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KAARVENS

STABILITY CERTIFICATE

09.01.2026

The detailed engineering and structure design of the proposed building comprising of **Stilt Floor + 5 Floors** at **Plot No.360 & 360A**, Survey No. **205/10, 205/8C1A1C, 205/8C1A1E, 205/1A2A1A3, 205/1A2B1A1A2 Morais City Extension-I, Keelakurichi Village & Panchayat, Thiruverumbur Panchayat Union and Taluk, Tiruchirappalli District** has been done by me based on the report of geotechnical investigation (soil test) done by **Dr. B.N.KRISHNASWAMI** Report No.**56** Dated **September 20, 2025** 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 have checked various parameters and found that the proposed building would be safe.
3. I further certify that:
   (i) The minimum grade of concrete is M30 for column & M25 for all other structural elements.
   (ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No IS : 875 (Part 1) – 1987 & IS: 875 (Part 2) - 1987 and design of earthquake resistant structure as per IS Code No IS 1893 (Part 1) – 2016
4. The building will be safe and sound when used for the purpose for which it is designed.

Stamp and Signature

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STRUCTURAL DESIGN CALCULATION REPORT

PROPOSED CONSTRUCTION OF STILT+5FLOORS (HEIGHT-20.72m) RESIDENTIAL APARTMENT BUILDING AT SURVEY NO: 205/10, 205/8C1A1C, 205/8C1A1E, 205/1A2A1A3, 205/1A2B1A1A2, PLOT NO.360 & 360A , KEELAKURICHI VILLAGE, THIRUVERUMBUR TALUK,THIRUCHIRAPALLI DISTRICT.

REV. NO.	R0		R1		R2		R3		ISSUE
	INITIALS	SIGN.	INITIALS	SIGN.	INITIALS	SIGN.	INITIALS	SIGN.	
PPD. BY	JS								R0
CHD. BY	BR								
APD. BY	SKAK								
DATE	09.01.2026								

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1.0 OBJECTIVE:

The Proposed Construction of Residential Building at Survey No: 205/10, 205/8C1A1C, 205/8C1A1E, 205/1A2A1A3, 205/1A2B1A1A2, Ploat No.360 & 360A, Keelakurichi Village, Thiruverumbur Taluk, Thiruchirapalli District.

The building is designed for stilt + five floors. The structure is supported on column in turn resting on column footing foundation. The structure system comprises column, beam, and slab structure.

3D Analysis of all thc building structurc will bc carricd out using STAAD.PRO Sowftwarc package and analysis result shall be used for the various elements.

2.0 DESIGN LOADS:

2.1 Dead Loads:

The Dead loads that are envisaged to act permanently are considered as per IS:875 (Part 1) – 1987 – Dead loads. Indian standard **"Code of Practice for Design Loads (other than earthquakes) for Buildings and Structures."**

1. Slab is assumed to be 150 mm thick – 3.755 KN/m²
2. Floor finish – 1.5 KN/m²
3. AAC Block masonry walls 200mm & 100mm thick are proposed to be used (location of walls per Architectural drawings). Unit weight is taken as 10 KN/m³

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2.2 Imposed Loads

The imposed loads that are envisaged to get permanently are considered as per IS: 875 (Part – 2) – 1987. Indian standard **"Code of Practice for Design Loads (other than earthquake) for Buildings and Structures".**

1. Living = 2 KN/m²
2. Staircase = 3 KN/m²
3. Toilets = 2 KN/m²
4. Terrace floors = 2 KN/m²

2.3 Load combination

Load combination condition is considered as per IS 456.

Table 18 Values of Partial Safety Factor γ_f for Loads
(*Clauses* 18.2.3.1, 36.4.1 *and* B-4.3)

Load Combination	Limit State of Collapse			Limit States of Serviceability		
	DL	*IL*	*WL*	*DL*	*IL*	*WL*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
DL + *IL*	1.5		1.0	1.0	1.0	–
DL + *WL*	1.5 or 0.9[1]	–	1.5	1.0	–	1.0
DL + *IL* + *WL*	1.2			1.0	0.8	0.8

NOTES

1 While considering earthquake effects, substitute *EL* for *WL*.

2 For the limit states of serviceability, the values of γ_f given in this table are applicable for short term effects. While assessing the long term effects due to creep the dead load and that part of the live load likely to be permanent may only be considered.

[1] This value is to be considered when stability against overturning or stress reversal is critical.

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3.0 ANALYSIS METHODS:

The analysis of the structures is carried out using the STAAD PRO. The entire super structure is modeled using frame elements as appropriate. Beams and columns are modeled as frame elements. Appropriate loads and its combinations as per relevant IS code clauses, for most unfavorable effects are chosen for design. Various load cases considered in the analysis are briefed above.

4.0 DESIGN ASSUMPTION:

1. The Base of the Foundation is assumed to be FIXED
2. All concrete elements shall be designed in accordance with IS 456:2000 Limit state design
3. Appropriate loads and its combination as per relevant clauses, for the most unfavorable effects are chosen for design. (Refer Load Combination in Cl.2.3 in the report)

5.0 FOUNDATION DESIGN:

Type of foundation	: Isolated footing
Depth of foundation	: 3m below natural ground level

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6.0 MATERIALS:

The self- weight of the various element are computed based on the unit weight of material as give below:

S.No.	MATERIAL	UNIT WEIGHT kN/m^3
1	REINFORCED CEMENT CONCRETE	25
2	AAC BLOCK	10
3	STEEL	78.50

The minimum grade of concrete is M30 for column & M25 for all other structural elements.
Steel reinforcement shall be of grade Fe 500 confirming to IS: 1786-2008.

7.0 NOMINAL COVER TO REINFORCEMENT

From Durability requirement, exposure condition is assumed as mild for structural elements above ground level and moderate for structural elements below ground level.
The clear cover to reinforcement to meet durability requirement shall be as follows:

- Footing -40mm
- Column - 40mm
- Beam - 25mm
- Slab - 20mm

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8.0 DESIGN CALCULATION:

8.1 FOOTING DESIGN CALCULATION:

GENERAL DATA

Member identification (Node No. / Load Case)	=		
Design Method	=	Limit-State of IS:456-2000	
Unfactored axial load (without selfwt)	=	516	kN
Unfactored moment about X (Anticlock +ve)	=	1	kN.m
Unfactored moment about Z (Anticlock +ve)	=	1	kN.m
Net Safe bearing capacity of soil @ 3.0 m below Finished grade M	=	250	kN/m²
Concrete mix	=	M 25	
Density of concrete	=	25	kN/m³
Density of soil	=	18	kN/m³
Factor of Safety	=	1.50	
Provide size of footing	=	1.60 x 1.35 x 0.38	m
Depth of Ftg @ Edge of Ftg.	=	0.23	m
Size of Column	=	0.45 x 0.2	m
Depth of footing below ground level	=	3	m
Clear cover to steel	=	40	mm
Width of Shoe all round Column	=	# 0.15	m

VERTICAL LOAD:

Weight of entire foundation

((0.38-0.23)/3)* {((((0.2+(2*0.15))*(0.45+(2*0.15))) +(1.6*1.35)+ SQRT[((((0.2+(2*0.15))*(0.45+(2*0.15))) * (1.6*1.35)]}*25+(1.6*1.35*0.23*25)

= 16.71 kN

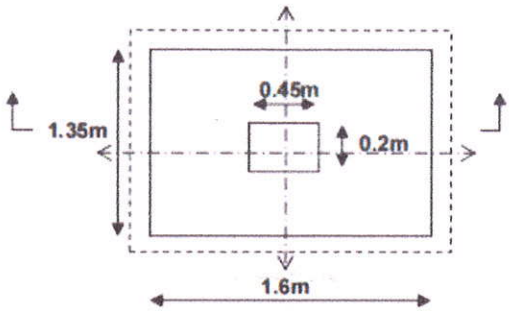
Weight of soil

(1.6*1.35*3*18)-16.71

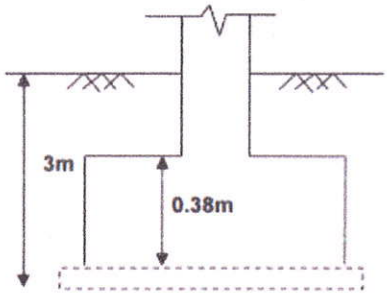
= 99.93 kN

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PLAN



SECTION

DESIGN CALCULATION

CHECK FOR BEARING PRESSURE:

Total Vertical Load

a) Weight of foundation	=	16.71	kN
b) Weight of soil	=	99.93	kN
c) Vertical load from structures	=	516	kN

TOTAL DOWNWARD LOAD = 16.71+99.93+516
= **632.6 kN**

Section Modulus about XX (Zxx)	=	1.6*1.35^2/6	
	=	0.486	Cum
Section Modulus about YY (Zyy)	=	1.35*1.6^2/6	
	=	0.576	Cum

Actual base pressure = (632.64/1.6/1.35)+(ABS(1)/0.486)+(ABS(1)/0.576)

qmax = **296.68** kN/m²

qmin = **289.1** kN/m²

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Max Net Pressure, qmax-γ H = 296.68-3*18

= **242.68 kN/m²**
< **250 kN/m²**
Hence Safe

DESIGN OF FOOTING SLAB:

Maximum base pressure = 296.68 kN/m²

Maximum overhang of pad = (1.6-0.45)/2 =
= 0.58 m

Pressure due to over burden of soil & pad = (3-0.38)*18+0.38*25

= 56.66 kN/m²

Base pressure at face of the pedestal = = (289.1+((296.68-289.1)/1.6*(1.6-0.58)
= 293.93 kN/m²

Maximum cantilever moment at the face of pedestal = 0.5*(296.68+293.93)*0.58*(0.58/3*(293.93+2*296.68)/(293.93+296.68))-56.66*0.58*(0.58/2)
= 40.220 kNm

Overall depth provided 380 mm
Diameter of reinforcement bar = 10 mm
Effective depth provided = 380-50-10/2
= 325 mm

Mu/bd² = 1.5*40.22*1000000/(1000*325^2)
= 0.5712

Percentage of reinforcement required (Pt) = 0.1351
(As per Table 2 of SP16)

A_{st} required = 0.1351/100*(1000*325)

= 439.08 mm²

Minimum reinforcement = 0.12/100*(1000*0.38*1000) = 456 mm²

Provide 10 @ 125 c/c m both ways at bottom.
(A_{st} provided = 628 mm²)
Pt provided = 100*628/(1000*325)= 0.194 **mm²**

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Two Way Shear

Perimeter of the critical section around the pedetal at a distance d/2 from face of pedestal	=	((0.45+2*(325/2/1000))*2)+((0.2+2*(325/2/1000))*2) 2.600 m
Depth at Critical Section	=	325 mm
	=	0.325 m

Allowable punching shear stress

$\tau_c' = k_s \cdot \tau_c$

$ks = 0.5 + \beta_c$

$\beta_c = 0.45/0.2 = 2.25$

ks	=	0.5 + 2
	=	2.8
ks should not be greater than 1	=	1
$\tau_c = 0.25 \sqrt{f_{ck}}$	=	0.25 x $\sqrt{25}$
	=	**1.25 N/mm²**
Allowable maximum load (unfactored) on pedestal from punching shear point of view	=	1.25*(2.6*1000)*0.325/1.5
	=	704.167 kN
Total Downward load	=	516 kN

Hence Safe

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8.2 COLUMN DESIGN CALCULATION:

COLUMN DESIGN CALCULATIONS

Project Name	:	MOS
Client Name	:	MOS
Engineer Name	:	HG
Design File	:	D\Adesktop\New folder (11)\RCDC.rcdx
Analysis File	:	D\Adesktop\New folder (11)\Proposed 2&3 BHK Apartment-MOS-25-02-R0-09.09.2025-HG.std
Analysis Last Modified	:	22-09-25 6:31:11 PM

Definitions Of Terms:

All forces in units kN and m

All reinforcement details like area, spacing are mm

Grade Of steel for 6 mm dia. bars is Fe250. It is irrespective of the grade of steel defined by user in column design.

Neutral axis angle for resultant design moment is with respect to local major axis.

1	β	=	Stiffness proportion factor at joint (column stiffness/Sum of stiffness of all members connected at joint)
2	Δu	=	Elastically computed first order lateral deflection. (Relative deflections)
3	εl	=	Strain at level considered, Calculated ignoring the stiffening of the concrete in tension zone
4	εm	=	Average steel strain at level considered
5	acr	=	Distance from the point considered to the surface of the nearest longitudinal bar
6	Ag	=	Gross area of the column cross section
7	Aeff	=	Effective area of column / wall considered for shear check in sqmm
8	Ak	=	Area of confined concrete core
9	Ash	=	Area of link cross section
10	b	=	Effective Width of Column in mm
11	beff	=	Effective Width of Column in mm
12	B	=	Width / Smaller Dimension of Column in mm
13	d	=	Effective Depth of Column in mm
14	deff	=	Effective Depth of Column in mm
15	D	=	Depth / Larger Dimension of Column OR Diameter of Circular Column in mm
16	Dk	=	Diameter Of core measured to the outside of circular link
17	Ec	=	Modulus of elasticity of concrete
18	Es	=	Modulus of elasticity of steel
19	FcPerm	=	Permissible Stress in Concrete required in N/(sqmm)
20	Fst	=	Stress in steel
21	FstPerm	=	Permissible Stress in Steel required in N/(sqmm)
22	Fck	=	Characteristic compressive strength of concrete cube in N/sqmm
23	Fy	=	Yield Stress Of Steel in N/sqmm
24	h	=	Longer dimension of rectangular link measured to its outer face
25	Hu	=	Total lateral force acting within the story(Story shear)
26	Hs	=	Height of the story (Floor height)
27	k	=	Reduction factor for slenderness moments
28	Max	=	Additional moment due to slenderness about major axis (Along D)
29	May	=	Additional moment due to slenderness about minor axis

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			(Along B)
30	Mminx	=	Moment due to minimum eccentricity along D
31	Mminy	=	Moment due to minimum eccentricity along B
32	Muv	=	Moment capacity of web portion of wall as per clause 9.4.2 and Annex A of IS 13920 - 2016
33	Mux	=	Factored moment Along D (Moment About Major Axis)
34	Muy	=	Factored moment Along B (Moment About Minor Axis)
35	MCap	=	Moment capacity of section for NA angle at design Pu
36	MRes	=	Resultant design moment at angle to local major axis
37	Pb	=	Axial capacity of column along B as defined in 39.7.1.1
38	Pd	=	Axial capacity of column along D as defined in 39.7.1.1
39	Pu	=	Factored axial force
40	Puz	=	Axial load on column as defined in 39.6
41	Pu_Total	=	Sum of Axial loads on all column in the story (Gravity Load)
42	Q	=	Stability Index (factor for checking sway/ non sway condition for a given story)
43	S	=	Link Spacing
44	Shear Strength Enhancement Factor	=	Multiplying factor for shear strength of concrete as per 40.2.2
45	Vur	=	Factored resultant shear force acting on the column
46	Vux	=	Factored shear force Along B
47	Vuy	=	Factored shear force Along D
48	Wcr	=	Surface Crack Width
49	WcrPerm	=	Permissible Crack Width required in mm
50	β	=	It is a Neutral Axis angle corresponding to load angle to find out MCap

Code References:

IS 456

	ELEMENT		CLAUSE / table
1	Max area of reinforcement	:	26.5.3.1-a & b
2	Min area of reinforcement	:	26.5.3.1-a & b
3	Min number of bars	:	26.5.3.1-c
4	Minimum Eccentricity Calc	:	25.4 & 39.2
5	Effective Length	:	25.2
6	Slenderness Moments	:	25.3 & 39.7
7	Design for axial loads	:	39.3
8	Design for axial loads And uniaxial bending	:	39.5
9	Design for axial loads And Biaxial bending	:	39.6
10	Design of horizontal links	:	26.5.3.2
11	Design shear strength	:	40.2
12	Stiffness Proportion Factor, β	:	E-1
13	Stability(Index, Q)	:	E -2
14	Crack width calculation	:	3.8
15	Multiplying factor to Beam Stiffness for effective length calculation	:	SP 24 1983 APPENDIX D

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IS 13920 - 2016

	ELEMENT		CLAUSE / table
1	Spacing of special confining reinforcement	:	10.4 and 7.6
2	C/s area of special confining reinforcement	:	7.6.1
3	Applicability of boundary element	:	10.4.1
4	Muv-Moment Capacity of Web	:	Annex
5	Additional Compressive Force in BE	:	10.4.2
6	Check for BE in tension and compression	:	10.4.2.1 and 10.4.3
7	Shear include due to Beam	:	7.5
8	Minimum Flexural Strength of Column	:	7.2
9	Shear Check at Column Joint	:	9.1
10	Length of wall to thickness ratio	:	10.1.3
11	Type of wall & Minimum reinforcement	:	10.1.4
12	Largest diameter of longitudinal steel bar	:	10.1.8
13	Shear reinforcement in RC wall	:	10.2.3
14	Special confinement reinforcement in Boundary Element	:	10.4.4
15	Minimum vertical reinforcement across horizontal construction joint	:	10.7

General Data

Column No.	:	C6	
Level	:	2.767 m To 5.84 m	
Frame Type	=	Non-Ductile	
Response Reduction Factor	=	3	
Design Code	=	IS 456 : 2000 + IS 13920 : 2016	
Grade Of Concrete	=	M30	N/sqmm
Grade Of Steel (Main)	=	Fe500	N/sqmm
Grade Of Steel (Shear)	=	Fe500	N/sqmm
Grade Of Steel - Flexural Design	=	Fe500	N/sqmm
Grade Of Steel - Shear Design	=	Fe415	N/sqmm
Column B	=	200	mm
Column D	=	600	mm
Clear Cover	=	40	mm
Clear Floor Height @ B	=	2623	mm
Clear Floor Height @ D	=	2473	mm
No Of Floors	=	1	
No Of Columns In Group	=	1	
Column Type	:	UnBraced	
Minimum eccentricity check	:	One Axis at a Time	
Code defined D/B ratio	:	4	
D/B Ratio	:	3 <= 4 Hence, Design as Column	

Flexural Design (Analysis Forces)

Analysis Reference No.	=	917	
Critical Analysis Load Combination	:	201	
Load Combination	=	[2] : 1.5 (LOAD 1: WDL) +1.5 (LOAD 2: SDL) + 1.5 (LOAD 3: LL)	
Critical Location	=	Bottom Joint	
Pu	=	757.14	kN

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Mux	=	-4.83	kNm
Muy	=	-49.12	kNm
Vux	=	-31.4	kN
Vuy	=	2.86	kN

Minimum Eccentricity Check

Since Axial Force is compressive, Min. Eccentricity check to be performed
Most critical case is with Min. Eccentricity check in Y-direction
Minimum Eccentricity Along B :

Minimum Eccentricity	=	Unsupported Length / 500 + B / 30	
	=	11.91	mm
Mminy	=	Pux Minimum Eccentricity	
	=	15.14	kNm

Slenderness Check

Max Slenderness Ratio(L/B)	=	13.12	
	<	60	(Hence Ok)

Column Is Unbraced Along D
Slenderness Check Along D:

Effective Length Factor	=	1	
Slenderness Ratio	=	Effective Length / D	
	=	4.12, Column not Slender Along D	

Column Is Unbraced Along B
Slenderness Check Along B:

Effective Length Factor	=	1	
Slenderness Ratio	=	Effective Length / B	
	=	13.12, Column Slender Along B	
Slenderness moment along B	=	(Pu B/ 2000) (Ley/B)^2	
	=	13.02	kNm
Design slenderness moment along B			
Puz	=	2283.24	kN
Pb	=	596.66	kN
Reduction factor 'k' for slenderness moment	=	(Puz - Pu) / (Puz - Pb) <= 1	
	=	0.9 <= 1, Hence k=0.9	
Msindy	=	k x 13.02	
	=	11.78	kNm

Calculation of Design Moment

Direction	Manalysis	Mmin (Abs)	Mdesign	Msindx (Abs)	Mdesign-final
	A	B	C	E	F
Major Axis - Mux	-4.83	---	-4.83	0	-4.83
Minor Axis - Muy	-49.12	15.14	-49.12	11.78	-60.9

Where

A = Moments directly from analysis
B = Moments due to minimum eccentricity
C = Maximum of analysis moment and min. eccentricity = Max (A,B)
E = Moment due to slenderness effect

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F = Final design Moment = Max(C- Top Bottom , D- Top Bottom) + E

Final Critical Design Forces

Pu	=	757.14	kN
Mux	=	-4.83	kNm
Muy	=	-60.9	kNm

Resultant Moment (Combined Action)

Moment Capacity Check

Pt Calculated	=	1.53	
Reinforcement Provided	=	8-T16 + 2-T12	
Load Angle	=	Tan^{-1}(Muy/Mux)	
	=	85.46	deg
MRes	=	61.1	kNm
MCap	=	65.35	kNm
Capacity Ratio	=	MRes/MCap	
	=	0.93 <= 1	

Shear Calculation	Along D	Along B
Critical Analysis Load Combination	101	201
Critical Load Combination	[1] : (LOAD 1: WDL) +(LOAD 2: SDL) + (LOAD 3: LL)	[2] : 1.5 (LOAD 1: WDL) +1.5 (LOAD 2: SDL) +1.5 (LOAD 3: LL)
Design shear force, Vu (kN)	1.9095	-31.3973
Pu (kN)	496.07	744.1
Deff , Beff (mm)	552	152
Aeff (sqmm)	110400	91200
Design shear stress, Tv	Vu / (B x Deff)	Vu / (D x Beff)
Tv (N/sqmm)	0.0173	0.3443
Pt (%)	0.764	0.764
Design shear strength, Tc (N/sqmm)	0.5905	0.5905
Shear Strength Enhancement Factor (Compressive Force)	1 + 3 x Pu / (B x D x Fck)	
	1.4493	1.8159
Shear Strength Enhancement Factor (Tensile Force)	-	-
Shear Strength Enhancement Factor (max)	1.5	1.5
Shear Strength Enhancement Factor	1.4493	1.5
Enhanced shear strength, Tc-e (N/sqmm)	0.8558	0.8857
Design shear check	Tv < Tc x Enhancement factor	Tv < Tc x Enhancement factor

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Design Of Links

Links in the zone where special confining links are not required

Normal Links

Diameter of link	=	8	mm
	>	Max. longitudinal bar dia /4	
	=	4	mm

Criterion for spacing of normal links

Min. Longitudinal Bar dia X 16	=	192	mm
Min. dimension of column	=	200	mm
Max. 300 mm	=	300	mm
Provided spacing	=	175	mm

Table For Links

	Required			Provided	
	Normal Design	Shear Design	Ductile Design	Normal Zone	Ductile Zone
Link Dia.	8	---	---	8	---
Spacing	175	---	---	175	---

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8.3 BEAM DESIGN CALCULATION:

KAARVENS	Project	2&3 BHK APARTMENT	Documen	Approved	Date
	Title	FIRST FLOOR	MOS-25-02	SKAK	16.10.2025
Grade of Con. (fc) (N/Sq.mm)	25	Grade of Steel (fy) 500	Clear cover (mm)	25	

DESIGN PARAMETERS										DESGIN FOR BENDING					CHECK FOR DELFECTION	
Beam No. From STAAD	Ult. Mom (Mu) from STAAD (kNm)	Ult. Shear (Vu) from STAAD (kN)	Size (m) b	Size (m) D	Max. Beam Span (m)	Basic Span to depth ratio (Ref. IS 456: 23.2.1)	Clear cover (mm)	Dia of Stir. (mm)	Slender Beam Check	Ast (Prov.) (Sq.mm) (Ten.)	Ast (Prov.) (Sq.mm) (Comp.)	Check for Tension Rft.	Check for Comp. Rft.	Depth Req. (mm)	Check
B1	45.00	90.00	0.2	0.38	5.00	20	25	8	SIZE OK	339.3	339.3	Safe	Safe	210.32	Safe
B2	68.00	90.00	0.2	0.38	7.00	20	25	8	SIZE OK	628.4	226.2	Safe	Safe	322.63	Safe
B3	90.00	103.00	0.2	0.38	6.00	20	25	8	SIZE OK	804.4	402.2	Safe	Safe	292.17	Safe
B4	95.00	124.00	0.2	0.45	7.00	20	25	8	SIZE OK	628.4	226.2	Safe	Safe	349.67	Safe
B5	119.00	160.00	0.2	0.45	7.00	20	25	8	SIZE OK	804.4	402.2	Revi	Safe	359.55	Safe
B6	151.00	175.00	0.2	0.45	7.00	20	25	8	SIZE OK	1030.6	402.2	Safe	Safe	371.69	Safe
B7/CAB1	116.00	102.00	0.2	0.45	3.00	7	25	8	SIZE OK	804.4	804.4	Safe	Safe	395.30	Safe
B8/CAB2	178.00	134.00	0.2	0.45	3.00	7	25	8	SIZE OK	1256.8	1256.8	Safe	Safe	393.87	Safe
B9	180.00	166.00	0.2	0.45	7.00	20	25	8	SIZE OK	1256.8	628.4	Safe	Safe	360.45	Safe
B10	536.00	510.00	0.2	0.9	7.00	20	25	10	SIZE OK	2945.6	2945.6	Safe	Safe	238.59	Safe

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8.4 SLAB DESIGN CALCULATION:

Project 2&3 BHK APARTMENT

Title FLOOR SLAB

Garde of steel fy 500 N/mm²

Garde of concrete fck 25 N/mm²

Clear cover 15.00 mm

Slab ID	Shorter Span		Longer Span		Shorter Span	Longer Span	Span Ratio	Floor Finish	Load Factor	Live Load	Check for Deflection					Short Span		Long Span		Slab Thickness
	ft	in	ft	in	(m)	(m)		(kN/m²)	(kN/m²)	(kN/m²)	Type of Slab	Allow Span/ Depth Ratio	Span/ Depth =L/dxF1xF2	Actual Span/Depth Ratio	Check	Dia mm	Spacing mm	Dia mm	Spacing mm	mm
5" thk	5	0	9	0	1.53	2.74	1.79	1.50	1.50	2.00	S.S	20	43.149	14.434	Safe	Y8@	175	Y8@	200	125
5" thk	13	0	16	6	3.97	5.03	1.27	1.50	1.50	2.00	S.S	20	43.558	37.453	Safe	Y8@	150	Y8@	175	125
6" thk	15	6	17	3	4.73	5.26	1.11	1.50	1.50	2.00	S.S	20	40.198	36.385	Safe	Y10@	175	Y10@	200	150
6" thk	17	9	21	6	5.42	6.55	1.21	1.50	1.50	2.00	S.S	20	41.766	41.692	Safe	Y10@	150	Y10@	175	150

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STABILITY CERTIFICATE

09.01.2026

The detailed engineering and structure design of the proposed building comprising of **Stilt Floor + 4 Floors at Plot No.416, S. No. 205/4C2, 205/4D1A1B, 205/4E1A5A, Morais City Extension-I, Keelakurichi Village & Panchayat, Thiruverumbur Panchayat Union and Taluk, Tiruchirappalli District** has been done by me based on the report of geotechnical investigation (soil test) done by **Dr. B.N.KRISHNASWAMI** Report No.**53** Dated **September 19, 2025** 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 have checked various parameters and found that the proposed building would be safe.
3. I further certify that:
   (i) The minimum grade of concrete is M30 for column & M25 for all other structural elements.
   (ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No IS : 875 (Part 1) – 1987 & IS: 875 (Part 2) - 1987 and design of earthquake resistant structure as per IS Code No IS 1893 (Part 1) – 2016
4. The building will be safe and sound when used for the purpose for which it is designed.

S. K. Arun Kamaraj

Stamp and Signature

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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
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Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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