

STABILITY CERTIFICATE

(To be furnished while filing application for registration of building)

The detailed engineering and structure design of the proposed building comprising of basement +stilt + 5 floors at uppilipalayam village S.No 504/1 has been done by me/us based on the report of geotechnical investigation (soil test) done by Geodesign India Private Limited Report No.Geo - G - 219 - 2025 - 26 Dated 27.12.2025 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/We have checked various parameters and found that the proposed building would be safe.

3. I/We further certify that:

(i) The minimum grade of concrete is M20 & 25

(ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No IS 875 and design of earthquake resistant structure as per IS Code No IS 1893

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



Stamp and Signature

Encl.: Structural Design Calculation

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S.G.STRUCTURAL ENGINEERS

Project	RR IYAL	Doc. No	DBR-IYAL-STR		
		Prepared	MG	Chkd	VS
Title	Design Basis Report	Rev	00	Date	11.05.2026

DESIGN BASIS REPORT

PROPOSED APARTMENT BUILDING FOR RR HOUSING, COIMBATORE.



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CONTENTS

SL No.	PARTICULARS	PAGE No.
1.0	SCOPE	3
2.0	DETAILED DESCRIPTION FOR APARTMENT BUILDING	3
3.0	TECHNICAL SPECIFICATION	3
4.0	GENERAL	4
5.0	SITE LEVELS	4
6.0	STANDARDS AND CODES	4
7.0	LOADINGS	4
8.0	METHOD OF DESIGN	8
9.0	SOIL INFORMATION	9
10.0	DESIGN	9
11.0	FLOOR PLAN	10
12.0	STAAD IMAGE	14
13.0	DESIGN CALCULATION	15


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1.0 SCOPE:

This Document covers the requirement of RCC structural Design of Apartment Building (RR IYAL) (Basement+Stilt+5) for RR HOUSING, Coimbatore.

2.0 DETAILED DESCRIPTION FOR APARTMENT BUILDING:

S. No.	Description	Description
1	Building Size	
1.1	Width of Building (O/O of wall)	22.1 m
1.2	Length of Building (O/O of wall)	66.88 m
2	Column Spacing	As per architectural drawings mentioned below.
3	Floor height	2.47m, 2.85m & 2.9 m from FFL
4	Headroom height	2.44m from terrace FFL
5	Staircase	RCC Staircase with waist slab.
6	Overhead tank	35981 Liters Capacity.
7	Expansion joint	Provided

3.0 TECHNICAL SPECIFICATION:

S. No.	Parameter	Specifications
1.	Type of Building	Rigid Frame Type
2.	Design Consideration	Designed as per IS CODE(Refer:6.0).
3.	Geometrical Requirements of Components	
3.1	Beams	RCC
3.2	Columns	RCC
3.3	Slab	RCC
4.	Grades of Material	
4.1	Grade of concrete	M25 & M20
4.2	Grade of steel	Fe500


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4.0 GENERAL:

All design calculations are carried out in SI System.

5.0 SITE LEVELS:

FFL is assumed as (+) 0.6 m level from FGL.

6.0 STANDARDS AND CODES:

Designs are in accordance with the latest editions of the Standards and Codes of Practice as described below:

IS: 456 – 2000 (Reaffirmed in 2021) - Code of Practice for Plain & Reinforced concrete.

IS: 875-1987 & 2015 (Part 1to5)- Code of Practice for Design loads (other than Earthquake) for Buildings and structures.

IS: 1893-2016- Criteria for Earthquake resistant design of structures.

IS: 13920-2016– Ductile detailing of reinforced concrete structures subjected to seismic force.

7.0 LOADINGS:

Load and Load combinations are generally as per IS:875 (Part 1 to 5)-1987& 2015, unless noted otherwise.

Dead Loads:

Dead Loads are generally taken as per unit weights given in IS: 875 (Part 1)-1987 and as per construction elements like RC slab, floor finishes, screeds, waterproofing, masonry wall, etc.

The following table gives the density of the major materials.

MATERIALS	DENSITY (kN/m ³)
PCC	24.0
Reinforced concrete	25.0
Light weight	9.0
Structural steel	78.5


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A. BRICK MASONRY LOAD CALCULATION

Type-I (Basement Wall Load)

Height of the wall	=	2.47	m
Width of the wall	=	0.15	m
Unit Weight of the Brick Masonry	=	9.0	KN/m ³
Effective Height of the wall	=	2.47	m
Weight per meter length of wall	=	3.33	KN/m
Total UDL	≈	4.00	KN/m

Type-II (Main wall 150mm thick)

Stilt Floor

Height of the wall from beam top	=	2.85	m
Width of the wall	=	0.15	m
Unit Weight of the Brick Masonry	=	9.00	KN/m ³
Effective Height of the wall	=	2.85	m
Weight per meter length of wall	=	3.84	KN/m
Total UDL	=	4.00	KN/m

Type-III (Main wall 150mm thick)

Typical Floor

Height of the wall from beam top	=	2.9	m
Width of the wall	=	0.15	m
Unit Weight of the Brick Masonry	=	9.00	KN/m ³
Effective Height of the wall	=	2.9	m
Weight per meter length of wall	=	3.915	KN/m
Total UDL	=	4.00	KN/m


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Type-IV(Parapet wall 150mm thick)

Height of the wall	=	1.22	m
Width of the wall	=	0.15	m
Unit Weight of the Brick Masonry	=	9.00	KN/m ³
Effective Height of the wall	=	1.22	m
Weight per meter length of wall	=	1.64	KN/m
Total UDL	=	2.00	KN/m

Type-VI (Main wall 150mm thick)

Terrace Floor

Height of the wall from beam top	=	2.44	m
Width of the wall	=	0.15	m
Unit Weight of the Brick Masonry	=	9.00	KN/m ³
Effective Height of the wall	=	2.44	m
Weight per meter length of wall	=	3.29	KN/m
Total UDL	=	4.00	KN/m

Stilt Floor and Typical floor Roof :

(i) Self weight of slab(Thk of slab* 25 KN/m ³)	=	3.125	KN/m ²
(ii) Floor finish, Ceiling finish & Fixtures	=	2.0	KN/m ²
(iii) Total dead load on slab	=	5.125	KN/m ²

Terrace floor and headroom floor Roof

(i) Self weight of slab(Thk of slab* 25 KN/m ³)	=	3.125	KN/m ²
(ii) Floor finish, Ceiling finish & Fixtures	=	2.5	KN/m ²
(iii) Total dead load on slab	=	5.625	KN/m ²

Live Loads:

Live Loads are considered as per IS: 875 – 1987 Part 2.

The load is considered as indicated below

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i) Room & Toilet	=	2.00 KN/m2
ii) Balcony	=	3.00 KN/m2
iii) Lift ,Passage and staircase	=	4.00 KN/m2
iii) Terrace	=	1.50 KN/m2

Seismic Loads:

The Seismic loads on the structure are calculated as per IS: 1893 – 2016. The zone factor considered as indicated below.

Seismic Zone - III

Soil type and Depth of foundation has been taken as per soil investigation report.

Load Combinations:

The load combinations are giving for the most critical conditions on foundations, structures or individual members shall be taken into account.

The load combination indicated in IS:875 (Part 5)-1987& IS: 1893 – 2016 is adopted for the design of civil / structural members. The load combination with corresponding load factor is indicated below.

- a) 1.0[DL+LL]
- b) 1.0DL+0.8[LL+EQX+]
- c) 1.0DL+0.8[LL+EQX-]
- d) 1.0DL+0.8[LL+EQZ+]
- e) 1.0DL+0.8[LL+EQZ-]
- f) 1.0[DL+EQX+]
- g) 1.0[DL+EQX-]


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Title	Design Basis Report	Rev	00	Date	11.05.2026

- h) 1.0[DL+EQZ+]
- i) 1.0[DL+EQZ-]
- j) 1.5[DL+LL]
- k) 1.2[DL+LL+EQX+]
- l) 1.2[DL+LL+EQX-]
- m) 1.2[DL+LL+EQZ+]
- n) 1.2[DL+LL+EQZ-]
- o) 1.5[DL+EQX+]
- p) 1.5[DL+EQX-]
- q) 1.5[DL+EQZ+]
- r) 1.5[DL+EQZ-]
- s) 0.9DL+1.5EQX+]
- t) 0.9DL+1.5EQX-]
- u) 0.9DL+1.5EQZ+]
- v) 0.9DL+1.5EQZ-]

Where,

- DL - Dead Load
- LL - Live load
- EQL - Earthquake Load


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8.0 METHOD OF DESIGN:

Equivalent Static analysis is carried out using Staad Pro v8i Software and load combinations giving the most critical conditions are considered for the design of foundations.

Sub structure is designed for critical load combination by manual calculation.

Reinforced cement concrete - Design as per IS: 456 – 2000 using Staad Pro v8i Software.

Ductile detailing is considered as per 13920 -2016.

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9.0 SOIL INFORMATION:

Safe Bearing Capacity of soil – 370.6kN/m^2 at a depth of 3.3m below NGL is considered as per soil report.

10.0 DESIGN:

10.1 FOUNDATIONS:

Foundation is designed to carry all the loads from super-structure.

10.2 RCC COLUMNS:

RCC columns are designed using the STAAD pro analysis software for critical load conditions and are tabulated in the provided drawing.

10.2 ROOF SLABS AND BEAMS:

All beams are designed using STAAD pro analysis software for critical load conditions. Slab design is carried out manually.

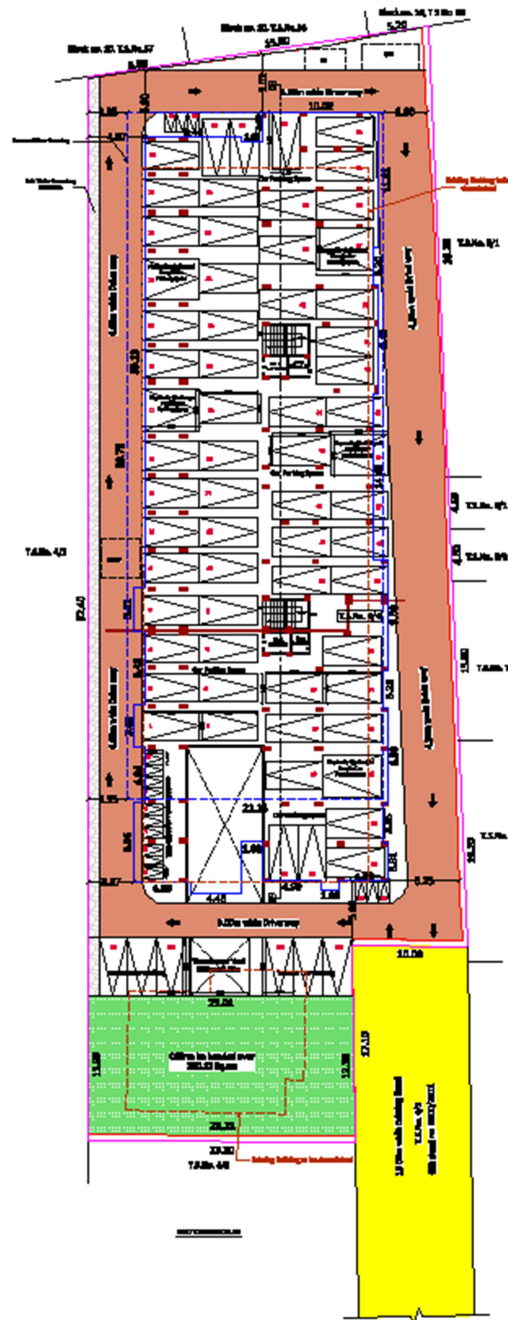

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11.0 FLOOR PLANS:

STILT FLOOR PLAN

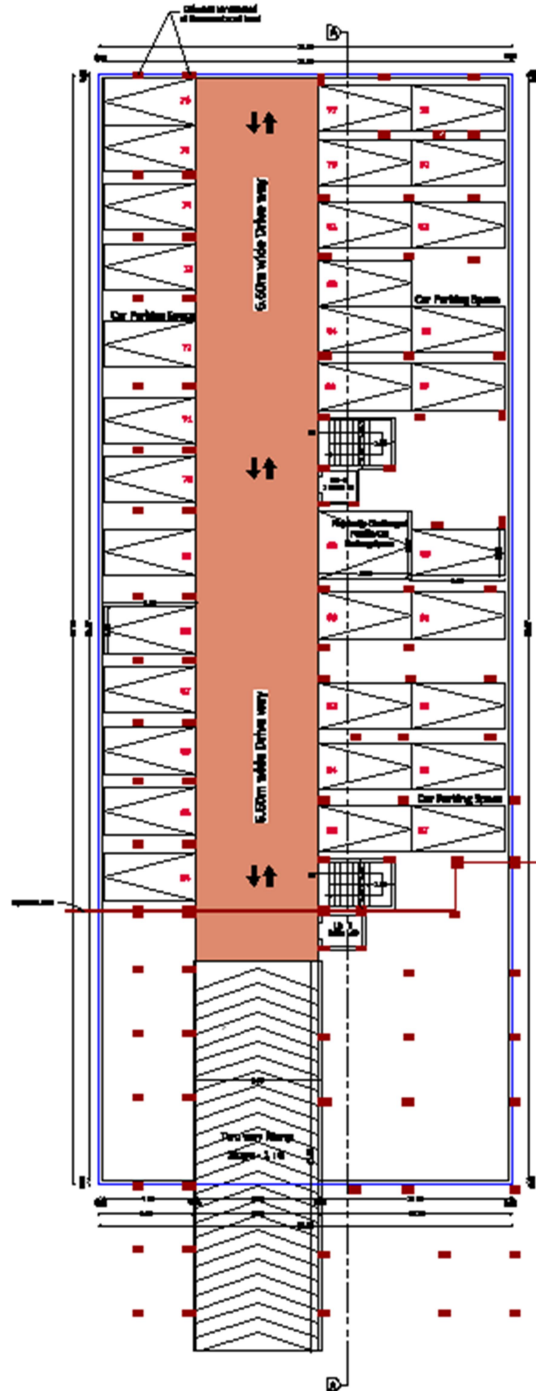



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BASEMENT FLOOR

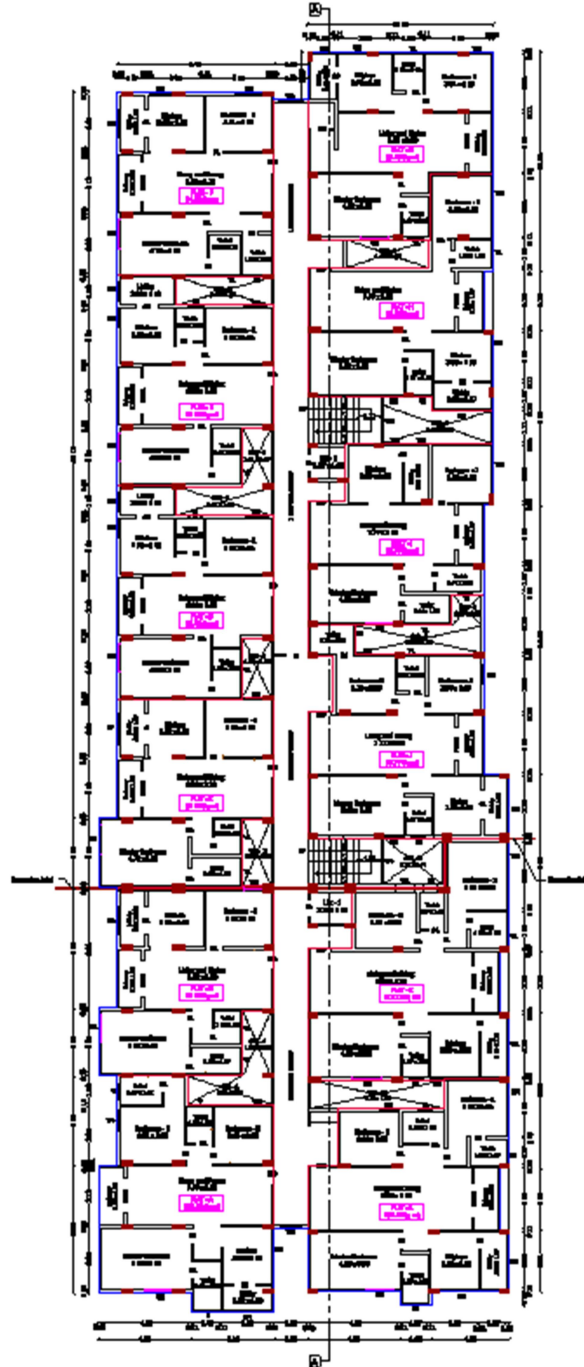


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TYPICAL FLOOR PLAN

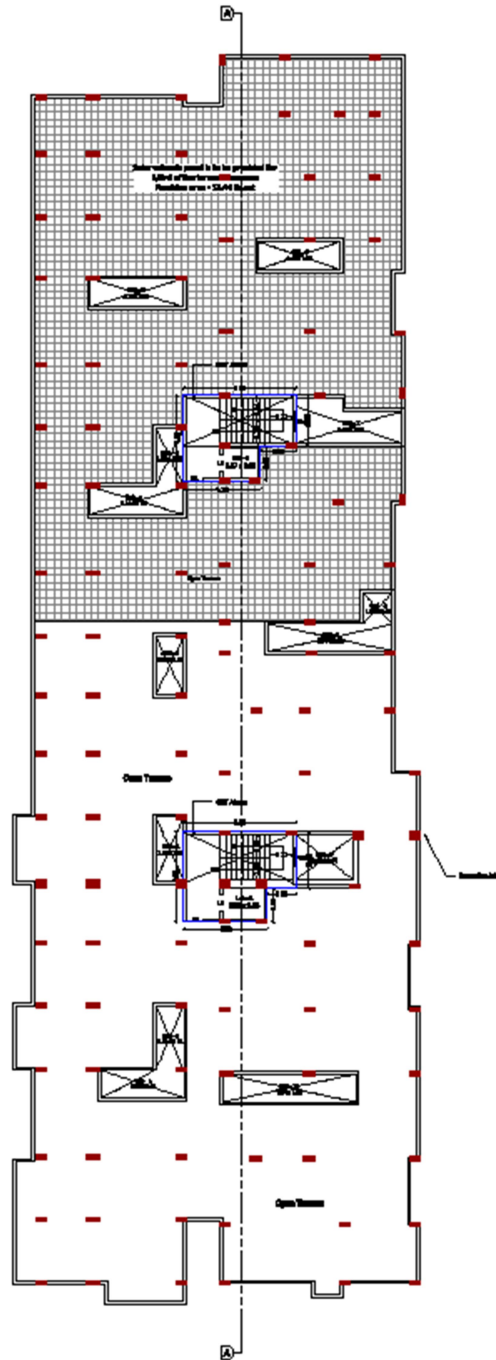



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TERRACE FLOOR PLAN

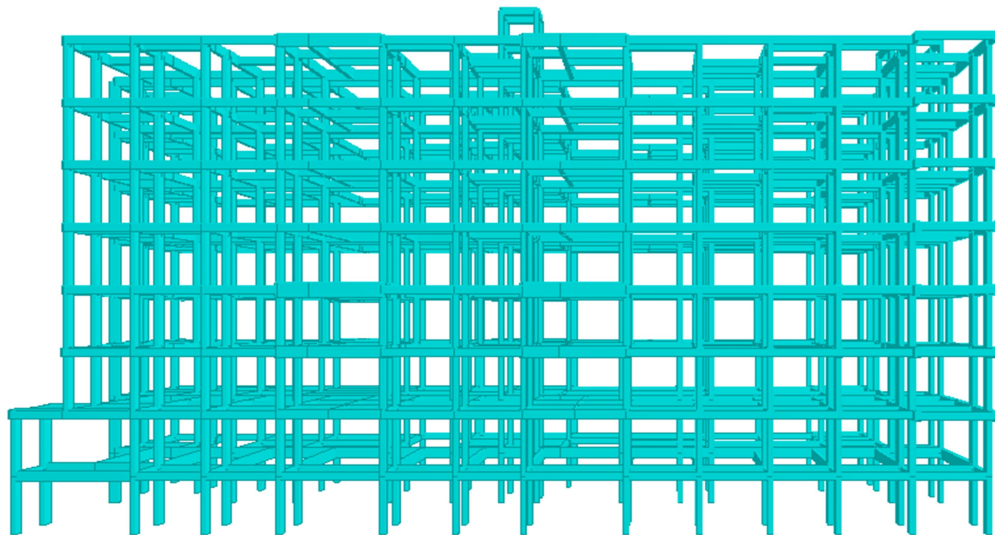
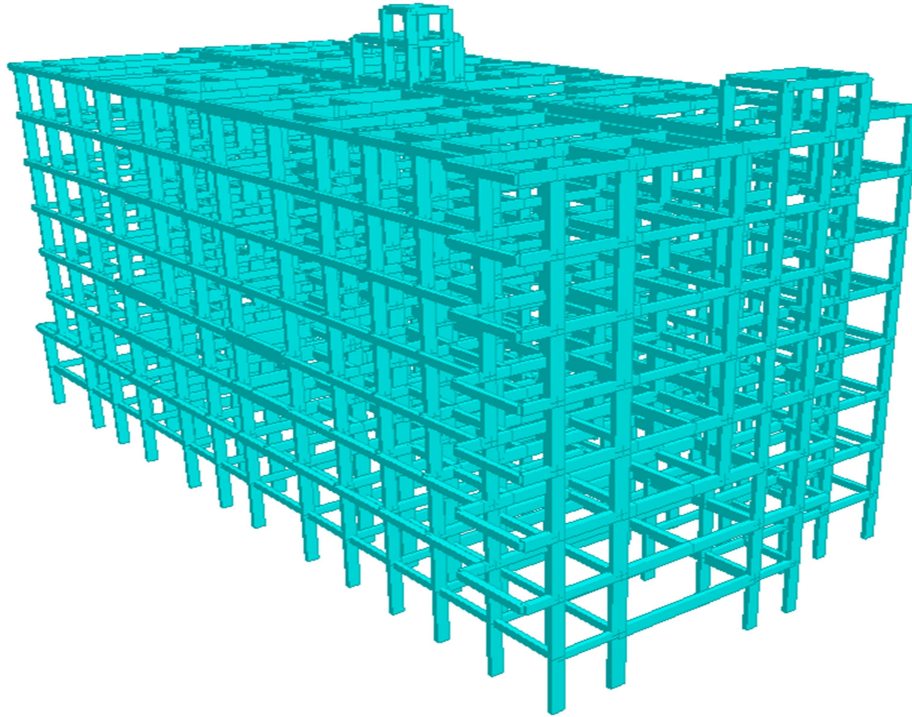


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12.0 STAAD IMAGE:




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13.0 DESIGN CALCULATION:

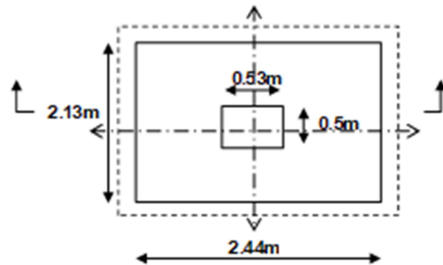
FOOTING DESIGN

GENERAL DATA	Node No:1133
Design Method	= Limit-State of IS:456-2000
Unfactored axial load (without selfwt)	= 1050 kN
Unfactored moment about X (Anticlock +ve)	= -65 kN.m
Unfactored moment about Z (Anticlock +ve)	= 162 kN.m
Net Safe bearing capacity of soil @ 2.3 m below Finished grade lvl	= 370.6 kN/m ²
Concrete mix	= M 25
Density of concrete	= 25 kN/m ³
Density of soil	= 18 kN/m ³
Factor of Safety	= 1.50
Provide size of footing	= 2.44 x 2.13 x 0.68 m
Size of Column	= 0.53 x 0.5 m
Depth of footing below ground level	= 3.3 m
Clear cover to steel	= 75 mm
VERTICAL LOAD:	
Weight of entire foundation	(2.44*2.13*0.68*25)
	= 88.35 kN
Weight of soil	(2.44*2.13*2.62*18)
	= 245.10 kN

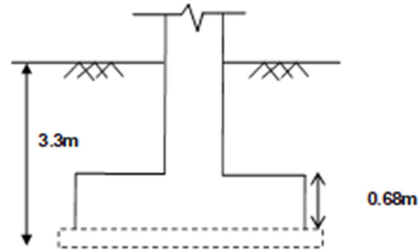

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PLAN



SECTION

DESIGN CALCULATION

CHECK FOR BEARING PRESSURE:

Total Vertical Load

- a) Weight of foundation = 88.35 kN
- b) Weight of soil = 245.1 kN
- c) Vertical load from structures = 1050 kN

$$\begin{aligned} \text{TOTAL DOWNWARD LOAD} &= 88.35 + 245.1 + 1050 \\ &= 1383.5 \text{ kN} \end{aligned}$$

$$\begin{aligned} \text{Section Modulus about XX (Z}_{xx}) &= \frac{2.44 \times 2.13^2}{6} \\ &= 1.845 \text{ Cum} \end{aligned}$$

$$\begin{aligned} \text{Section Modulus about YY (Z}_{yy}) &= \frac{2.13 \times 2.44^2}{6} \\ &= 2.114 \text{ Cum} \end{aligned}$$

$$\begin{aligned} \text{Actual base pressure} &= \frac{(1383.45/2.44/2.13) + (ABS(-65)/1.845) + (ABS(162)/2.114)}{1} \end{aligned}$$

$$q_{\max} = 378.05 \text{ kN/m}^2$$

$$q_{\min} = 154.329 \text{ kN/m}^2$$

Hence Safe


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$$\text{Max Net Pressure, } q_{\text{max}} = \gamma H = 378.05 - 3.3 \times 18$$

$$= 318.65 \text{ kN/m}^2$$

$$< 370.6 \text{ kN/m}^2$$

Hence Safe

DESIGN OF FOOTING SLAB:

$$\text{Maximum base pressure} = 378.05 \text{ kN/m}^2$$

$$\begin{aligned} \text{Maximum overhang of pad} &= (2.44 - 0.53)/2 = \\ &= 0.96 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Pressure due to over burden of soil \& pad} &= \\ &= (3.3 - 0.68) \times 18 + 0.68 \times 25 \end{aligned}$$

$$= 64.16 \text{ kN/m}^2$$

$$\begin{aligned} \text{Base pressure at face of the pedestal} &= \\ &= (154.329081161888 + ((378.05 - 154.329081161888)/2.44 \times (2.44 - 5))) - 64.16 \times 0.96 \times (0.96/2) \end{aligned}$$

$$= 290.03 \text{ kN/m}^2$$

$$\begin{aligned} \text{Maximum cantilever moment at the face of pedestal} &= \\ &= 0.5 \times (378.05 + 290.03) \times 0.96 \times (0.96/3 \times (290.03 + 2 \times 378.05)/(290.03 + 378.05)) - 64.16 \times 0.96 \times (0.96/2) \\ &= 131.120 \text{ kNm} \end{aligned}$$

Overall depth provided 680 mm

$$\text{Diameter of reinforcement bar} = 12 \text{ mm}$$

$$\begin{aligned} \text{Effective depth provided} &= 680 - 75 - 12/2 \\ &= 599 \text{ mm} \end{aligned}$$

$$\begin{aligned} \text{Mu/bd}^2 &= 1.5 \times 131.12 \times 1000000 / (1000 \times 599^2) \\ &= 0.54816 \end{aligned}$$

$$\begin{aligned} \text{Percentage of reinforcement required (Pt)} &= 0.131 \\ &= (\text{As per Table 2 of SP16}) \end{aligned}$$

$$\begin{aligned} A_{st} \text{ required} &= \\ &= 0.131/100 \times (1000 \times 599) \\ &= 784.69 \text{ mm}^2 \end{aligned}$$

$$\text{Minimum reinforcement} = 0.12/100 \times (1000 \times 599) = 718.8 \text{ mm}^2$$

Provide 12 @ 125 c/c m both ways at bottom.

$$(A_{st} \text{ provided} = 905 \text{ mm}^2)$$

$$\text{Pt provided} = 100 \times 905 / (1000 \times 599) = 0.152 \text{ mm}^2 \quad \text{Hence Safe}$$

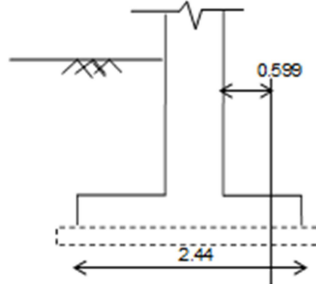

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Project	RR IYAL	Doc. No	DBR-IYAL-STR		
		Prepared	MG	Chkd	VS
Title	Design Basis Report	Rev	00	Date	11.05.2026

CHECK FOR SHEAR

One Way Shear



$$\begin{aligned}
 \text{Overhang of footing beyond critical section for shear} &= (2.44 - 0.59) / 2 = 0.925 \text{ m} \\
 \text{Maximum base pressure} &= 378.05 \text{ KN/m}^2 \\
 \text{Depth at Critical Section} &= 0.599 \text{ m} \\
 \text{Base pressure at a distance "d" from face of the pedestal} &= (154.329081161888 + ((378.05 - 154.329081161888) / 2.44) * 2.44) \\
 &= 323.13 \text{ KN/m}^2 \\
 \text{Downward force from footing} &= 64.16 \text{ KN/m}^2 \\
 \text{Shear force at critical section V} &= 0.5 * (378.05 + 323.13) * 0.356 - 64.16 * 0.356 \\
 &= 101.969 \text{ kN/m} \\
 \text{Shear stress } \tau_v &= 1.5 * 101.969 * 1000 / (1000 * 1000 * 0.599) \\
 &= 0.25535 \text{ N/mm}^2 \\
 \tau_c \text{ (Table 19 of IS 456-2000)} &= 0.293 \text{ N/mm}^2 \\
 &\text{Hence Safe}
 \end{aligned}$$


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Two Way Shear

Perimeter of the critical section around the pedetal at a distance d/2 from face of pedestal

$$= ((0.53+2*(599/2/1000))*2)+((0.5+2*(599/2/1000))*2)$$

$$= 4.456 \text{ m}$$

Depth at Critical Section = 0.599 m

Allowable punching shear stress

$$\tau_c = k_s \cdot \tau_c$$

$$k_s = 0.5 + \beta_c$$

$$\beta_c = 0.53/0.5 = 1.06$$

$$k_s = 0.5 + 1$$

$$= 1.6$$

$$k_s \text{ should not be greater than } 1 = 1$$

$$\tau_c = 0.25 \sqrt{f_{sk}} = 0.25 \times \sqrt{25}$$

$$= 1.25 \text{ N/mm}^2$$

$$\text{Allowable maximum load (unfactored) on pedestal from punching shear point of view} = 1.25(4.456*1000)*0.599/1.5$$

$$= 2224.287 \text{ kN}$$

$$\text{Total Downward load} = 1050 \text{ kN}$$

Hence Safe


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COLUMN DESIGN

1.(Column upto stilt floor roof top) – (NODE-1133)

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=====
          IS-456   L I M I T   S T A T E   D E S I G N
        C O L U M N   N O .   1 7 8 7   D E S I G N   R E S U L T S

          M20                      Fe500 (Main)                      Fe500 (Sec.)

LENGTH:  3000.0 mm  CROSS SECTION:  230.0 mm X  530.0 mm  COVER:  40.0 mm

** GUIDING LOAD CASE:   3  SHORT(Z)           /BRACED LONG(Y)

      DXF IMPORT OF DRAWING1                      -- PAGE NO. 4652

REQD. STEEL AREA   :      389.40 Sq.mm.
REQD. CONCRETE AREA:  48674.80 Sq.mm.
MAIN REINFORCEMENT : Provide   8 - 12 dia. (0.74%,   904.78 Sq.mm.)
                    (Equally distributed)
TIE REINFORCEMENT  : Provide   8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)
-----
Puz :   1239.62  Muz1 :    93.04  Muy1 :    36.69

INTERACTION RATIO: 0.49 (as per Cl. 39.6, IS456:2000)

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)
-----
WORST LOAD CASE:      1
Puz :   1428.25  Muz :    127.57  Muy :    46.01  IR: 0.34
=====

```


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BEAM-1

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 1899 D E S I G N R E S U L T S

M20 Fe500 (Main) Fe500 (Sec.)
LENGTH: 3289.3 mm SIZE: 230.0 mm X 380.0 mm COVER: 30.0 mm

SUMMARY OF REINF. AREA (Sq.mm)

SECTION	0.0 mm	822.3 mm	1644.7 mm	2467.0 mm	3289.3 mm
TOP REINF.	134.90 (Sq. mm)	134.90 (Sq. mm)	0.00 (Sq. mm)	0.00 (Sq. mm)	0.00 (Sq. mm)
BOTTOM REINF.	0.00 (Sq. mm)	0.00 (Sq. mm)	134.90 (Sq. mm)	134.90 (Sq. mm)	134.90 (Sq. mm)

DXF IMPORT OF DRAWING1

-- PAGE NO. 2484

SUMMARY OF PROVIDED REINF. AREA

SECTION	0.0 mm	822.3 mm	1644.7 mm	2467.0 mm	3289.3 mm
TOP REINF.	3-10d 1 layer(s)	3-10d 1 layer(s)	2-10d 1 layer(s)	2-10d 1 layer(s)	2-10d 1 layer(s)
BOTTOM REINF.	2-10d 1 layer(s)	2-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)	3-10d 1 layer(s)
SHEAR REINF.	2 legged 8d @ 125 mm c/c	2 legged 8d @ 125 mm c/c	2 legged 8d @ 125 mm c/c	2 legged 8d @ 125 mm c/c	2 legged 8d @ 125 mm c/c

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 460.0 mm AWAY FROM START SUPPORT

VY = 9.30 MX = -0.12 LD= 4
Provide 2 Legged 8d @ 125 mm c/c

SHEAR DESIGN RESULTS AT 460.0 mm AWAY FROM END SUPPORT

VY = 4.40 MX = -0.12 LD= 4
Provide 2 Legged 8d @ 125 mm c/c


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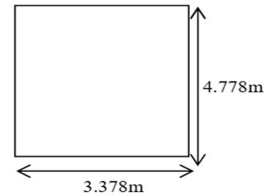
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SLAB DESIGN:

GENERAL DATA

Shorter dimension of slab, l_x	3.38 m
Longer dimension of slab, l_y	4.78 m
l_y/l_x	1.41
Assuming thickness of slab	125 mm
Consider width	1000 mm
f_{ck}	25 kN/m ²
f_y	500 kN/m ²

Twoway Slab



Type of panel -	Interior panel
Clear cover to reinforcement	20 mm

Loads

Live load	2 kN/m ²
Dead load	3.125 kN/m ²
Floor Finish	2 kN/m ²
Total load	7.125 kN/m ²
Fact. load	10.69 kN/m ²

Typical design calculation

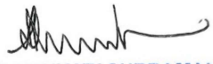
$$\begin{aligned}
 M_u &= \text{Coeff} * W_u * l_x * l_x && \text{(Coefficient from IS:456)} \\
 &= 0.051 * 10.69 * 3.378 * 3.378 \\
 &= 6.23 \text{ kN-m} \\
 M_u / b d^2 &= (6.23 * 10^6) / (1000 * 100^2) \\
 &= 0.623 \text{ N/mm}^2 \\
 P_t &= 0.204 && \text{(From SP-16, Table-3)} \\
 A_{st} &= (0.204 * 1000 * 100) / 100 \\
 &= 204 \text{ mm}^2 \\
 \text{Spacing} &= (3.14 * 10 * 10 / 4 / 204) * 1000 \\
 &= 384.81 \text{ mm}
 \end{aligned}$$

Short span direction	Coeff	Mu (kNm)	Mu / b d ²	P _t	A _{st}	Dia	Spacing
Negative moment @ continuous edge	0.051	6.22	0.622	0.154	154	10	509.75
Positive moment @ midspan	0.039	4.76	0.48	0.118	118	10	665.26

Long span direction	Coeff	Mu (kNm)	Mu / b d ²	P _t	A _{st}	Dia	Max. Spacing
Negative moment @ continuous edge	0.032	3.90	0.39	0.118	118	8	425.77
Positive moment @ midspan	0.024	2.93	0.29	0.118	118	8	425.77

Reinforcement provided

Ast provided in short span	=	523.33	mm ²	Ast provided in long span	=	334.93	mm ²
Spacing provided in short span	=	150.00	mm	Spacing provided in long span	=	150.00	mm
P _t provided in short span	=	0.52		P _t provided in long span	=	0.33	
Hence spacing is safe				Hence spacing is safe			
Minimum effective depth required	d _{reqd.}	=	42.46 mm	(SQRT(MAX(Mu/0.138*f _{ck} *1000)))*1000			
Minimum effective depth provided	d _{prov.}	=	(125-20-10/2)	100 mm			
Minimum reinforcement	A _{st min}	=	(0.12*1000*100/100)	120 mm ²			
		=	120				
Depth provided is greater				than minimum effective depth required			
Hence safe							


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Check for shear

Maximum shear force @ support

$$V_u = W L_x / 2$$

$$= (10.69 \times 3.378) / 2$$

$$= 18.06 \text{ kN}$$

Actual shear force

$$\zeta_v = V_u / b d$$

$$= (18.06 \times 1000) / (1000 \times 100)$$

$$= 0.18 \text{ N/mm}^2$$

% of tension rft. provided in support pt

$$= 0.52$$

IS:456-2000 Table-19

Allowable shear stress

$$\zeta_c = 0.5$$

As per IS:456,cl:40.2.1.1 k value for slab =

$$1.3$$

Design shear stress for concrete

$$k \times \zeta_c = 0.65$$

Actual shear stress

<
Hence safe

Design shear stress

Check for deflection

Type of slab

Simply supported

Allowable span / depth ratio =

$$l/d = 20 \quad [\text{As per IS:456-2000, Cl:23.2.1(a)}]$$

Percentage of tension reinforcement =

$$0.52$$

Steel stress of service loads

$$f_s = 0.58 f_y (\text{Area of steel required} / \text{Area of steel provided})$$

$$65.39 \text{ N/mm}^2$$

Corresponding comp. rft.

Percentage of comp. reinforcement =

$$0.33$$

Modification factor for tension rft.

$$F_1 = 2.00 \quad (\text{From fig:4 ,IS:456-2000})$$

Modification factor for comp. rft.

$$F_2 = 1.110 \quad (\text{From fig:5 ,IS:456-2000})$$

Modified span/depth ratio

$$= l/d \times F_1 \times F_2$$

$$44.4$$

Actual span/ depth ratio

$$= 33.78$$

Actual span/ depth ratio

<
Hence safe

Modified span / depth ratio

At Short span direction

Provided T10@ 150mm c/c

At Longer span direction

Provided T8@ 150mm c/c


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