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# *STRUCTURAL DESIGN BRIEF*

THE PROPOSED CONSTRUCTION OF RESIDENTIAL GROUP DEVELOPMENT BUILDINGS IN S.F.NOS: 45/1B2B & 46/1B1 AT KALAPATTI WEST VILLAGE, EAST ZONE, NORTH TALUK, COIMBATORE CORPORATION, COIMBATORE DISTRICT.

## " SREEVATSA VRINDAVAN"

S. MURUGESH, M.E.,FIE.,
Chartered Engineer F-1279323
Structural Engineer Grade-I
(Coimbatore LPA/SE/Gr-I/061/2024/01-08-2024)

**SANKAR & ASSOCIATES, ARCHITECTS & PLANNERS,**
**COIMBATORE-641 009**

| | | | | |
|---|---|---|---|---|
| CLIENT: | M/s. SREEVATSA - VRINDAVAN | DESIGN: | G + 2 Floors | ARCHITECT & PLANNERS<br>**SANKAR & ASSOCIATES**<br>27 SENGUPTA STREET,<br>RAMNAGAR,<br>COIMBATORE. |
| STRUCTURE NAME : | RESIDENTIAL BUILDING | TITLE: REPORT ON STRUCTURAL DESIGN. | | |
| PLACE: | COIMBATORE | | | |

| Name of Project: | | Name of the Structure: |
|---|---|---|
| RESIDENTIAL VILLA | | RESIDENTIAL GROUP DEVELOPMENT |
| **Report by:** | **Checked by:** | **Approved by:** |
| N.GOWDAMAN | S.MURUGESH | V.P.PONNUSWAMI |

## DESCRIPTION OF THE PROJECT:

The Proposed structure belongs to M/s Sreevatsa Vrindavan. Purpose of this structure is to house "Residential Villa". The structure is designed for Ground floor + Two Upper floors. The structural design was carried out as per IS 456-2000. The dead load and live load are calculated based on IS 875: Part I & II. The structure was analyzed using the software STAAD-PRO V8i.

# STRUCTURAL DESIGN CALCULATION

## I DESIGN PARAMETERS:

1. This structure is designed for Ground floor + Two Upper floors.
2. SBC Adopted as 310 KN/sqm. (As per soil test Report provided)

Table-1 Allowable Safe Bearing Capacity

| Trial Pit No. | Depth Below EGL (m) | Type of Strata | N Value | SBC (kN/m²) B=1.5m |
|---|---|---|---|---|
| TP1, TP4 & TP6 | 1.80 | DG / VSR | >50 | 310 |
| TP2, TP3, TP5, TP7 & TP8 | 1.50 | | | 270 |

GEOCARE Engineering Consultancy CBE-468

- 4 -

Project Code: 092532

GEOCARE ENGINEERING CONSULTANCY — GEOTECHNICAL INVESTIGATION

**CONCLUSION & RECOMMENDATION**

- The subsoil consists of Top Filled Soil followed by Clay, Clayey Gravel, Sandy Gravel and underlain by DG / VSR at explored depth.
- Based on the investigation on the subsoil profile, open foundation of **isolated / combined footing** with tie beam is recommended.
- The recommended SBC for depth of foundation **1.80m** below EGL is **310kN/m²** considering TP1, TP4 & TP6 for a footing width of **1.50m.**
- The recommended SBC for depth of foundation **1.50m** below EGL is **270kN/m²** considering TP2, TP3, TP5, TP7 & TP8 for a footing width of **1.50m.**

3. Concrete grade adopted:
   For Footing & Columns : M25
   For Beams & Slabs : M25
   Grade of steel adopted : Fe 500.
4. Floor height : 3.35m (Typical)

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## II LOAD DETAILS:

### DEAD LOAD:

1. Self weight of slab (Assumed as 130mm Tk.) - 3.25 KN/$m^2$.
2. Self weight of slab (Assumed as 150mm Tk.) - 3.750 KN/$m^2$.

### SUPER IMPOSED DEAD LOAD:

1. Floor finish - 1.5 KN/$m^2$.
2. Unit wt. of brick * Tk of wall * Ht of wall
   (19 x 0.23 x (0.80 x (3.10-0.38)) - 10.00 KN/m.

### SUPER IMPOSED LIVE LOAD:

1. All Rooms and Kitchen - 2 KN/$m^2$
2. Terrace Floor - 1.5 KN/$m^2$

## III LOAD COMBINATION

Loads considered for calculation of horizontal seismic load = DL + 25 % LL

Load case:

1. Dead Load (DL)
2. Live Load (LL)

Load combination:

1. LOAD COMB (1.0 DL + 1.0 LL)
2. LOAD COMB (1.2 DL + 1.2 LL)
3. LOAD COMB (1.5 DL + 1.5 LL)

Location and thickness of walls as depicted in the architectural drawings were considered for loads at appropriate locations in the analysis.

## IV ANALYSIS:

The analysis is performed using software STAAD Pro V8i.

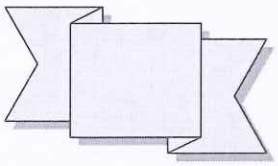
## V DESIGN OF STRUCTURE:

From analysis the columns and beams were grouped as shown in centerline drawing depending on the forces. The footing, column and beams were designed for the maximum forces in-group as per IS456-2000.

## VI STRUCTURAL ARRANGEMENT:

Typical Design Calculation for Column, footing , Beam and Slab in Annexure (II)

# ANNEXURE – I



# TYPICAL COLUMN DESIGN

**Input Data**

| | | | | |
|---|---|---|---|---|
| Breadth | b | = | 300.00 | mm |
| Depth | D | = | 450.00 | mm |
| Clear cover | cc | = | 40.00 | mm |
| Effective cover | d' | = | 56.00 | mm |
| Effective Breadth | b' | = | 244.00 | mm |
| Effective Depth | D' | = | 394.00 | mm |
| Length of column | L | = | 3.20 | m |
| Depth of Beam/Slab framing into coln (Major) | Bd | = | 0.60 | m |
| Depth of Beam/Slab Framing into coln (Minor) | Bd | = | 0.60 | m |
| Clear length in major axis | Lc or Lo | = | 2.60 | m |
| Clear height in minor axis | Lc or Lo | = | 2.60 | m |
| Effective length factor | β | = | 0.80 | |
| Effective length of column | Leff (x-dir) | = | 2.08 | m |
| Effective length of column | Leff (y-dir) | = | 2.08 | m |
| Axial Load (Factored) | N | = | 750.00 | KN |
| Moment about major axis (Factored) | Mx | = | 4.00 | KN-m |
| Moment about minor axis (Factored) | My | = | 12.00 | KN-m |
| Characteristic strength of concrete | fck | = | 25.00 | N/mm^2 |
| Characteristic strength of steel | fy | = | 500 | N/mm^2 |

**Design Calculations:**

**Step1:** Check for Slenderness ratio : Leff/D = 4.62 <12

Check for Slenderness ratio : Leff/b = 6.93 <12

**Design a Short Column**

| | | | | |
|---|---|---|---|---|
| | eax | = | 0.00 | mm |
| | eay | = | 0.00 | mm |
| Slenderness limits for column Lo < 60 b | 2.60 m | < | 18.00 | m |

**Step:2 Check for moment due to minimum eccentricity**

| | | | | |
|---|---|---|---|---|
| Minimum Eccentricity (L/500 + d or b/30) or 20 (whichever | ex | = | 20.00 | mm |
| | ey | = | 15.20 | mm |
| **A.) Moments due to Min eccentricity** | Mex | = | 15.00 | KN-m |
| | Mey | = | 11.40 | KN-m |

**Step:3 Calculation of Additional Moments**

| | | | | |
|---|---|---|---|---|
| Assume Percentage of Reinforcement | p | = | 1.20 | % |
| Reinforcement Equally Distributed on | Four Face | | | |
| | Puz | = | 2126.25 | KN |
| | d'/d along x-dir | = | 0.15 | |
| | d'/b along y-dir | = | 0.20 | |
| | Along x-direction | | | |
| | k1 | = | 0.196 | |
| | k2 | = | 0.256 | |




| | | | | |
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Along y-direction

| | | | |
|---|---|---|---|
| | k1 | = | 0.184 |
| | k2 | = | 0.04 |
| Pb=(k1 + k2 p/Fck)Fck b d) | Pbx | = | 702.97 KN |
| | Pby | = | 627.48 KN |
| k = (Puz - Pu)/(Puz - Pb) | Kx | = | 0.97 |
| | Ky | = | 0.92 |
| **B.) Additional Moments** | Max | = | 0.00 KN-m |
| | May | = | 0.00 KN-m |

**Step:4** Total Moments for which the column is to be designed are

| | | | |
|---|---|---|---|
| **D.) Final Moment** | **Mux** | = | **15.00** KN-m |
| | **Muy** | = | **12.00** KN-m |

**Step:5**

Pu / Fck bD = 0.22

p/Fck = 0.05

*Refer CHART 49 From SP 16 : 1980 for red values

Pu / Fck bD= 0.22 p/Fck= 0.048 d'/D = 0.15

Mux1 / Fck bD^2 = 0.12

**Mux1** = **182.25** KN-m

*Refer CHART 50 From SP 16 : 1980 for red values

Pu / Fck 0.22 p/Fck= 0.048 d'/b = 0.20

Muy1 / Fck bD^2 = 0.11

**Muy1** = **111.38** KN-m

Mux/Mux1 = 0.08

Muy/Muy1 = 0.11

Pu/Puz = 0.35

αn = 1.25

**(Mux/Mux1)^αn + (Muy/Muy1)^αn = 0.10 <1**

**Step:6 Longitudinal Reinforcem** Area of steel Required Asc = 1620.00 mm^2

| Larger dia | | Smaller dia | | |
|---|---|---|---|---|
| Select Bar dia | 16 mm | Select Bar dia | = | 12 mm |
| No. of bars Req | 8.1 | No. of bars Req | = | 3.7 |
| No. of bars Prov | 6 | No. of bars Prov | = | 4 |
| Area Prov. | 1206.37 | Area Prov. | = | 452 |

Area of Steel Provided Asc (pro) = 1658.76 mm^2

Percentage of Steel Provided = 1.23 %

**Provide 6Y16+ 4Y12 as longitudinal reinforcement**

**Step:7 Lateral Ties**

1. Pitch: ( take whichever is lesser)

i. 16x smaller dia of main steel = 175.00 mm

ii. 200 mm = 200.00 mm

Pi = 175.00 mm

2. Diameter (whichever is greater )

i. 1/4 x largest dia of main steel = 4.00 mm

ii. 8mm = 8.00 mm

Dia = 8.00 mm

Therefore provide Y8 @175c/c as Lateral ties.

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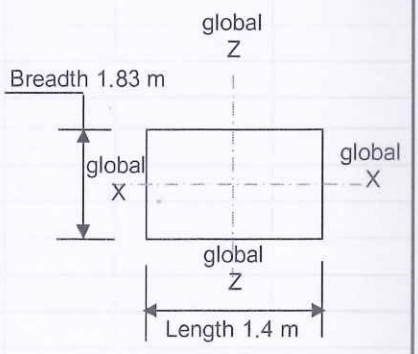
# TYPICAL FOOTING DESIGN

**COLUMN**

| | | |
|---|---|---|
| Length Ll, dim. \|\| X axis ) = | 450 | mm |
| Breadth (B, dim. \|\| Z axis) = | 300 | mm |

**FOOTING**

| | | |
|---|---|---|
| Foot length (L, dim. \|\| X axis) = | 1.40 | m |
| Foot Breadth (B, dim. \|\| Z axis) = | 1.83 | m |
| Thickness of footing (t) = | 500 | mm |
| Clear cover of footing = | 50 | mm |
| Main bar dia of footing = | 12 | mm |
| Effective depth of footing = | **444** | mm |
| Selfweight of the footing = | **32.03** | KN |
| Area of Footing(A) = | **2.56** | $m^2$ |
| Sect mod of foot about Z axis (Zz) = | **0.78** | $m^3$ |
| Sec mod of foot about X axis (Zx) = | **0.60** | $m^3$ |



Footing Dimensions

**MATERIALS OF CONSTRUCTION**

| | | |
|---|---|---|
| Grade of concrete $f_{ck}$ = | 25 | $N/mm^2$ |
| Grade of steel $f_y$ = | 500 | $N/mm^2$ |

**CHECK FOR GROSS BEARING PRESSURE**

| | | |
|---|---|---|
| Safe NET bearing pressure = | 750 | $KN/m^2$ |
| Safe gross bearing pr. = | **786.00** | $KN/m^3$ |
| **Unfactored** load case number = | 0 | |
| Axial load from output (P1) = | 550.00 | KN |
| Moment about Z axis ($M_z$) = | 6.00 | KN-m |
| Moment about X axis ($M_x$) = | 14.00 | KN-m |
| Depth of top of foot. from ground = | 2 | m |
| Unit wt of soil = | 18 | $KN/m^3$ |
| Weight of soil retained above foot = | **39.50** | KN |
| P = (P1+soil+foot self wt) = | **550.00** | KN |
| Maximum bearing pressure = | **285.27** | $KN/m^2$ |
| Minimum bearing pressure = | **183.58** | $KN/m^2$ |

(net pr. + depth of foot * soil unit wt)

$$\frac{P}{A} \pm \frac{M_y}{Z_y} \pm \frac{M_x}{Z_x}$$

**Hence footing is safe against max gross bearing pr.**

**DESIGN FORCES**

| | | |
|---|---|---|
| Factored load comb. no. | 0 | |
| Axial load:($P_u$) = | 825 | **KN** |
| Moment about Z axis ($M_{uz}$) = | 9 | **KN-m** |
| Moment about X axis ($M_{ux}$) = | 21 | **KN-m** |

Maximum effective soil pressure $p_{e\,max}$ = ( Pu/Area+ Muz/Zz + Mux/Zx) = **368.66** $KN/m^2$

212.3552124

Minimum effective soil pressure $p_{e\,min}$ = ( Pu/Area - Muz/Zz - Mux/Zx) = **275.37** $KN/m^2$

Design of footing is done using above maximum effective soil pressure

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**CALCULATION FOR BOTTOM STEEL**

Mu about X1 X1 = ( pe max x length$^2$/2)= **41.59** KN-m per meter

$$A_{st} = \frac{0.5 f_{ck}}{f_y}\left[1 - \sqrt{1 - \frac{4.6 M_u}{f_{ck} b d^2}}\right] bd$$

Mu limit = **524.48** KN-m per meter

The section is singly reinforced

Hence, Ast = **218.120** mm$^2$

Min Ast = **532.800** mm$^2$ (0.12 % for slab, cl 26.5.2.1)

Spacing = **150.00** mm (considering max of above two calculated values of Ast)

pt provided = **0.17** %

Hence provide 12 mm dia bar @ 150 mm c/c parellel to length of footing ( || to Z)

Mu about N1 N1 = ( pe max x length$^2$/2)= **107.87** KN-m per meter

Calc. Ast = **577.595** mm$^2$ The section is singly reinforced

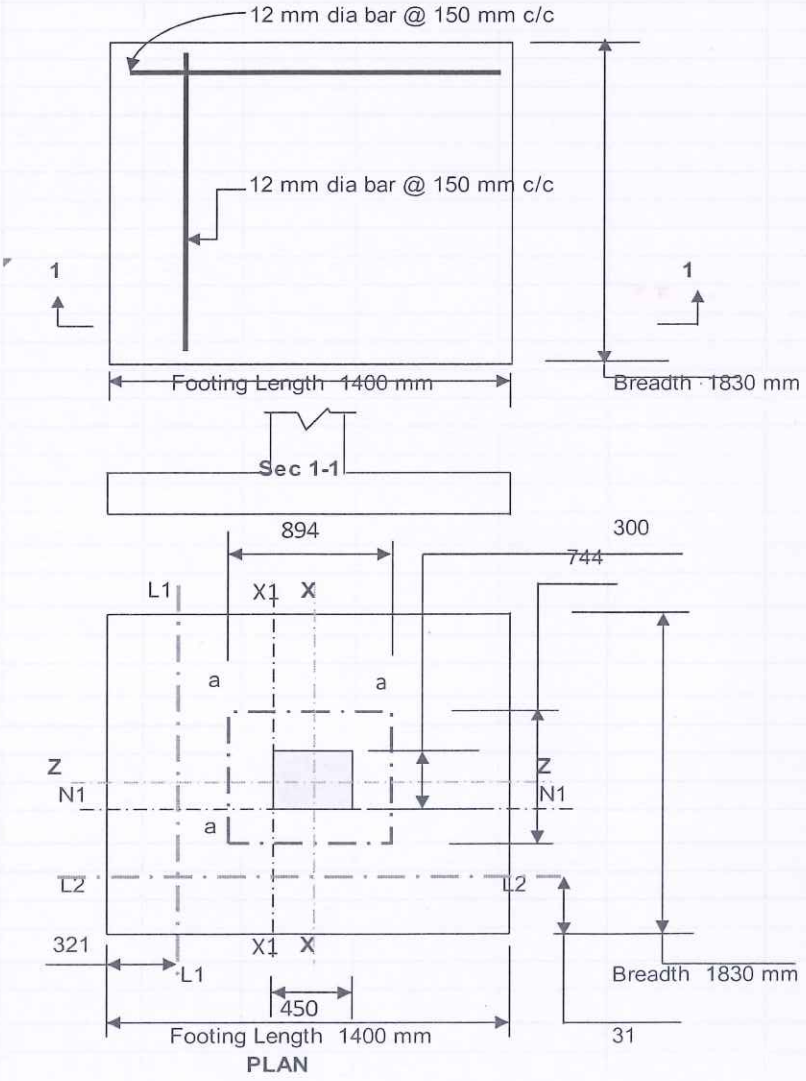
Min Ast = **600** mm$^2$ (0.12 % for slab, cl 26.5.2.1)

Spacing = **150.00** mm (considering max of above two calculated values of Ast)

pt provided = **0.17** %

Hence provide 12 mm dia bar @ 150 mm c/c parellel to breadth of footing ( || to X)

**Arrangement of bottom reinforcement as per above design is shown below**




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**CHECK FOR ONE WAY SHEAR :**

**One way shear at critical section L1- L1**

Distance of critical sec. from edge of footing : **0.321** m

Shear force Vs =pe max x 0.321 x 1m width of footing = **118.340** KN

Shear stress $\tau_v = Vs/bd$ = **0.267** $N/mm^2$

$\tau_c$ = **0.30** $N/mm^2$

**tv < tc hence O.K.**

**One way shear at critical section L2- L2**

Distance of critical sec. from edge of footing : **0.031** m

Shear force Vs =pe max x 0.031 x 1m width of footing = **11.428** KN

Shear stress $\tau_v = Vs/bd$ = **0.026** $N/mm^2$

$\tau_c$ = **0.30** $N/mm^2$

**tv < tc hence O.K.**

**CHECK FOR TWO WAY SHEAR**

Ref. cl 34.2.4 and cl.31.6.3 of IS 456 : 2000

Allowable shear stress $\tau_{v\ allowable} = k_s \tau_c$

$k_s = ( 0.5 + bc)$ = **1.26503** >1

Hence, $k_s$= **1**

$\tau_c = 0.25 (fck)^{0.5}$ = **1.11803** $N/mm^2$

$\tau_{v\ allowable} = k_s \times \tau_c$ = **1.11803** $N/mm^2$

Shear force Vs = 368.66 ( 1.4 x 1.83 - 0.894 x 0.744) = **579.79** KN

Length of critical section = 2 x ( 894 + 744) = **3276** mm

Area of the critical section (length of critical sec x eff. d ) = **1454544** $mm^2$

Hence shear stress $\tau_v$ = **0.399** $N/mm^2$

**tv < allowable hence O.K.**

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# TYPICAL BEAM DESIGN

**SECTION DETAILS** — Floor Level : Ground Floor — **B124**

| | | | | |
|---|---|---|---|---|
| Width of the beam | B | = | 200.00 | mm |
| Depth of the beam | D | = | 450.00 | mm |
| Clear cover of the beam | $C_v$ | = | 25 | mm |
| Grade of concrete | $f_{ck}$ | = | 25 | N/mm^2 |
| Grade of steel | Fy | = | 500 | N/mm^2 |
| Effective length of the beam | L | = | 4 | m |

**FORCE DETAILS FROM ETAB :**

| | | | |
|---|---|---|---|
| Max. sagging moment of the beam | = | 70.00 | kN m |
| LHS Support moment of the beam | = | 89.00 | kN m |
| RHS Support moment of the beam | = | 75.00 | KN m |
| Torsional Moment | = | 0.05 | KN m |
| Shear force at LHS of the beam | = | 160.00 | KN |
| Shear force at RHS of the beam | = | 168.00 | KN |
| Shear force at concentrated load location | = | 0.00 | KN |

## Design of beam at LHS section

**Tension Reinf.**

| | | | |
|---|---|---|---|
| Bending Mt $(Mu)_L$ | = | 89.10 | kN m |
| Breath of the beam ( | = | 200 | mm |
| Effective cover $(d')_L$ | = | 63.5 | mm |
| Effective depth $(d)_L$ | = | 386.50 | mm |
| $x_u$ max/d | = | 0.4560 | |
| $K_L = M_{UL}/(bd^2f_{ck})$ | = | 0.1193 | ( 2.983 ) |
| K'L | = | 0.1338 | |

**Hence comp. reinf. NOT reqd.**

| | | | |
|---|---|---|---|
| Eff. Cover d' (Comp) | = | 63.5 | mm |
| $A_{st}$ lim | = | 733 | $mm^2$ |
| $\Delta A_{st}$ | = | 0 | $mm^2$ |
| fsc | = | 0.0 | $N/mm^2$ |
| $A_{st}$ reqd | = | 634 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 3.2 | 1.16 | 0 |
| Provided | 2 | 2 | 0 |
| Ast prov. | 402 | 402 | 0 |

$A_{st}$ provided = 804 $mm^2$

**Compression Reinf.**

| | | | |
|---|---|---|---|
| $A_{st}$ required | = | 0 | $mm^2$ |
| $A_{st}$ min. | = | 402 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 2 | 0 | 0 |
| Provided | 2 | 2 | 0 |
| Ast prov. | 402 | 0 | 0 |

$A_{st}$ provided = 402 $mm^2$

**Shear Check**

| | | | |
|---|---|---|---|
| Shear force $V_{UR}$ | = | 160.00 | kN |
| $\zeta_v = V_{uL}/bd$ | = | 2.07 | $N/mm^2$ |
| % of reinf provided | = | 1.04 | % |
| Design Stress | = | 0.65 | $N/mm^2$ |
| $\zeta_c$ max | = | 3.10 | $N/mm^2$ |

2 Legged 10 mm Dia stirrups

Design Shear reinf.

| | | | |
|---|---|---|---|
| Reqd. stirrup spac. | = | 240.78 | mm |
| Proived stirrup spac. | = | 150 | mm |

## Design of beam at Max sagging section

**Tension Reinf.**

| | | | |
|---|---|---|---|
| Bending Mt $(Mu)_M$ | = | 70.00 | kN m |
| Breath of the beam ( | = | 200 | mm |
| Effective cover $(d')_M$ | = | 63.5 | mm |
| Effective depth $(d)_M$ | = | 386.50 | mm |
| $x_u$ max/d | = | 0.4560 | |
| $K_M = M_{UM}/(bd^2f_{ck})$ | = | 0.0937 | ( 2.343 ) |
| K'M | = | 0.1338 | |

**Hence comp. reinf. NOT reqd.**

| | | | |
|---|---|---|---|
| Eff. Cover d' (Comp) | = | 43.0 | mm |
| $A_{st}$ lim | = | 733 | $mm^2$ |
| $\Delta A_{st}$ | = | 0 | $mm^2$ |
| fsc | = | 0.0 | $N/mm^2$ |
| $A_{st}$ reqd | = | 475 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 2.4 | 0.37 | 0 |
| Provided | 2 | 2 | 0 |
| Ast prov. | 402 | 402 | 0 |

$A_{st}$ provided = 804 $mm^2$

**Compression Reinf.**

| | | | |
|---|---|---|---|
| $A_{st}$ required | = | 0 | $mm^2$ |
| $A_{st}$ min. | = | 201 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 1 | 0 | 0 |
| Provided | 2 | 0 | 0 |
| Ast prov. | 402 | 0 | 0 |

$A_{st}$ provided = 402 $mm^2$

**Torsional Reinforcement**

| | | | |
|---|---|---|---|
| Torsional Moment | = | 0.05 | kNm |
| $\zeta_{ve}$ | = | 2.08 | $N/mm^2$ |
| $\zeta_c$ max | = | 3.10 | $N/mm^2$ |
| $M_t$ | = | 0.10 | kNm |
| $M_{e2}$ | = | 0.00 | kNm |
| Stirrup spacing reqd | = | 239.78 | mm |
| Sideface. Reinf reqd | = | 0.00 | mm^2 |
| Provide 0 Nos of | | 12 | mm on EVF |
| Ast prov. | = | 0.0 | $mm^2$ |

## Design of beam at RHS section

**Tension Reinf.**

| | | | |
|---|---|---|---|
| Bending Mt $(Mu)_R$ | = | 75.10 | kN m |
| Breath of the beam ( | = | 200 | mm |
| Effective cover $(d')_R$ | = | 63.5 | mm |
| Effective depth $(d)_R$ | = | 386.50 | mm |
| $x_u$ max/d | | 0.4560 | |
| $K_R = M_{UR}/(bd^2f_{ck})$ | = | 0.1005 | ( 2.514 ) |
| K'R | = | 0.1338 | |

**Hence comp. reinf. NOT reqd.**

| | | | |
|---|---|---|---|
| Eff. Cover d' (Comp) | = | 63.5 | mm |
| $A_{st}$ lim | = | 733 | $mm^2$ |
| $\Delta A_{st}$ | = | 0 | $mm^2$ |
| fsc | = | 0.0 | $N/mm^2$ |
| $A_{st}$ reqd | = | 515 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 2.6 | 0.57 | 0 |
| Provided | 2 | 2 | 0 |
| Ast prov. | 402 | 402 | 0 |

$A_{st}$ provided = 804 $mm^2$

**Compression Reinf.**

| | | | |
|---|---|---|---|
| $A_{st}$ required | = | 0 | $mm^2$ |
| $A_{st}$ min. | = | 402 | $mm^2$ |

| Layer | 1st | 2nd | 3rd |
|---|---|---|---|
| Dia of reinf | 16 | 16 | 12 |
| Reqd No. | 2 | 0 | 0 |
| Provided | 2 | 2 | 0 |
| Ast prov. | 402 | 0 | 0 |

$A_{st}$ provided = 402 $mm^2$

**Shear Check**

| | | | |
|---|---|---|---|
| Shear force $V_{UL}$ | = | 168.00 | kN |
| $\zeta_v = V_{uL}/bd$ | = | 2.17 | $N/mm^2$ |
| % of reinf provided | = | 1.04 | % |
| Design Stress | = | 0.65 | $N/mm^2$ |
| $\zeta_c$ max | = | 3.10 | $N/mm^2$ |

2 Legged 10 mm Dia stirrups

Design Shear reinf.

| | | | |
|---|---|---|---|
| Reqd. stirrup spac. | = | 224.41 | mm |
| Proived stirrup spac. | = | 150 | mm |

**CHECK FOR DEFLECTION : As per IS 456**

| | | | |
|---|---|---|---|
| Provided area of reinforcement | = | 804 | |
| Mu/bd^2 | = | 2.34 | |
| Actual Span / Effective depth Ratio | = | 10.35 | |
| Support Condition | = | Continuous | |
| Design service stress | = | 171.16 | |
| Modification factor - Tension reinf. | = | 1.34 | |
| Modification factor - Comp. reinf. | = | 1.15 | |
| Allowable Span /Effective depth Ratio | = | 39.87 | |

==<<< Hence SAFE in Deflection >>>==

| Beam No | Size | Bottom steel | | Top steel | | | Stirrups | | Side Face Reinf. |
|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Curtail | Middle | LHS | RHS | Ends | Mid | |
| RB24 | 200 x 450 | 2Y16+2Y16 | --- | 2Y16 | 2Y16+2Y16 | 2Y16+2Y16 | 2L Y10/150 | 2L Y10/200 | |

SANKAR & ASSOCIATES ★ COIMBATORE ★

| | | | | |
|---|---|---|---|---|
| CLIENT: | M/s. SREEVATSA - VRINDAVAN | DESIGN: | G + 2 Floors | ARCHITECT & PLANNERS **SANKAR & ASSOCIATES** 27 SENGUPTA STREET, RAMNAGAR, COIMBATORE. |
| STRUCTURE NAME : | RESIDENTIAL BUILDING | TITLE: | REPORT ON STRUCTURAL DESIGN. | |
| PLACE: | COIMBATORE | | | |

# TYPICAL SLAB DESIGN

Slab Number : F15 Floor level : Ground Floor Reference grid :

**SPANS :**

| | | | | |
|---|---|---|---|---|
| Shorter span c/c w.r.to beam | B | = | 3.50 | m |
| Longer span c/c w.r.to beam | L | = | 4.00 | m |
| Width of support - shorter span - Left | bxl | = | 450 | mm |
| Width of support - shorter span - Right | bxr | = | 450 | mm |
| Width of support - longer span - Left | byl | = | 600 | mm |
| Width of support - longer span - Right | byr | = | 450 | mm |
| Clear Cover of slab | cv | = | 20 | mm |
| Ratio Ly / Lx | ly/lx | = | 1.15 | < 2 |

**LOAD CALCULATION :**

| | | | |
|---|---|---|---|
| Assume the thickness of the slab | = | 125.00 | mm |
| Effective Depth of the of the slab | = | 100.00 | mm |
| Self Weight of slab | = | 3.125 | KN / m$^2$ |
| Weathering course / Floor finishing | = | 2.000 | KN / m$^2$ |
| Wall load | = | 0.000 | KN / m$^2$ |
| Live Load | = | 3.000 | KN / m$^2$ |
| D.L+L.L | = | 8.125 | KN / m$^2$ |
| 1.5D.L+1.5L.L | = | 12.188 | KN / m$^2$ |

**DESIGN AS TWO WAY SLAB**

Support Condition THREE EDGES DICONTINUOUS (ONE LONG. EDGE CONT.)

**EFFECTIVE SPANS :**

**Shorter span: (Lx)**

| | | | |
|---|---|---|---|
| Clear span + effective depth | = | 3.15 | m |
| Center to centre of supports | = | 3.50 | m |
| Effective span | = | 3.50 | m |

**Longer span: (Ly)**

| | | | |
|---|---|---|---|
| Clear span + effective depth | = | 3.58 | m |
| Center to centre of supports | = | 4.00 | m |
| Effective span | = | 3.58 | m |
| Aspect Ratio Ly / Lx | = | 1.02 | < 2 |

**As per IS 456**

| | | |
|---|---|---|
| + ve Alpha - x | = | 0.044 |
| - ve Alpha - x | = | 0.059 |
| + ve Alpha - y | = | 0.044 |
| - ve Alpha - y | = | 0.000 |

| | | | |
|---|---|---|---|
| Compressive Stength of Concrete | = | 25.00 | N/mm$^2$ |
| Grade of steel | = | 500.00 | N/mm$^2$ |

**BENDING MOMENTS:**

**EFFECTIVE DEPTH OF SLAB**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Positive moment along Shorter dir. | Mx +ve = | 6.57 | KNm / m | dx+ | = | 100.00 | mm | Kx+ | = | 0.026 | Zx+ | = | 95.000 mm |
| Negative moment along Shorter dir. | Mx -ve = | 8.81 | KNm / m | dx- | = | 101.00 | mm | Kx- | = | 0.035 | Zx- | = | 95.950 mm |
| Positive moment along Longer dir. | My +ve = | 6.57 | KNm / m | dy+ | = | 90.00 | mm | Ky+ | = | 0.032 | Zy+ | = | 85.500 mm |
| Negative moment along Longer dir. | My -ve = | 0.00 | KNm / m | dy- | = | 101.00 | mm | Ky- | = | 0.000 | Zy- | = | 95.950 mm |

**REQUIRED AREA OF STEEL :**

| | | | |
|---|---|---|---|
| Ast req. at midspan along x- dir. | ast +ve x = | 155.88 | mm$^2$ |
| Ast req. at midspan along y- dir. | ast +ve y = | 174.58 | mm$^2$ |
| Ast req. at support along x- dir. | ast -ve x = | 209.17 | mm$^2$ |
| Ast req. at support along y- dir. | ast -ve y = | 0.00 | mm$^2$ |
| Minimum Ast required | ast min = | 150.00 | mm$^2$ |

**REQUIRED SPACING OF STEEL:**

| | | | | |
|---|---|---|---|---|
| 10 | mm dia at midspan along x- dir. | = | 504 | mm c/c |
| 10 | mm dia at midspan along y- dir. | = | 450 | mm c/c |
| 8 | mm dia at support along x- dir. | = | 240 | mm c/c |
| 8 | mm dia at support along y- dir. | = | 335 | mm c/c |
| 8 | mm dia for distribution steel | = | 335 | mm c/c |
| 0 | mm dia for top of mid span | = | 100 | mm c/c |

**PROVIDED SPACING OF STEEL**

| | | | | |
|---|---|---|---|---|
| Bottom reinforcement along x- dir. | Y | 10 | 150 | mm c/c |
| Bottom reinforcement along y- dir. | Y | 10 | 150 | mm c/c |
| Top reinforcement along x- dir. | Y | 8 | 150 | mm c/c |
| Top reinforcement along y- dir. | Y | 8 | 150 | mm c/c |
| Distribution Steel | Y | 8 | 200 | mm c/c |

**CHECK FOR DEFLECTION :**

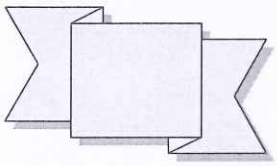
| | | | |
|---|---|---|---|
| Provided Ast (Bottom) | = | 523.60 | mm$^2$ |
| Provided Ast (Top) | = | 0.00 | mm$^2$ |
| Mu/bd^2 | = | 0.66 | |
| Actual Span / Effective depth Ratio | = | 35.00 | |
| Design service stress | = | 86.34 | |
| Modification factor - Tension reinf. | = | 2.00 | |
| Modification factor - Comp. reinf. | = | 1.00 | |
| Allowable Span /Effective depth Rat | = | 46.00 | |

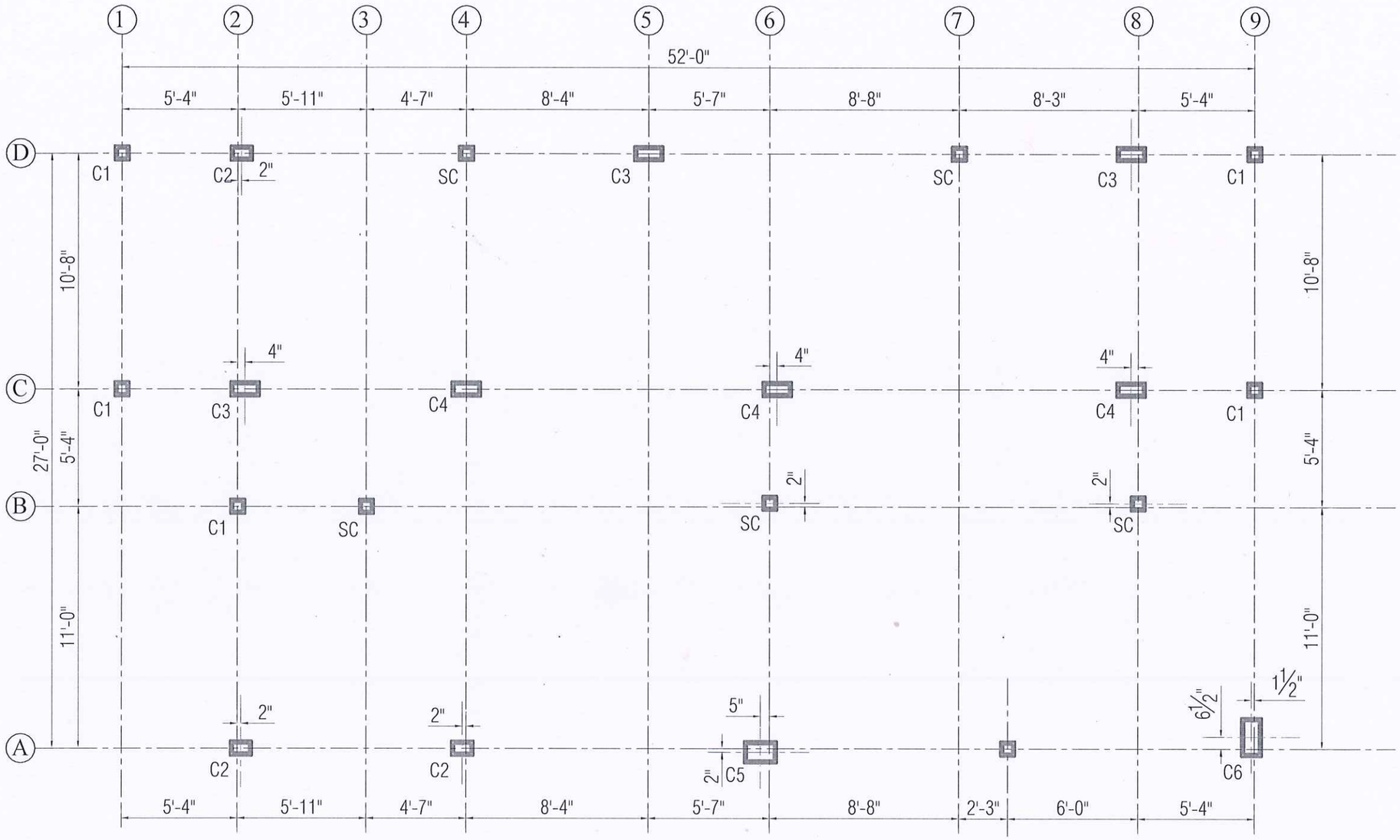
<<<< Hence SAFE in Deflection >>>>

SANKAR & ASSOCIATES COIMBATORE

| | | | | |
|---|---|---|---|---|
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| STRUCTURE NAME : | RESIDENTIAL BUILDING | TITLE: | REPORT ON STRUCTURAL DESIGN. | |
| PLACE: | COIMBATORE | | | |

# ANNEXURE – II






CENTRE LINE LAYOUT

| SCHEDULE OF COLUMNS | |
|---|---|
| TYPE | COLUMN SIZE |
| C1 | 0'-8" x 0'-8" |
| C2 | 0'-8" x 1'-0" |
| C3 | 0'-8" x 1'-4" |
| C4 | 0'-8" x 1'-4" |
| C5 | 1'-0" x 1'-6" |
| C6 | 1'-0" x 1'-9" |
| SC | 0'-8" x 0'-8" |

NOTES :

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2. ALL DIMENSIONS ARE TO BE VERIFIED PROPERLY AT SITE.
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
4. ℄ DIA OF TOR STEEL
5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
   a) FOR COLUMN = 40mm
   b) FOR FOOTING = 50mm
6. LAPPING:
   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR.
   b) DEVELOPMENT LENGTH SHALL BE = 50 x DIA OF BAR.
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
8. PROVIDE SPACER RODS OF 25mm Ø (min) AT 1000mm C/C
9. GRADE OF CONCRETE IS M25
10. GRADE OF REINFORCING STEEL IS Fe 500
10. ADOPTED SBC OF SOIL = 310 KN / Sqm. AS PER SOIL REPORT.
11. MINIMUM DEPTH OF FOUNDATION = 1.8m BELOW NGL
12. ALL THE LEVELS MENTIONED ARE FROM THE F.F.L. OF GROUND + 2 FLOOR

| REV., | DESCRIPTION | REV BY., | DATE | APP BY., |
|---|---|---|---|---|
| | | | | |
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IMPORTANT NOTES:-

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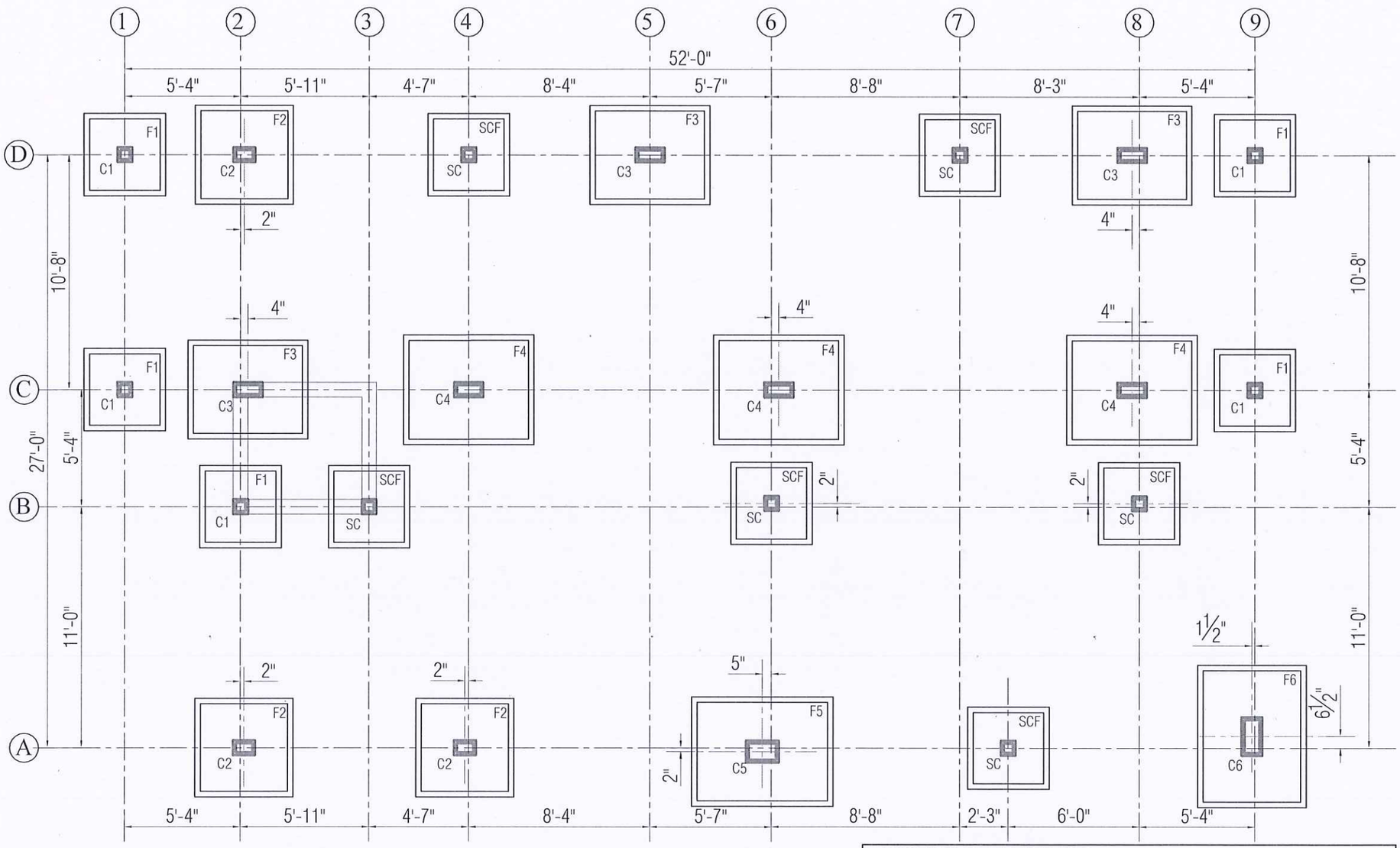
BUILDING: EAST FACING VILLA-(TYPE-07)

DETAIL: CENTRE LINE LAYOUT

| | | | | |
|---|---|---|---|---|
| SCALE: 1 : 8'-0" | JOB NO: 26-SREL-IH-01 | REV | DRN BY: | E.S |
| DATE: 13.06.26 | DRG NO: ST-CL-001 | | CKD BY: | GOWDAMAN |
| | SHEET NO: | | APD BY: | S.M |

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A3 - P




## SCHEDULE OF FOOTING

| TYPE | FOOTING SIZE | PIT SIZE |
|---|---|---|
| F1 | 3'-3" x 3'-3" | 3'-9" x 3'-9" |
| F2 | 4'-0" x 4'-0" | 4'-6" x 4'-6" |
| F3 | 4'-0" x 5'-0" | 4'-6" x 5'-6" |
| F4 | 4'-6" x 5'-6" | 5'-0" x 6'-0" |
| F5 | 4'-6" x 6'-0" | 5'-0" x 6'-6" |
| F6 | 4'-6" x 6'-0" | 5'-0" x 6'-6" |
| SCF | 3'-3" x 3'-3" | 3'-9" x 3'-9" |

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3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
4. ℄ DIA OF TOR STEEL
5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
   a) FOR COLUMN = 40mm
   b) FOR FOOTING = 50mm
6. LAPPING:
   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR.
   b) DEVELOPMENT LENGTH SHALL BE = 50 x DIA OF BAR.
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
8. PROVIDE SPACER RODS OF 25mm Ø (min) AT 1000mm C/C
9. GRADE OF CONCRETE IS M25
10. GRADE OF REINFORCING STEEL IS Fe 500
10. ADOPTED SBC OF SOIL = 310 KN / Sqm, AS PER SOIL REPORT.
11. MINIMUM DEPTH OF FOUNDATION = 1.8m BELOW NGL
12. ALL THE LEVELS MENTIONED ARE FROM THE F.F.L OF GROUND + 2 FLOOR

| REV., | DESCRIPTION | REV BY., | DATE | APP BY., |
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BUILDING: EAST FACING VILLA-(TYPE-07)

DETAIL: FOOTING LAYOUT

| | | | | | |
|---|---|---|---|---|---|
| SCALE: | 1 : 8'-0" | JOB NO: | 26-SREL-IH-01 | REV | DRN BY: E.S |
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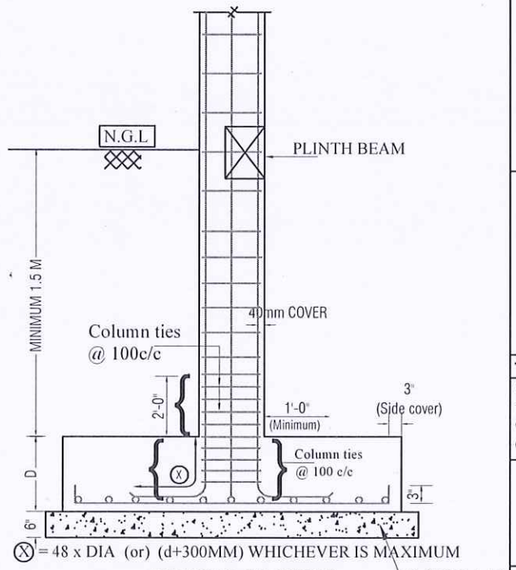
A3 - P

## SCHEDULE OF COLUMNS

| TYPE | COLUMN DETAILS | TIES |
|---|---|---|
| C1 | 8" × 8" — 4 # 12 ϕ | 8 ϕ @ 6" c/c (1 Ties) |
| C2 | 8" × 1'-0" — 6 # 12 ϕ | 8 ϕ @ 6" c/c (1 Tie) |
| C3 | 8" × 1'-4" — 4 # 16 ϕ, 2 # 12 ϕ ( ● ) | 8 ϕ @ 6" c/c (1 Tie + 1 Link) |
| C4 | 8" × 1'-4" — 6 # 16 ϕ | 8 ϕ @ 6" c/c (1 Tie) |
| C5 | 1'-0" × 1'-6" — 6 # 16 ϕ, 4 # 12 ϕ ( ● ) | 8 ϕ @ 8" c/c (2 Ties) |
| C6 | 1'-0" × 1'-9" — 10 # 16 ϕ | 8 ϕ @ 6" c/c (2 Ties) |
| SC | 8" × 8" — 4 # 12 ϕ | 8 ϕ @ 6" c/c (1 Ties) |

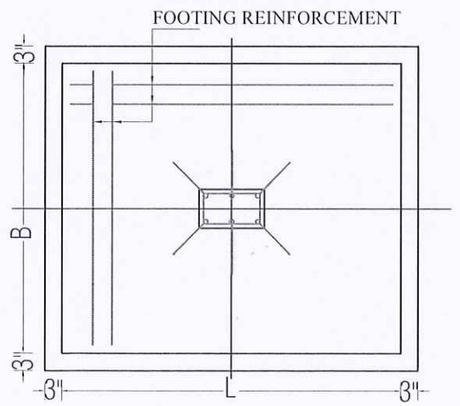
## SCHEDULE OF FOOTING

| TYPE | L | B | D | FOOTING REINFORCEMENT |
|---|---|---|---|---|
| F1 | 3'-3" | 3'-3" | 1'-0" | 10 ϕ @ 7" c/c BOTHWAYS |
| F2 | 4'-0" | 4'-0" | 1'-0" | 10 ϕ @ 6" c/c BOTHWAYS |
| F3 | 4'-0" | 5'-0" | 1'-4" | 10 ϕ @ 6" c/c BOTHWAYS |
| F4 | 4'-6" | 5'-6" | 1'-4" | 10 ϕ @ 6" c/c BOTHWAYS |
| F5 | 4'-6" | 6'-0" | 1'-6" | 10 ϕ @ 5" c/c BOTHWAYS |
| F6 | 4'-6" | 6'-0" | 1'-6" | 10 ϕ @ 5" c/c BOTHWAYS |
| SCF | 3'-3" | 3'-3" | 1'-0" | 10 ϕ @ 7" c/c BOTHWAYS |




X = 48 x DIA (or) (d+300MM) WHICHEVER IS MAXIMUM

TYPICAL SECTION




FOOTING BASE PLAN

TYPICAL FOOTING DETAILS

### NOTES :

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4. ϕ DIA OF TOR STEEL
5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
   a) FOR COLUMN = 40mm
   b) FOR FOOTING = 50mm
6. LAPPING:
   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR.
   b) DEVELOPMENT LENGTH SHALL BE = 50 x DIA OF BAR.
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
8. PROVIDE SPACER RODS OF 25mm Ø (min) AT 1000mm C/C
9. GRADE OF CONCRETE IS 25
10. GRADE OF REINFORCING STEEL IS Fe 500
10. ADOPTED SBC OF SOIL = 310 KN / Sqm, AS PER SOIL REPORT.
11. MINIMUM DEPTH OF FOUNDATION = 1.8m BELOW NGL
12. ALL THE LEVELS MENTIONED ARE FROM THE F.F.L. OF GROUND + 2 FLOOR

| REV. | DESCRIPTION | REV BY. | DATE | APP BY. |
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1. Drg. no. Dt. OF

NP

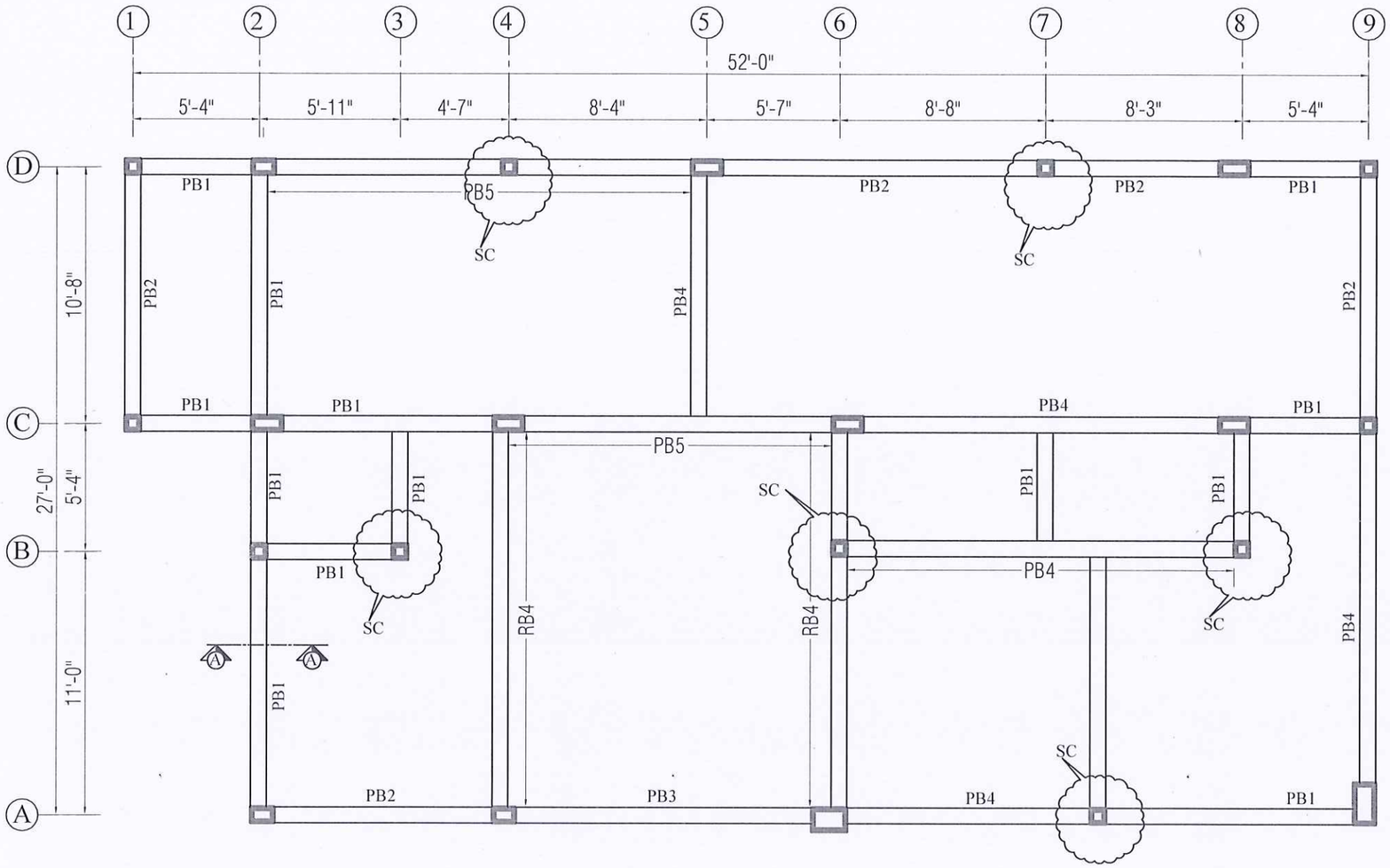
BUILDING: EAST FACING VILLA-(TYPE-07)

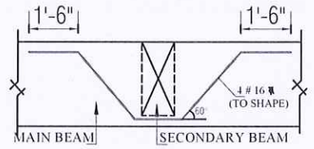
DETAIL: COLUMN & FOOTING RFT. DETAILS

| SCALE: | 1 : 8'-0" | JOB NO: | 26-SREL-IH-01 | REV | DRN BY: | E.S |
|---|---|---|---|---|---|---|
| DATE: | 13.06.26 | DRG NO: | ST-FL-001 | | CKD BY: | GWDAMAN |
| | | SHEET NO: | 02 | | APD BY: | S.M |

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E-mail : admin@sankarassociates.in
Website : www.sankarassociates.in

A3 - P




TYPICAL BEAM TO BEAM JUNCTION DETAIL
(WHERE THE DEPTH OF SECONDARY BEAM IS LESS THAN MAIN BEAM)

NOTES :

1. DIMENSIONS ARE NOT TO BE SCALED
2. ALL DIMENSIONS ARE TO BE VERIFIED PROPERLY AT SITE
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS
4. ϕ DIA OF TOR STEEL
5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
   a) FOR BEAMS = 25 mm
   b) DEVELOPMENT LENGTH SHALL BE = 50 x DIA OF BAR
6. LAPPING
   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR
   b) FOR SLABS = 20 mm
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
8. PROVIDE SPACER RODS OF 25mm Ø (min) AT 1000mm C/C
9. GRADE OF CONCRETE IS M25
10. GRADE OF REINFORCING STEEL IS Fe 500
11. ALL THE LEVELS MENTIONED ARE FROM THE F F L. OF THE RESPECTIVE FLOOR
12. FLOOR FINISH ALLOWANCE SHALL BE 50 / 75 mm FROM THE RAW SLAB AS PER SITE INSTRUCTIONS
13. REINFORCEMENT FABRICATION SHOULD BE DONE AS PER STANDARD DUCTILE DETAIL PROVIDED VIDE DRG .No
14. PROVISION OF CONDUITS / SLEEVES / CORECUTS TO BE PROVIDED AS PER SERVICE (ELECTRICAL / PLUMBING / HVAC) CONSULTANT'S DETAIL / DRAWINGS DULY APPROVED BY THE ARCHITECT / STRUCTURAL ENGINEER

| REV. | DESCRIPTION | REV BY., | DATE | APD BY., |
|---|---|---|---|---|
| | | | | |

| RELEASE STATUS | DATE | SIGNATURE |
|---|---|---|
| PRELIMINARY/ TENDER | | |
| FOR CONSTRUCTION | | |

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S. MURUGESH, M.E.,F.I.E.,
Chartered Engineer F-1279323
Structural Engineer Grade-I
(Coimbatore LPA/SE/Gr-I/061/2024/01-08-2024)

STRUCTURAL ENGINEER

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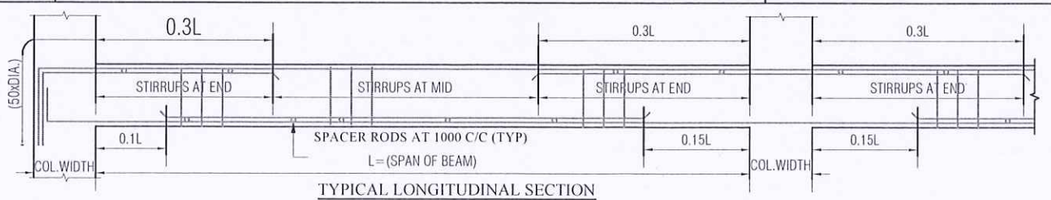
## SCHEDULE OF PLINTH BEAM

| BEAM NO | | | | | | |
|---|---|---|---|---|---|---|
| PB1 | -150 Lvl From NGL, 1'-4" | 2 # 12 ϕ ST<br>8 ϕ @ 8" c/c<br>2 # 12 ϕ ST | | | | |
| PB2 | -150 Lvl From NGL, 1'-4" | 2 # 12 ϕ ST<br>8 ϕ @ 7" c/c<br>2 # 12 ϕ Ctld (●)<br>2 # 12 ϕ ST | MID | | 2 # 12 ϕ ST<br>2 # 12 ϕ Ctld (●)<br>8 ϕ @ 6" c/c<br>2 # 12 ϕ ST | END |
| PB3 | -150 Lvl From NGL, 1'-4" | 2 # 12 ϕ ST<br>8 ϕ @ 7" c/c<br>2 # 12 ϕ Ctld (●)<br>2 # 12 ϕ ST | MID | | 2 # 12 ϕ ST<br>2 # 12 ϕ Ctld (●)<br>8 ϕ @ 6" c/c<br>2 # 12 ϕ ST | END |

## SCHEDULE OF PLINTH BEAM

| BEAM NO | | | | | | |
|---|---|---|---|---|---|---|
| PB4 | -150 Lvl From NGL, 1'-8" | 2 # 12 ϕ ST<br>8 ϕ @ 5" c/c<br>2 # 12 ϕ Ctld (●)<br>2 # 12 ϕ ST | MID | | 2 # 12 ϕ ST<br>2 # 12 ϕ Ctld (●)<br>8 ϕ @ 6" c/c<br>2 # 12 ϕ ST | END |
| PB5 | -150 Lvl From NGL, 1'-8" | 2 # 12 ϕ ST<br>8 ϕ @ 5" c/c<br>2 # 12 ϕ Ctld (●)<br>2 # 12 ϕ ST | MID | | 2 # 12 ϕ ST<br>2 # 12 ϕ Ctld (●)<br>8 ϕ @ 6" c/c<br>2 # 12 ϕ ST | END |

NOTE:
SC - STUB COLUMN TO BE TERMINATED AT PLINTH BEAM TOP LVL




TYPICAL LONGITUDINAL SECTION

SREEVATSA - VRINDAVAN
@ COIMBATORE

CLIENT:-

REFERENCE:

N

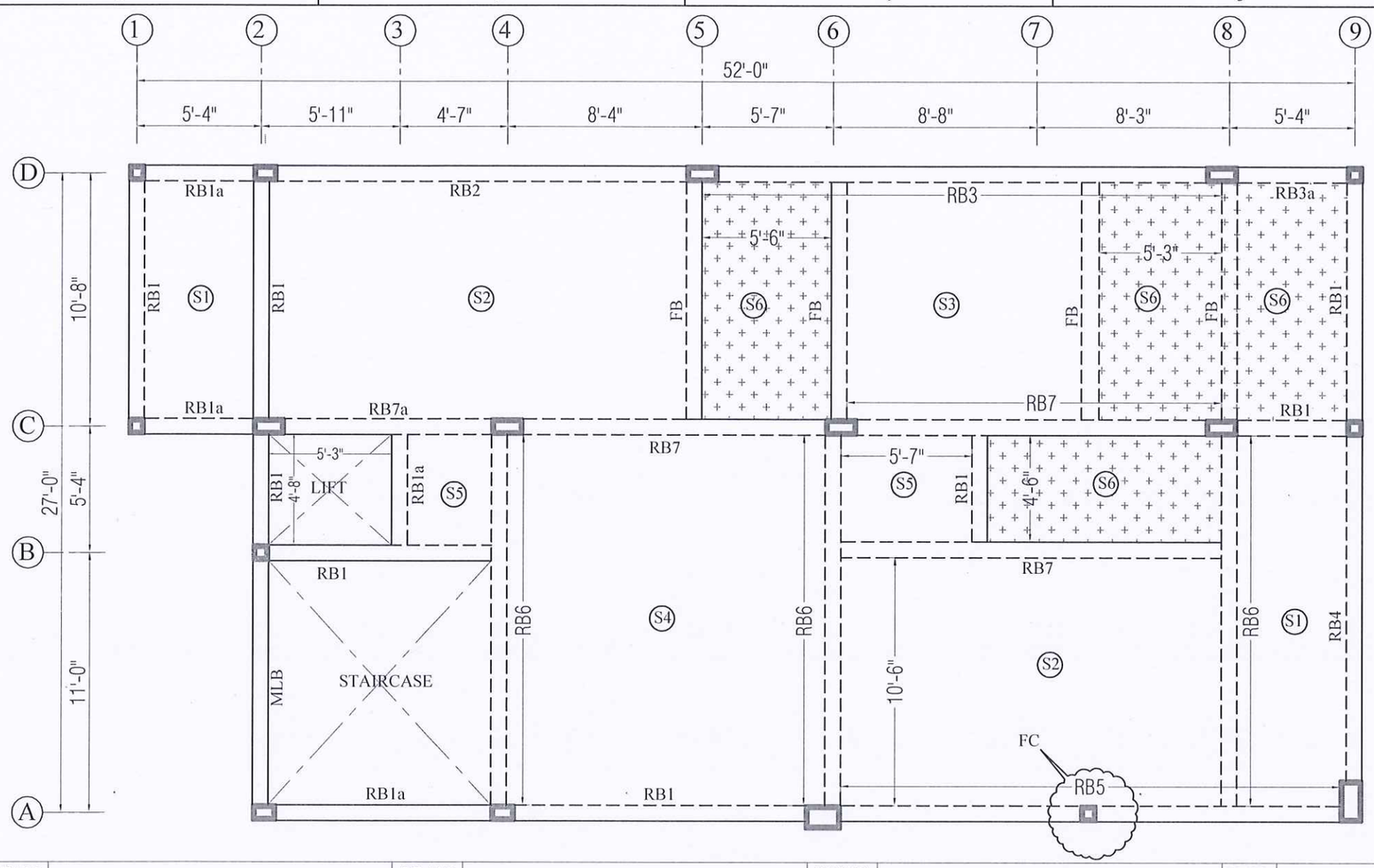
BUILDING: EAST FACING VILLA-(TYPE-07)

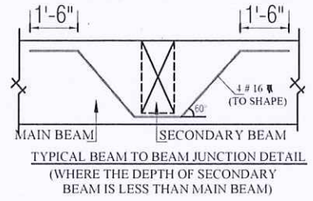
DETAIL: PLINTH BEAM LAYOUT & DETAILS

| SCALE: 1: 8'-0" | JOB NO: 26-SREL-IH-01 | REV: | DRN BY: E.S |
|---|---|---|---|
| DATE: 13.06.26 | DRG NO: ST-PL-001 | | CKD BY: GOWDAMAN |
| | SHEET NO. | | APD BY: S.M |

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A3 - P




TYPICAL BEAM TO BEAM JUNCTION DETAIL
(WHERE THE DEPTH OF SECONDARY BEAM IS LESS THAN MAIN BEAM)

NOTES :

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5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
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6. LAPPING
   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR
   b) FOR SLABS = 20 mm
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
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| REV. | DESCRIPTION | REV BY.. | DATE | APD BY.. |
|---|---|---|---|---|
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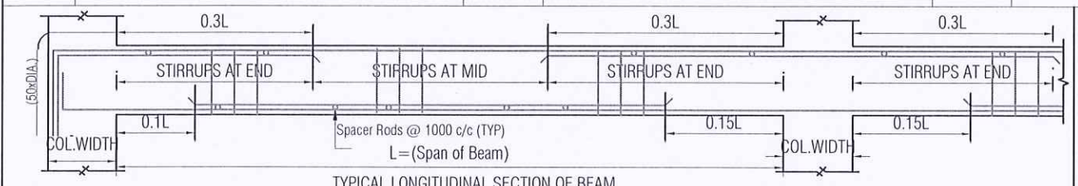
STRUCTURAL ENGINEER

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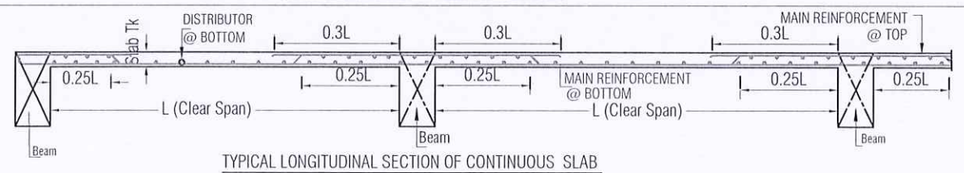
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## SCHEDULE OF ROOF BEAM

| BEAM TYPE | | BEAM TYPE | | BEAM TYPE | | BEAM TYPE | |
|---|---|---|---|---|---|---|---|
| RB1 | 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ctld (•), 2 # 12 ϕ ST (MID); 2 # 12 ϕ ST, 2 # 12 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 12 ϕ ST (END) | RB3 | 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 16 ϕ ST (MID); 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST (END) | RB5 | 2 # 25 ϕ ST, 8 ϕ @ 6" c/c, 2 # 16 ϕ ctld (•), 4 # 25 ϕ ST (MID); 2 # 25 ϕ ST, 2 # 25 ϕ ctld (•), 8 ϕ @ 6" c/c, 4 # 25 ϕ ST (END) | RB7 | 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 16 ϕ ST (MID); 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST (END); 2 # 16 ϕ ST, 8 ϕ @ 6" c/c (FB) |
| RB2 | 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 12 ϕ ST (MID); 2 # 12 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 12 ϕ ST (END) | RB4 | 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ctld (•), 2 # 16 ϕ ST (MID); 2 # 16 ϕ ST, 2 # 12 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST (END) | RB6 | 2 # 16 ϕ ST, 8 ϕ @ 6" c/c, 2 # 16 ϕ ctld (•), 4 # 16 ϕ ST (MID); 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 150 c/c, 4 # 16 ϕ ST (END) | RB7a | 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ST |
| | | | | | | RB3a | 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ST |



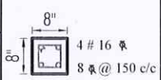

TYPICAL LONGITUDINAL SECTION OF BEAM




TYPICAL LONGITUDINAL SECTION OF CONTINUOUS SLAB

## SCHEDULE OF SLABS

| SLAB NO. | SLAB THICKNESS | REINFORCEMENT IN SHORTER DIRECTION | REINFORCEMENT IN LONGER DIRECTION |
|---|---|---|---|
| S1 | 0'-5" | 8 ϕ @ 6"c/c (Ctld) | 8 ϕ @ 7"c/c (Ctld) |
| S2 | 0'-5" | 10 ϕ @ 6"c/c (Ctld) | 8 ϕ @ 7"c/c (Straight) |
| S3 | 0'-5 | 10 ϕ @ 6"c/c (Ctld) | 8 ϕ@ 6"c/c (Ctld) |
| S4 | 0'-6" | 10 ϕ @ 6"c/c (Ctld) | 10 ϕ @ 6"c/c (Ctld) |
| S5 | 0'-5" | 8 ϕ @ 6"c/c (Top & Bottom) | 8 ϕ @ 6"c/c (Top & Bottom) |
| S6 | 0'-5" | 8 ϕ @ 6"c/c (Top & Bottom) | 8 ϕ @ 6"c/c (Top & Bottom) |




FLOATING COLUMN-FC

SREEVATSA - VRINDAVAN
@ COIMBATORE

CLIENT:-

REFERENCE:

This Drawing is Prepared Based On The Source Drg.
1:Dwg No : A-100 Ground Floor Plan
2 :Date : 26.07.24

N

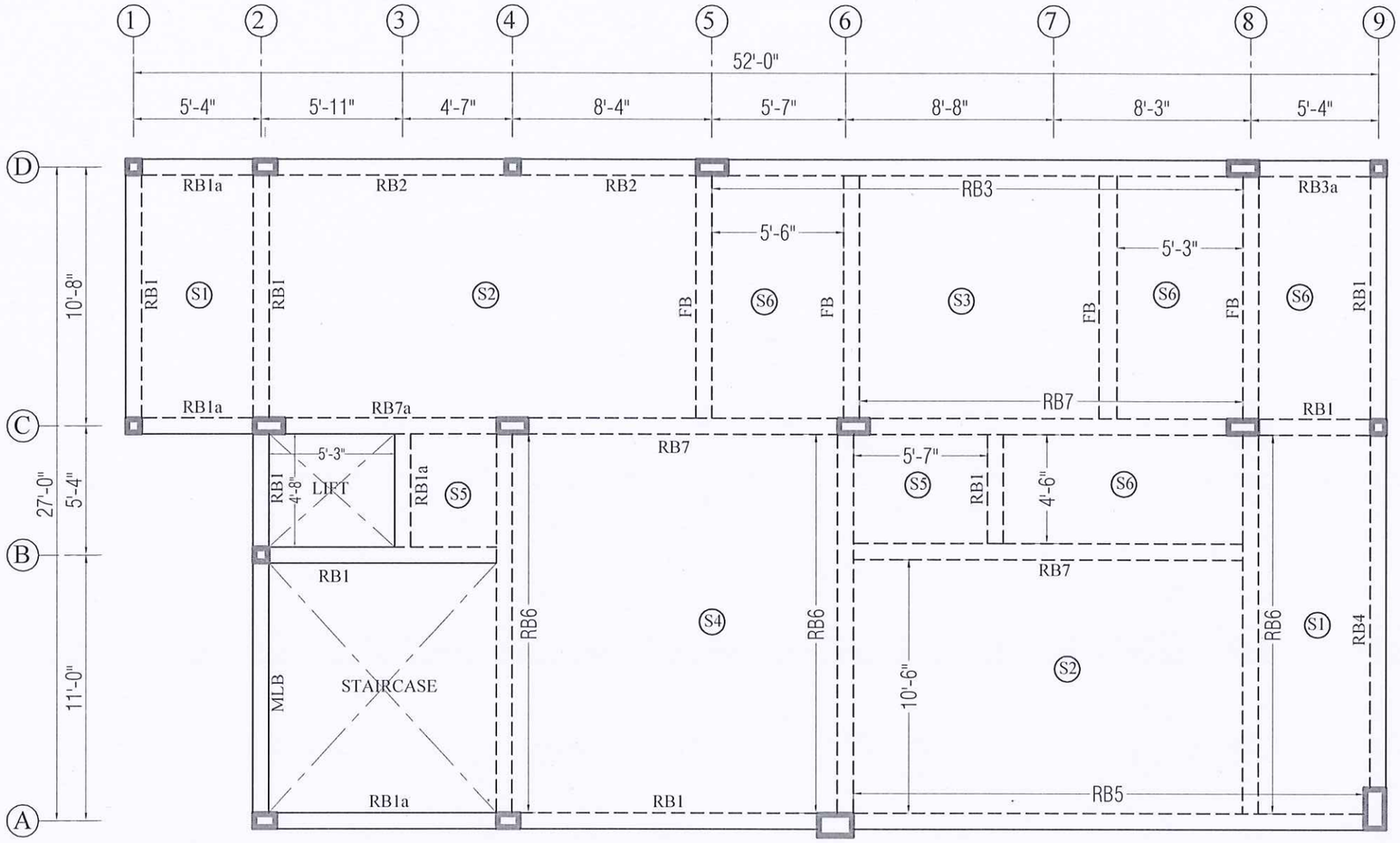
BUILDING: EAST FACING VILLA-(TYPE-07)

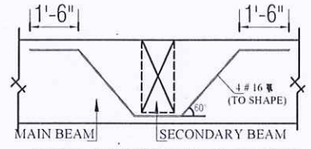
DETAIL: GROUND FLOOR ROOF BEAM LAYOUT & SECTIONS

| SCALE: 1: 8'-0" | JOB NO: 26-SREL-IH-01 | REV | DRN BY: E.S |
|---|---|---|---|
| DATE: 13.06.26 | DRG NO: ST-RF-001 | | CKD BY: GOWDAMAN |
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A3 - P



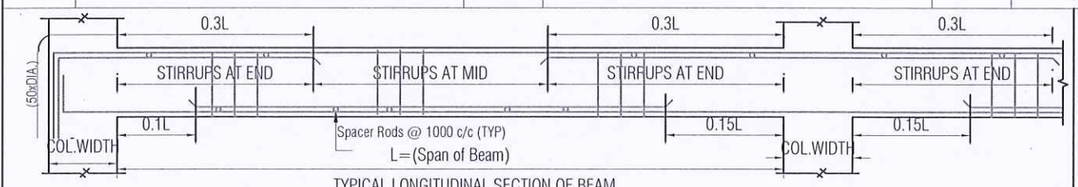

TYPICAL BEAM TO BEAM JUNCTION DETAIL
(WHERE THE DEPTH OF SECONDARY BEAM IS LESS THAN MAIN BEAM)

## SCHEDULE OF ROOF BEAM

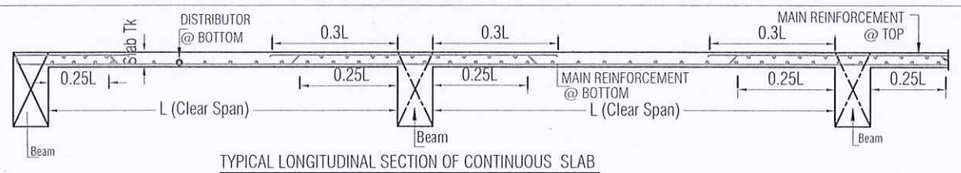
| BEAM TYPE | | BEAM TYPE | | BEAM TYPE | | BEAM TYPE | |
|---|---|---|---|---|---|---|---|
| RB1 | 8" × 1'-3"; MID: 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ctld (•), 2 # 12 ϕ ST; END: 2 # 12 ϕ ST, 2 # 12 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 12 ϕ ST | RB3 | 8" × 1'-6"; MID: 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 16 ϕ ST; END: 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST | RB5 | 8" × 2'-0"; MID: 2 # 25 ϕ ST, 8 ϕ @ 6" c/c, 2 # 16 ϕ ctld (•), 4 # 25 ϕ ST; END: 2 # 25 ϕ ST, 2 # 25 ϕ ctld (•), 8 ϕ @ 6" c/c, 4 # 25 ϕ ST | RB7 | 8" × 1'-6"; MID: 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 16 ϕ ST; END: 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST; FB: 2 # 16 ϕ ST, 8 ϕ @ 6" c/c |
| RB2 | 8" × 1'-3"; MID: 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 2 # 12 ϕ ST; END: 2 # 12 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 12 ϕ ST | RB4 | 8" × 1'-6"; MID: 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ctld (•), 2 # 16 ϕ ST; END: 2 # 16 ϕ ST, 2 # 12 ϕ ctld (•), 8 ϕ @ 6" c/c, 2 # 16 ϕ ST | RB6 | 8" × 1'-6"; MID: 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ctld (•), 4 # 16 ϕ ST; END: 2 # 16 ϕ ST, 2 # 16 ϕ ctld (•), 8 ϕ @ 150 c/c, 4 # 16 ϕ ST | RB7a | 8" × 1'-3"; 2 # 12 ϕ ST, 8 ϕ @ 8" c/c, 2 # 12 ϕ ST |

RB3a: 8" × 1'-6"; 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ST

RB7a: 8" × 1'-6"; 2 # 16 ϕ ST, 8 ϕ @ 8" c/c, 2 # 16 ϕ ST




TYPICAL LONGITUDINAL SECTION OF BEAM




TYPICAL LONGITUDINAL SECTION OF CONTINUOUS SLAB

## SCHEDULE OF SLABS

| SLAB NO. | SLAB THICKNESS | REINFORCEMENT IN SHORTER DIRECTION | REINFORCEMENT IN LONGER DIRECTION |
|---|---|---|---|
| S1 | 0'-5" | 8 ϕ @ 6"c/c (Ctld) | 8 ϕ @ 7"c/c (Ctld) |
| S2 | 0'-5" | 10 ϕ @ 6"c/c (Ctld) | 8 ϕ @ 7"c/c (Straight) |
| S3 | 0'-5 | 10 ϕ @ 6"c/c (Ctld) | 8 ϕ@ 6"c/c (Ctld) |
| S4 | 0'-6" | 10 ϕ @ 6"c/c (Ctld) | 10 ϕ @ 6"c/c (Ctld) |
| S5 | 0'-5" | 8 ϕ @ 6"c/c (Top & Bottom) | 8 ϕ @ 6"c/c (Top & Bottom) |
| S6 | 0'-5" | 8 ϕ @ 6"c/c (Top & Bottom) | 8 ϕ @ 6"c/c (Top & Bottom) |

NOTES :

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5. CLEAR COVER TO MAIN REINFORCEMENT(MILD EXPOSURE)
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   a) LAP LENGTH SHALL BE = 50 x DIA OF BAR
   b) FOR SLABS = 20 mm
7. PROVIDE CHAIR RODS WHEREVER NECESSARY
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9. GRADE OF CONCRETE IS M25
10. GRADE OF REINFORCING STEEL IS Fe 500
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| REV. | DESCRIPTION | REV BY.. | DATE | APD BY. |
|---|---|---|---|---|
| | | | | |

| RELEASE STATUS | DATE | SIGNATURE |
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# SREEVATSA - VRINDAVAN @ COIMBATORE

CLIENT:-

REFERENCE:

This Drawing is Prepared Based On The Source Drg.
1:Dwg No : A-100 Ground Floor Plan
2 :Date : 26.07.24

N

BUILDING: EAST FACING VILLA-(TYPE-07)

DETAIL: FIRST FLOOR ROOF BEAM LAYOUT & SECTIONS

| SCALE: | 1: 8'-0" | JOB NO: | 26-SREL-IH-01 | REV | DRN BY: | E.S |
|---|---|---|---|---|---|---|
| DATE: | 13.06.26 | DRG NO: | ST-RF-002 | | CKD BY: | GOWDAMAN |
| | | SHEET NO. | | | APD BY: | S.M |

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A3 - P

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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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.