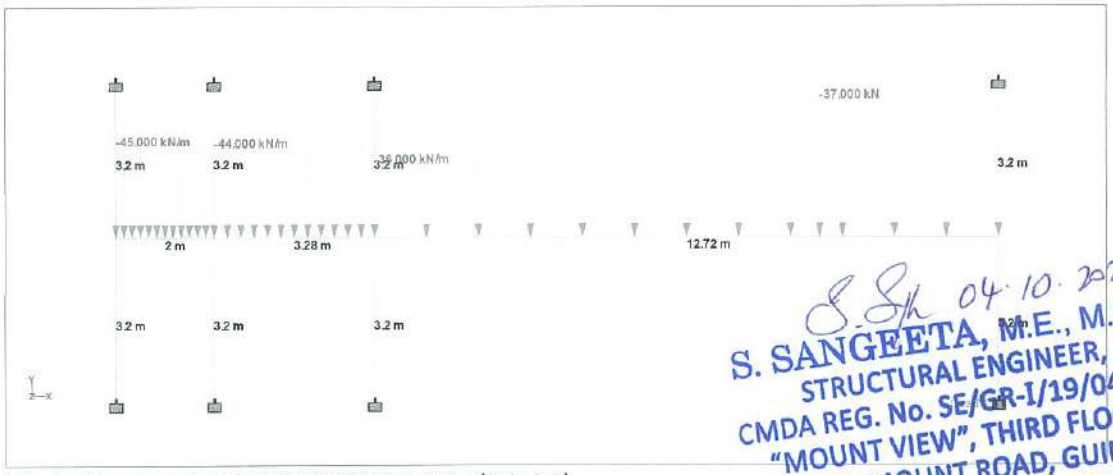
STAAD.Pro Report

Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	1.5(D.L+L.L)

Beam Loads : 1 1.5(D.L+L.L)

Beam	Type	Direction	Fa	Da (m)	Fb	Db	Ecc. (m)
26	UNI kN/m	GY	-45.000	-	-	-	-
33	UNI kN/m	GY	-44.000	-	-	-	-
34	UNI kN/m	GY	-36.000	-	-	-	-
	CON kN	GY	-37.000	9.073	-	-	-



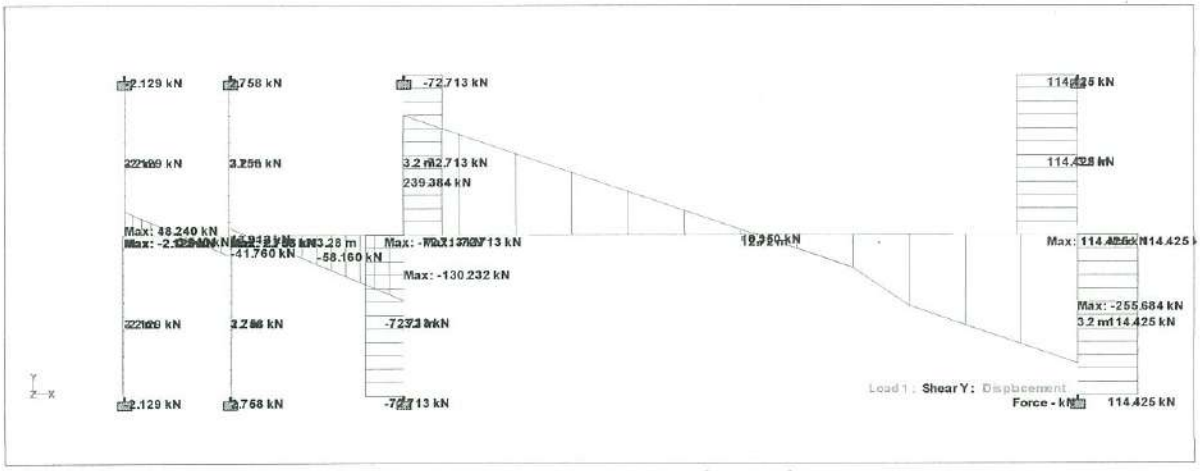
Whole Structure Loads 13.7036kN:1m 1 1.5(D.L+L.L)

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Beam Maximum Shear Forces

Distances to maxima are given from beam end A.

Beam	Node A	Length (m)	L/C		d (m)	Max Fz (kN)	d (m)	Max Fy (kN)
26	9	2.000	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	48.240
				Max +ve	0.000	0.000	2.000	-41.760
33	10	3.276	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	13.912
				Max +ve	0.000	0.000	3.276	-130.232
34	33	12.724	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	239.384
				Max +ve	0.000	0.000	12.724	-255.684
35	10	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	2.758
				Max +ve	0.000	0.000		
36	33	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000		
				Max +ve	0.000	0.000	0.000	-72.713
37	34	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	114.425
				Max +ve	0.000	0.000		
38	10	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	2.758
				Max +ve	0.000	0.000		
39	33	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000		
				Max +ve	0.000	0.000	0.000	-72.713
40	34	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	114.425
				Max +ve	0.000	0.000		
41	9	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000		
				Max +ve	0.000	0.000	0.000	-2.129
42	9	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000		
				Max +ve	0.000	0.000	0.000	-2.129



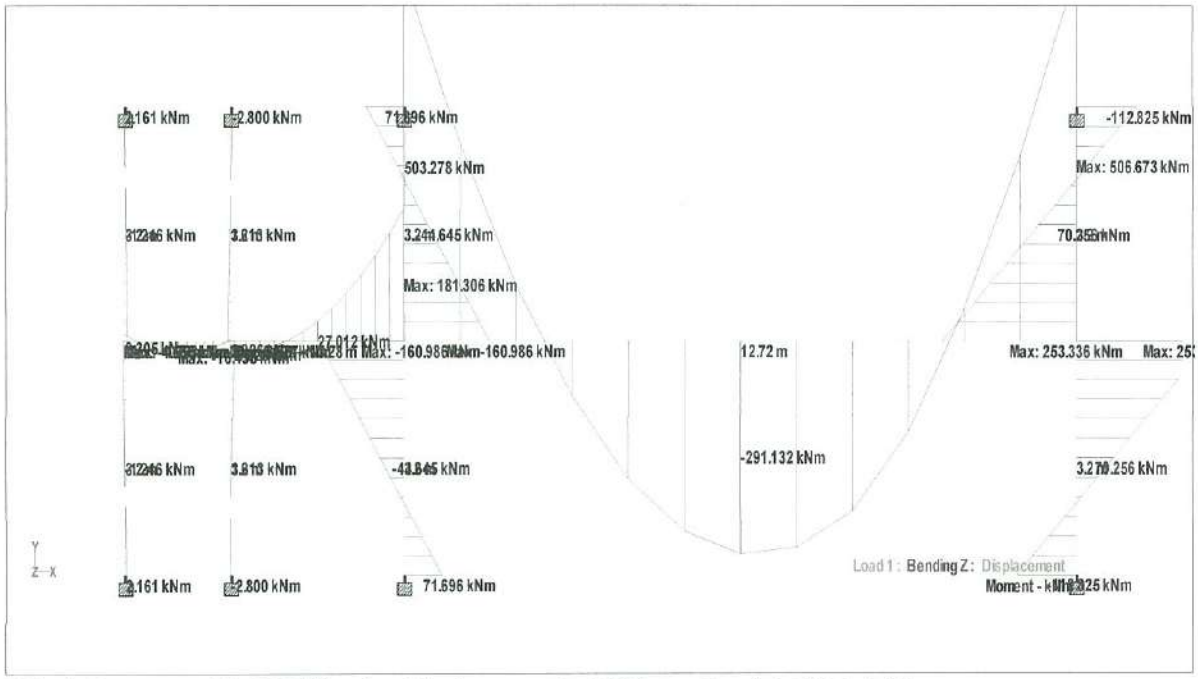
Whole Structure Fy 100kN:1m Displacements 1000mm:1m 1 1.5(D.L+L.L)

Beam Maximum Moments

Distances to maxima are given from beam end A.

Beam	Node A	Length (m)	L/C		d (m)	Max My (kNm)	d (m)	Max Mz (kNm)
26	9	2.000	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	9.305
				Max +ve	0.000	0.000	1.000	-16.435
33	10	3.276	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	3.276	181.306
				Max +ve	0.000	0.000	0.273	-11.386
34	33	12.724	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	12.724	506.673
				Max +ve	0.000	0.000	6.362	-291.132
35	10	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	6.027
				Max +ve	0.000	0.000	3.200	-2.800
36	33	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	3.200	71.696
				Max +ve	0.000	0.000	0.000	-160.986
37	34	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	253.336
				Max +ve	0.000	0.000	3.200	-112.825
38	10	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	6.027
				Max +ve	0.000	0.000	3.200	-2.800
39	33	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	3.200	71.696
				Max +ve	0.000	0.000	0.000	-160.986
40	34	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	0.000	253.336
				Max +ve	0.000	0.000	3.200	-112.825
41	9	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	3.200	2.161
				Max +ve	0.000	0.000	0.000	-4.653
42	9	3.200	1:1.5(D.L+L.L)	Max -ve	0.000	0.000	3.200	2.161
				Max +ve	0.000	0.000	0.000	-4.653

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Whole Structure Mz 100kNm:1m Displacements 1000mm:1m 1 1.5(D.L+L.L)

Maximum moment at the support : 506.673kNm

M_u/bd^2 : 506.673 x 10^6 / 300 x 737.5^2 : 3.1 *From Table 55 of SP16* p_t : 0.863

A_{st} : 0.863 x 600 x 737.5/100 : 1909.39mm², *A_{st} provided: 3Y25+2Y20 (2101mm²).*

Maximum moment at mid span : 291.132kNm

M_u/bd^2 : 291.132 x 10^6 / 300 x 737.5^2 : 1.8, *From Table 3 of SP16* p_t : 0.549

A_{st} : 0.549 x 300 x 737.5/100 : 1214.6 , *A_{st} provided: 3Y20+2Y20 (1570mm²).*

Maximum Shear Force : 255.684kN. For p_t : 0.56

Shear capacity of the section : $\tau_c' bd$: 0.56 x 300 x 737.5 : 123.9 kN

Shear to be carried by the stirrups, V_{us} : 255.648 – 123.9 : 131.748kN

V_{us} /d : 131.748/73.75 : 1.79

For the first span provide Y8ST2@100mm for 2m at supports , Y8st2@ 125 for the next 1m and Y8st2@ 150 for the remaining span.

All the other beams are designed in a similar way.

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7. DESIGN OF FLOOR SLAB

Self Weight of the slab 125mm thick	: 3.125kN/m^2
Floor Finish	: 1 kN/m^2
Live Load	: 2kN/m^2
Total Load	: 6.125 kN/m^2

The slab has two adjacent edges discontinuous

l_y / l_x : 6.4/3.05 : 2.09> 2. The slab is designed as a one-way slab.

Postive moment at midspan for shorter side M_x : w l^2_x /8

: 6.125 x 3.05^2/8 x 1.5 : 10.68kNm

Effective depth required : $\sqrt{10.68x10^6/0.138x25x\ 1000}$

: 55.63mm.

A slab depth of 150mm is provided.

M_u/bd^2 : 10.68 x 10^6 /1000 x 105^2 : 1

From Table 3 of SP16 p_t : 0.242

A_{st} required : 0.242x 1000 x105/100 : 254.1mm^2.

However Y8 @ 125mm c/c (403m^2) is provided along the shorter span.

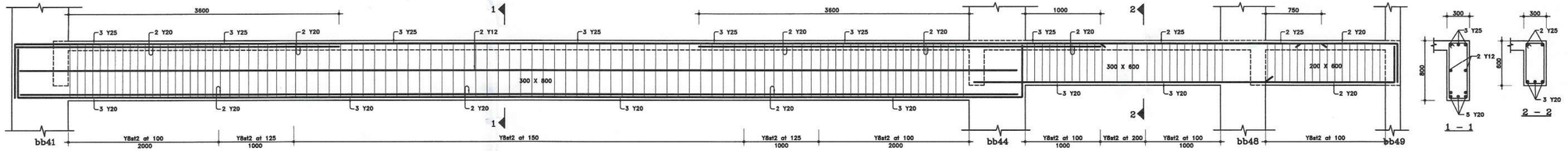
Y8 @ 150 mm c/c (335mm^2) is provided along the longer span.

All other slabs are designed in a similar way.

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APPENDIX



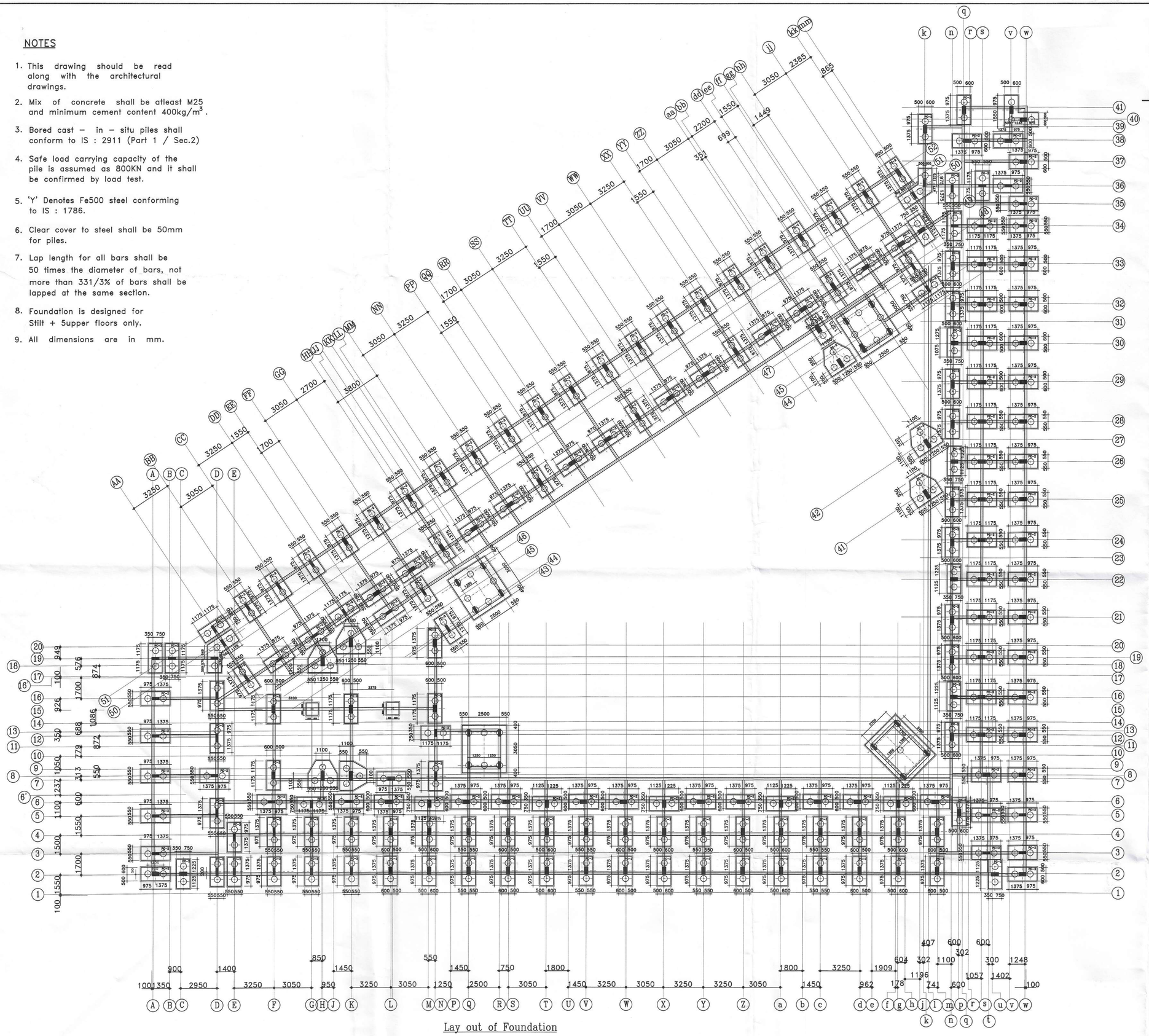
Details of beam bb41 – bb49 300 X 600, 300 X 600 & 200 X 600

24.10.2024

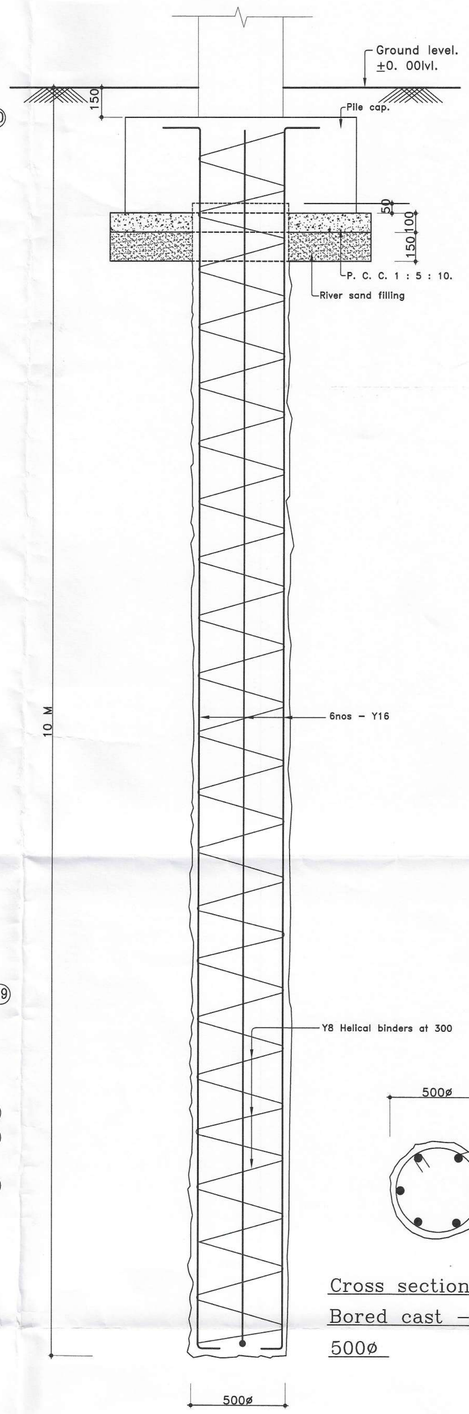
S. SANGEETA, M.E., M.I.E.,
STRUCTURAL ENGINEER,
CMDA REG. No. SE/GR-I/19/04/084
"MOUNT VIEW", THIRD FLOOR,
No. 64, MOUNT ROAD, GUINDY,
CHENNAI-600 032. PH: 9940388755

NOTES

1. This drawing should be read along with the architectural drawings.
2. Mix of concrete shall be atleast M25 and minimum cement content 400kg/m^3.
3. Bored cast – in – situ piles shall conform to IS : 2911 (Part 1 / Sec.2)
4. Safe load carrying capacity of the pile is assumed as 800KN and it shall be confirmed by load test.
5. 'Y' Denotes Fe500 steel conforming to IS : 1786.
6. Clear cover to steel shall be 50mm for piles.
7. Lap length for all bars shall be 50 times the diameter of bars, not more than 331/3% of bars shall be lapped at the same section.
8. Foundation is designed for Stilt + 5upper floors only.
9. All dimensions are in mm.



Lay out of Foundation



Longitudinal section of
Bored cast – in – situ pile
500ø

Cross section of
Bored cast – in – situ pile
500ø

Project

PROPOSED SENIOR CITIZEN RESIDENTIAL DEVELOPEMENT
AT SRIPERAMBUDUR FOR LANCOR

Scale : 1 : 150

Date : 4. October. 2024.

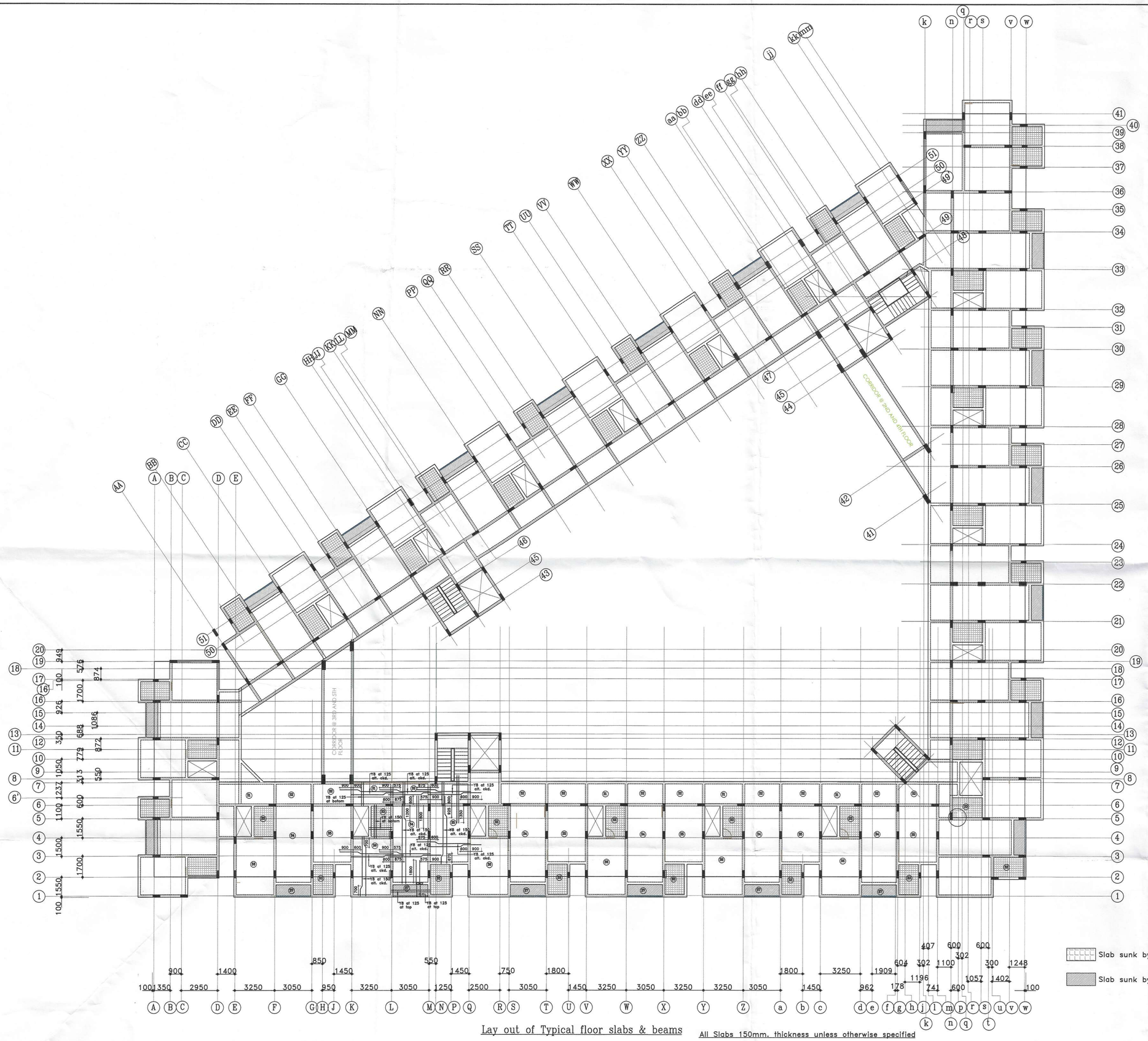
Project Management Consultants
LANCOR HOLDINGS PVT. LTD.
Arihant VTN Square, 2ndfloor, No.58, G.N.Chetty Road, T. Nagar, Chennai – 600 017.

Architects
NATARAJ & VENKAT ASSOCIATES.
18, 3rd Seaward road, Valmiki nagar, Thiruvanmiyur, Chennai –600 041.

Structural Consultants
S. Sgh 04.10.2024
S. SANGEETA, M.E., M.I.E.,
STRUCTURAL ENGINEER,
CMDA REG. No. SE/GR-I/19/04/084
"MOUNT VIEW", THIRD FLOOR,
64, MOUNT ROAD, GUINDY, CHENNAI - 600 032. PH: 9940388755
V. SANGAMESWARAN CONSULTING ENGINEERS
'MOUNT VIEW', Third floor,
64, Mount road, Guindy, Chennai – 600 032.

Details of Pile cap

Designed	Drawn	Checked	Job. no.	Drg. no.
S.Sangeeta	S.Vijayalakshmi	S.S.	2964	PC



Lay out of Typical floor slabs & beams

All Slabs 150mm. thickness unless otherwise specified

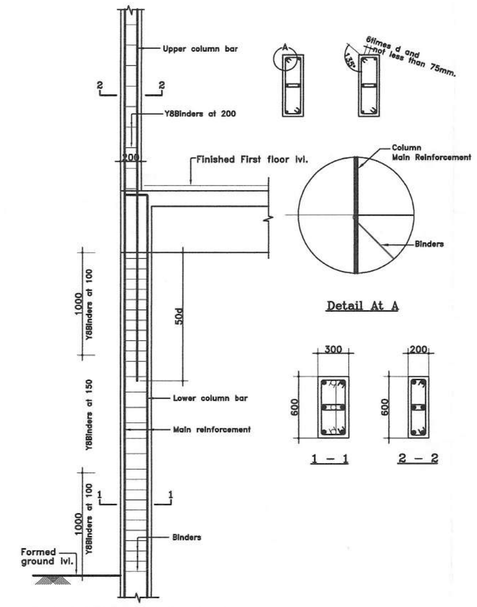
Project	Scale : 1 : 150	Project Management Consultants	Architects	Structural Consultants	Details of Typical floor slabs and beams (1/5)
PROPOSED SENIOR CITIZEN RESIDENTIAL DEVELOPEMENT AT SRIPERAMBUDUR FOR LANCOR	Date : 1. October. 2024.	LANCOR HOLDINGS PVT. LTD. Arihant VTN Square, 2ndfloor, No.58, G.N.Chetty Road, T. Nagar, Chennai – 600 017.	NATARAJ & VENKAT ASSOCIATES. 18, 3rd Seaward road, Valmiki nagar, Thiruvanmiyur, Chennai –600 041.	V. SANGAMESWARAN, "MOUNT VIEW" Third floor 64, Mount road, Guindy, Chennai – 600 032.	Designed: S.Sangeeta; Drawn: S.Vijayalakshmi; Checked: S.S.; Job. no.: 2964; Drg. no.: ST

04.10.2024
S. SANGEETA, M.E., M.I.E.,
STRUCTURAL ENGINEER,
REG. No. SE/GR-1/19/04/-
"MOUNT VIEW", THIRD FLOOR,
No. 64, MOUNT ROAD, GUINDY,
CHENNAI-600 032. PH: 9940388755

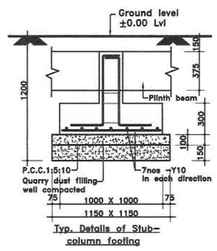
Schedule of Columns
(upto Stilt floor roof)

Sl.no.	Columns									No.off	Size	Cross section	Main reinforcement	Binders
1.	H7	H19	K7	K20	bb41	bb44	dd42	dd44	AA44	8	300 X 750		8nos –Y25	Y8 at 200
2.	F8*	N15*	N20*	AA51*						4	300 X 600		6nos –Y25	Y8 at 200
3.	A2*	C2*	C7*	A19*						4	600 X 300		6nos –Y25	Y8 at 200
4.	FF48*									1	600 X 200		6nos –Y25	Y8 at 200
5.	A3	A5	A8	A12	A13	A16	A19	D8	D19	54	600 X 300		6nos –Y25	Y8 at 200
	F6	K6	L6	Q6	S6	V6	W6	Y6	Z6					
	c6	d6	m6	n16	n22	n26	n30	w5	w8					
	w12	w16	w19	w21	w22	w24	w25	w26	w28					
	w29	w30	w32	w33	w34	w35	w37	w40	BB49					
	CC49	GG49	MM'49	NN49	RR49	SS49	VV49	WW49	ZZ49					
6.	D12	D16	E2	F2	G2	K2	L2	M2	Q2	58	300 X 600		6nos –Y25	Y8 at 200
	S2	T2	V2	W2	X2	Y2	Z2	a2	c2					
	d2	g2	m2	x6	a6	g6	n12	n19	n21					
	n24	n28	n29	n30	BB51	CC51	DD51	EE51	FF51					
	GG51	JJ51	MM'51	NN51	PP51	RR51	SS51	TT51	VV51					
	WW51	XX51	ZZ51	aa51	ee51	hh51	jj51	mm51	AA49					
	DD49	PP49	TT49	XX49										
7.	E4	F4	G4	K4	L4	M4				29	300 X 600		6nos –Y20	Y8 at 200
	Q4	S4	T4	V4	W4	X4								
	Y4	Z4	a4	c4	d4	g4								
	l4	n12	p5	q41	v41	k39								
	n36	MM50	n33	bb48	AA50									
8.	r38	s36	r36	n34	r34					22	600 X 300		6nos –Y20	Y8 at 200
	t3	t5	t8	s12	s16									
	s19	s21	s22	s24	s25									
	s26	s28	s29	s30	s32									
	s33	s34												
9.	N7	h7	N13	Q9	Q13					21	200 X 600		6nos –Y25	Y8 at 200
	R9	R13	e11	g14										
	l10	GG43	HH43	LL43										
	GG48	HH46	LL46	gg44										
	gg47	dd47	JJ45	JJ48										

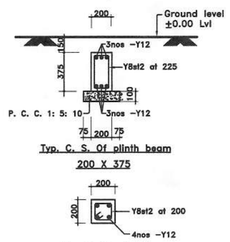
* –Columns terminated at Stilt floor roof



Typical Splicing details of columns



Typ. Details of Stub–column footing

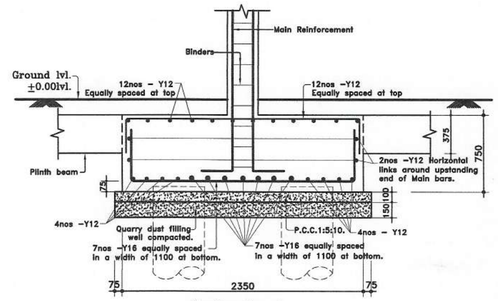


Typ. C. S. Of plinth beam 200 X 375

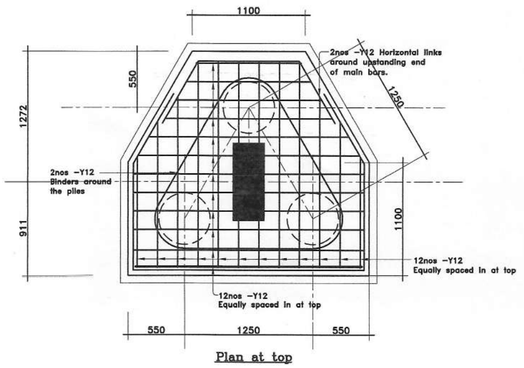
Typ. C. S. of Stub–column 200 X 200

NOTES:

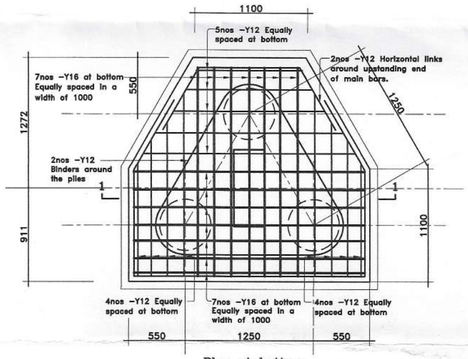
1. All hooks should be bent to an angle of 135 degree with a length 6 times the dia of column main rod and not less than 75mm
2. Grade of concrete for all R.C.C. items of work shall be M25.
3. Lap length for all bars shall be 50 times the dia of the bars.
4. At any cross section of the member not more than 50 % of the bars should be lapped.
5. Laps shall be staggered with a minimum centre to centre distance of 1.3 times lap length of the bar in tendion and compression.
6. Laps in columns shall be provided at mid height and not at slab level.



Section 1 – 1



Plan at top



Plan at bottom

Details of Pile cap –PC3

Project	Scale :	Project Management Consultants	Architects	Structural Consultants	Details of Pile cap				
PROPOSED SENIOR CITIZEN RESIDENTIAL DEVELOPEMENT AT SRIPERAMBUDUR FOR LANCOR	1 : 25	LANCOR HOLDINGS PVT. LTD. Arihant VTN Square, 2ndfloor, No.58, G.N.Chetty Road, T. Nagar, Chennai – 600 017.	NATARAJ & VENKAT ASSOCIATES. 18, 3rd Seaward road, Valmiki nagar, Thiruvanmiyur, Chennai –600 041.	8. Sgs 04.10.2024 V. SANGAMESWARAN CONSULTING ENGINEERS "MOUNT VIEW", Third floor, 64, Mount road, Guindy, Chennai – 600 032.	Designed	Drawn	Checked	Job. no.	Drg. no.
	Date : 4. October. 2024.				S.Sangeeta	S.Vijayalakshmi	S.S.	2964	

S. SANGAMESWARAN, M.E., M.I.E.,
STRUCTURAL ENGINEER,
CMDA REG. No. SE/GR-I/19/04/084
"MOUNT VIEW", THIRD FLOOR,
No. 64, MOUNT ROAD, GUINDY,
CHENNAI-600 032. PH: 9940388755

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

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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.