
N.TAMILVANAN M.E (STRUCT.)

**STRUCTUAL ENGINEER
CONSULTANT**

STRUCTURAL DESIGN REPORT

G THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.

STRUCTURAL CONSULTANT:

B&W STRUCTURAL DESIGN CONSULTANTS

181/64, GANDHI ROAD, (NEAR CENTRAL BANK OF INDIA),

VELACHERY,

CHENNAI-600042.

G THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.

1. INTRODUCTION

The Structure is a Residential building. It is designed as RCC building supported on Footing at 2 m depth from Existing Ground Level.

2. STRUCTURAL SYSTEM

The structural system adopted is as below.

- The entire structure is designed as R.C. Framed Beam-Slab Structure with Beams Framing in to Columns.
- The Foundation System considered for the Structure is an footing at 2 m depth from Existing Ground Level and SBC of soil 250kN/m².

3. MATERIAL SPECIFICATIONS

3.1. CONCRETE AND REINFORCEMENT

1. Concrete Grades: M25

(Minimum cement content-340kg/m³, water cement ratio – 0.45).

2. TMT High:max Fe 500Grade for all R.C. members

Yield Strength Bars (For efficient usage of Rebar (for all rebar) Consumption in Concrete).

4. ENVIRONMENTAL CONDITIONS, CORROSION AND FIRE PROTECTION FOR CONCRETE.

Environment – Severe

Exposure conditions – Concrete exposed to rain

Fire protection – Thickness of the structural elements proportioned to suit Fire rating (2hrsFire rating considered in the Design)

N. TAMILVANAN, M.E. (STRUCTURAL)
Registration No. SE/GR-I/2024/02/005
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

Nominal concrete cover to reinforcement – Exposure – severe – 45 mm Nominal covers for 2 hr. fire resistance

Nominal Cover to reinforcement

(As per IS 456:2000 , TABLE 16A) For 2 hr. fire resistance

Beams	-	25 mm
Slabs	-	20 mm
Columns	-	40mm
Foundation	-	50mm
pile and pile cap	-	75mm
RC wall	-	50 mm
waist slab	-	25 mm

5. STRUCTURAL ANALYSIS & DESIGN

- The entire Structure is analyzed using Software STAAD PRO-V8i Structural Analysis Package.
- In the 3D Model, Loads are applied and Analyzed for various Load Combinations. The results of all Load Combinations are reviewed and Members are designed for Maximum Forces arrived.
- The 3D Model Comprises Column-Beam Frame with Slabs contributing loads to the Frame and the effect of Slab stiffness has been ignored in the analysis.

Ultimate load combination

* * * WITH LOAD FACTOR * * *

1. LOAD COMB 1 $1.5 \cdot DL + 1.5 \cdot L.L$
2. LOAD COMB 2 $1.0 \cdot DL + 1.0 \cdot L.L$

A. Dead loads:

Dead Load shall include weight of all Structural and Architectural components.

Self-weight of the materials shall be calculated on the basis of unit weights given in

IS: 875 PART I-1987.

1. Unit weight of concrete - 25 kN /m^3

2. Unit weight of steel - 78.5 kN/m^3
3. Floor finish considered - 1.5 kN/m^2
5. Unit weight of Solid block - 20 kN/m^3

B. Live loads:

Following Live Loads are considered while designing the Structural Elements

Apart from the Dead Loads as per codes.

1. Living, Kitchen and bed room floor slab : 3 KN / Sq. m
2. Toilet : 2 KN / Sq. m
3. Corridor, staircase and passage : 3 KN/ Sq.m

C. Additional Floor Provision & Equipment Load

In the Design intent, Loads arising due to Provision for additional Floors to be built in Future has not been considered. If any equipment has been proposed to be mounted on terrace, then the load details based on vendor inputs will be considered.

7. LOADING INTENSITIES ON SLABS:

1. REDENTIAL BUILDING FLOOR SLAB:

Self-wt. of the slab = $0.15 \text{ m} \times 25 \text{ KN/m}^3$	= 3.75 KN/m^2
Floor finishes	= 1 KN/m^2
False ceiling	= 0.5 KN/m^2
Total load	= 5.25 KN/m^2

2. RESIDENTIAL BUILDING TOILET FLOOR SLAB:

Self-wt. of the slab = $0.15 \text{ m} \times 25 \text{ KN/m}^3$	= 3.75 KN/m^2
Soil filling = 0.23×18	= 4.14 KN/m^2
Total load	= 7.89 KN/m^2

3. Member load:

Grade beam	= $(4.8 \text{ m} - 0.38 \text{ m}) \times 0.23 \text{ m} \times 20 \text{ KN/ m}^3$	= 20 KN/m
Ground floor beam	= $(3.5 \text{ m} - 0.38 \text{ m}) \times 0.23 \text{ m} \times 20 \text{ KN/ m}^3$	= 14 KN/m
Parapet wall	= $0.9 \text{ m} \times 0.23 \text{ m} \times 20 \text{ KN/ m}^3$	= 4 KN/m

FOOTING DESIGN CALCULATIONS

Design Code : IS Code
Footing No : F1
Column No : C1 (300mm X 750mm)
Analysis No : 42

Concrete Grade : M25
Steel Grade : Fe500
Clear Cover : 40 mm
Df : 2.1M
Dw : 4 M

Density of Soil = 18 KN/cuM
Soil Bearing Capacity = 180 KN/sqM
Permissible SBC Increse for EQ = 25 %
Permissible SBC Increse for Wind = 25 %
Live Load Reduction = 50 %
Permissible area of loss of contact = 0 %

Cross Section designed by : Maximum pressure
Consider overburden pressure
Surcharge Load = 2 KN/sqM

Footing Type : Pad

Footing Size (LxBxD) : 3050 X3050mm X 450mm

Soil Wt. + Footing Wt. + Surcharge Load = 170.72+4.80 KN
= 175.52 KN

Check For Maximum Soil Pressure:

Critical Analysis Load Combination	= 3	
Critical Load Combination	= [1] : (LOAD 1: DEAD LOAD) +(LOAD 2: LIVE LOAD)	
Pcomb	= 4068.30	KN
P	= Pcomb + Soil Wt. + Footing Wt. + Surcharge Load	
P	= 550	KN
Mx	= 0	KNM
My	= 0	KNM
P/A	= 119.09	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Maximum Soil Pressure	= 119.09	KN/sqM
Allowable Soil Pressure	= 1x120	KN/sqM
	= 120	KN/sqM

Check For Minimum Soil Pressure:

Critical Analysis Load Combination	= 3	
Critical Load Combination	= [1] : (LOAD 1: DEAD LOAD) +(LOAD 2: LIVE LOAD)	
Pcomb	= 468.3	KN
P	= Pcomb + Soil Wt. + Footing Wt. + Surcharge Load	
P	= 550	KN
Mx	= 0	KNM
My	= 0	KNM
P/A	= 119.09	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Minimum Soil Pressure	= 119.09	KN/sqM
	> 0	
Offset Along L (Loff)	= 610	mm
Offset Along B (Boff)	= 600	mm

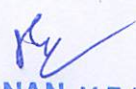
Check For Bouyancy:

Critical Analysis Load = 3
Combination
Critical Load = [1] : (LOAD 1: DEAD LOAD) +(LOAD 2:
Combination LIVE LOAD)
Factor of safety = 1.4
Depth of Founding Layer = 2.1 M
Ground Water Level = 4 M
Water Pressure = 22 KN/sqM

Upward force = Water Pressure X L X
B
= 53 KN
Downward force = 321.81 KN
Factor of safety available = Downward Force /
Upward Force
= 6.09
> 1.4

Check For Sliding:

Critical Analysis Load = 3
Combination
Critical Load = [1] : (LOAD 1: DEAD LOAD) +(LOAD 2:
Combination LIVE LOAD)
Coefficient Of Friction = 0.4
Factor of safety = 1.2
Shear Vx = 0.24 KN
shear Vy = 1.30 KN
Resultant sliding force = 1.32 KN
Downward force = 321.81 KN
Upward water pressure = 52.80 KN
Net downward force = 269.01 KN
Force resisting sliding = Friction Coeff X Net
Downward Force
= 107.60 KN
Factor of safety available = Resisting Force /
Sliding Force
= 81.68
> 1.2


N. TAMILVANAN, M.E.(STRUCT.,)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

Design For Bending:

Bottom Steel Along L:

Critical Analysis Load Combination	= 4	
Critical Load Combination	= [4] : 1.5 (LOAD 1: DEAD LOAD) +1.5 (LOAD 2: LIVE LOAD)	
Pu	= 550	KN
Mux	= 0	KNM
Muy	= 0	KNM
P/A	= 188.94	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Deff	= 277	mm
Beff	= 1500	mm
SPu	= 188.94	KN/sqM
Mu	= SPu X B X Loff X Loff / 2	
	= 52.73	KNM
Pt	= 0.141	%
Ast Rqd (BM)	= 585	Sqmm
Ast Prv	= T10 @ 150	
	= 628	Sqmm

Distributed Across Total Width

Bottom Steel Along B:

Critical Analysis Load Combination	= 4	
Critical Load Combination	= [4] : 1.5 (LOAD 1: DEAD LOAD) +1.5 (LOAD 2: LIVE LOAD)	
Pu	= 550	KN
Mux	= 0	KNM
Muy	= 0	KNM
P/A	= 188.94	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Deff	= 261	mm
Leff	= 1600	mm
SPu	= 188.94	KN/sqM
Mu	= SPu X L X Boff X Boff / 2	
	= 54.41	KNM

Pt	= 0.149	%
Ast Rqd (BM)	= 624	Sqmm
Ast Prv	= T10 @ 150	
	= 628	Sqmm
Distributed Across Total Length		

Design For Shear:

One Way Shear Along L:

Critical Section @ d from Column Face

	= 277	mm
Critical Analysis Load Combination	= 4	
Critical Load Combination	= [4] : 1.5 (LOAD 1: DEAD LOAD) +1.5 (LOAD 2: LIVE LOAD)	
Pu	= 453.46	KN
Mux	= 0	KNM
Muy	= 0	KNM
P/A	= 188.94	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Deff	= 277	mm
Beff	= 1500	mm
SPu	= 188.94	KN/sqM
Vu	= SPu X (Loff - d) X B	
	= 94.38	KN
Tv	= Vu / (Beff X Deff)	
	= 0.23	N/Sqmm
Tc	= 0.29	N/Sqmm
Tv	< Tc	

One Way Shear Along B:

Critical Section @ d from Column Face

	= 261	mm
Critical Analysis Load Combination	= 4	
Critical Load Combination	= [4] : 1.5 (LOAD 1: DEAD LOAD) +1.5 (LOAD 2: LIVE	

	LOAD)	
Pu	= 453.46	KN
Mux	= 0	KNM
Muy	= 0	KNM
P/A	= 188.94	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM
Deff	= 261	mm
Leff	= 1600	mm
SPu	= 188.94	KN/sqM
Vu	= SPu X (Boff - d) X L	
	= 102.48	KN
Tv	= Vu / (Leff X Deff)	
	= 0.25	N/Sqmm
Tc	= 0.29	N/Sqmm
Tv	< Tc	

Design For Punching Shear:

Critical Section @ d/2 from Column Face

$$= 134 \quad \text{mm}$$

Critical Analysis Load
Combination = 4

Critical Load
Combination = [4] : 1.5 (LOAD 1: DEAD LOAD) +1.5
(LOAD 2: LIVE LOAD)

Pu	= 453.46	KN
Mux	= 0	KNM
Muy	= 0	KNM
P/A	= 188.94	KN/sqM
Mx/Zx	= 0	KN/sqM
My/Zy	= 0	KN/sqM

Deff	= 269	mm
Leff	= 649	mm
Beff	= 569	mm
SPu	= Max Pressure	
	= 188.94	KN/sqM
Vu	= SPu X ((L X B)-(Leff X Beff))	

$$\begin{aligned}
 &= 383.69 \quad \text{KN} \\
 T_v &= V_u / (2 \times (L_{eff} + B_{eff}) \times D_{eff}) \\
 &= 0.586 \quad \text{N/Sqmm} \\
 T_c &= 1.25 \quad \text{N/Sqmm} \\
 T_v &< T_c
 \end{aligned}$$

Load Transfer Check For Load Transfer From Column To Footing

$$\text{Critical Analysis Load Combination} = 4$$

$$\text{Critical Load Combination} = [4] : 1.5 (\text{LOAD 1: DEAD LOAD}) + 1.5 (\text{LOAD 2: LIVE LOAD})$$

$$\begin{aligned}
 P_u &= 453.46 \quad \text{KN} \\
 A_2 &= 0.11 \quad \text{sqM} \\
 A_1 &= 2.69 \quad \text{sqM} \\
 \text{Base Area} &= 2.4 \quad \text{sqM}
 \end{aligned}$$

$$A_1 > \text{Base Area}$$

$$\text{Thus, } A_1 = 2.4$$

$$\text{Modification Factor} = \text{SquareRoot}(A_1/A_2) < 2$$

$$\text{SquareRoot}(A_1/A_2) = 4.671$$

$$\text{Thus, Modification Factor} = 2$$

$$\begin{aligned}
 \text{Concrete Bearing Capacity} &= 0.45 \times F_{ck} \times \text{Modification Factor} \times \text{Column Area} \\
 &= 2565 \quad \text{KN}
 \end{aligned}$$

$$\text{Concrete Bearing Capacity} > P_u, \text{ Hence Safe.}$$

COLUMN DESIGN CALCULATIONS

General Data

Column No.	:	C1	
Level	:	0m To 1.8m	
Design Code	=	IS Code	
Grade Of Concrete	=	M25	N/Sqmm
Grade Of Steel	=	Fe500	N/Sqmm
Column B	=	300	MM
Column D	=	600	MM
Clear Cover	=	40	MM
Clear Floor Height @ B	=	3000	MM
Clear Floor Height @ D	=	3000	MM
No Of Floors	=	1	
No Of Columns In Group	=	1	
Column Type	:	UnBraced	
Minimum eccentricity check	:	One Axis at a Time	

Load Data

Analysis Reference No.	=	47	
Critical Analysis Load Combination	:	4	
Load Combination	=	[2] : 1.5 (LOAD 1: DL) +1.5 (LOAD 2: LL)	
Critical Location	=	Top Joint	
Pu	=	550	KN
Mux	=	-30.31	KNM
Muy	=	-10.07	KNM
Vux	=	-8.55	KN
Vuy	=	15.6	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

$$\begin{aligned}
 & / 30 \\
 M_{\min} & = 14.32 \quad \text{MM} \\
 & = P_u \times \text{Minimum Eccentricity} \\
 & = 34.83 \quad \text{KNM}
 \end{aligned}$$

Slenderness Check

$$\begin{aligned}
 \text{Max Slenderness Ratio}(L/B) & = 6 \\
 & < 60 \quad \text{(Hence Ok)}
 \end{aligned}$$

Column Is Unbraced Along D

Slenderness Check Along D:

$$\begin{aligned}
 \text{Effective Length} & = 1.2 \\
 \text{Factor} & \\
 \text{Slenderness Ratio} & = \text{Effective Length} / D \\
 & = 2.7, \text{ Column not Slender Along D}
 \end{aligned}$$

Column Is Unbraced Along B

Slenderness Check Along B:

$$\begin{aligned}
 \text{Effective Length} & = 1.2 \\
 \text{Factor} & \\
 \text{Slenderness Ratio} & = \text{Effective Length} / B \\
 & = 7.2, \text{ Column not Slender Along B}
 \end{aligned}$$

Calculation of Design Moment

Direction	M _{analysis}	M _{min}	M _{design}	M _{sldx}	M _{design-final}
	A	B	C	E	F
Major Axis - M _{ux}	30.31	---	30.31	0	30.31
Minor Axis - M _{uy}	10.07	34.83	34.83	0	34.83

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

Final Critical Design Forces

Critical Case - Axial Load & BiAxial Bending

$$P_u = 550 \quad \text{KN}$$

Mux	=	30.31	KNM
Muy	=	34.83	KNM

Biaxial Bending Check

Pt Calculated	=	2.07	
Steel Provided	=	8-T16	
Mux1	=	306.98	KNM
Muy1	=	154.32	KNM
Puz	=	$0.45 \times F_{ck} \times A_c + 0.75 \times F_y \times A_{sc}$	
	=	3378.02	KN
Pu/Puz	=	0.52	
Alpha	=	1.53	
Interaction Ratio	=	$(M_{ux} / M_{ux1})^{\alpha} + (M_{uy} / M_{uy1})^{\alpha}$	
	=	0.13 < 1	

Design Of Shear

Design for shear along D

Critical Analysis Load Combination	:	4	
Critical Load Combination	=	$[2] : 1.5 (\text{LOAD 1: DL}) + 1.5 (\text{LOAD 2: LL})$	KN
Design shear force, Vuy	=	15.5958	KN
Pu	=	1741.62	
Design shear stress, Tvy	=	$V_{uy} / (B \times D_{eff})$	N/Sqmm
	=	0.0945	N/Sqmm
Design shear strength, Tc	=	0.6493	N/Sqmm
Shear Strength Enhancement Factor	=	$1 + 3 \times P_u / (B \times D \times F_{ck})$	
	=	2.1611	
Shear Strength Enhancement Factor (max)	=	1.5	
Shear Strength Enhancement Factor	=	1.5	
Enhanced shear strength, Tc-e	=	0.9739	N/Sqmm
Design shear check	=	$T_{vy} < T_c \times \text{Enhancement factor}$	

Link for Shear Design along D are not required

Design for shear along B

Critical Analysis Load Combination	:	4	
Critical Load Combination	=	[2] : 1.5 (LOAD 1: DL) + 1.5 (LOAD 2: LL)	KN
Design shear force, V_{ux}	=	-8.5535	kN
P_u	=	550	
Design shear stress, T_{vx}	=	$V_{ux} / (D \times B_{eff})$	kN
	=	0.057	N/Sqmm
Design shear strength, T_c	=	0.6493	N/Sqmm
Shear Strength Enhancement Factor	=	$1 + 3 \times P_u / (B \times D \times F_{ck})$	
	=	2.1611	
Shear Strength Enhancement Factor (max)	=	1.5	
Shear Strength Enhancement Factor	=	1.5	
Enhanced shear strength, T_{c-e}	=	0.9739	N/Sqmm
Design shear check	=	$T_{vx} < T_c \times \text{Enhancement factor}$	

Link for Shear Design along B are not required

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	
	=	5	mm

Criterion for spacing of normal links

Min. Longitudinal Bar dia X 16	=	256	mm
Min. dimension of column	=	230	mm
Max. 300 mm	=	300	mm
Maximum B/2	=	150	mm

Provided spacing

N. TAMILVANAN, (STRUCT.)
Registered Structural Engineer GRADE-I (SE)
(CMDA) REG.No. SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

Table For Links

	Required			Provided	
	Normal Design	Shear Design	Ductile Design	Normal Zone	Ductile Zone
Link Dia.	8	---	---	8	---
Spacing	150	---	---	150	---

BEAM DESIGN CALCULATION

Group : G1
 Beam No : B1
 Analysis Reference (Member) 4.2m : 125
 Beam Length : 5275 mm
 Breadth (B) : 200 mm
 Depth (D) : 750 mm
 Effective Depth (d) : 395 mm
 Design Code : IS Code
 Beam Type : Regular Beam
 Grade Of Concrete : M25
 Grade Of Steel : Fe500
 Clear Cover (Cmin) : 25 mm
 Es : 2×10^5 N/Sqmm

Flexure Design

	Beam Bottom			Beam Top		
	Left	Mid	Right	Left	Mid	Right
Critical L/C - Analysis	4	4	4	4	4	4
Critical L/C - RCDC	2	2	2	2	2	2
Mu (KNm)	4.56	23.9	1.77	48.43	0	54.01
Tu (KNm)	3.39	3.39	3.39	3.39	3.39	3.39
M _{Tu} (KNm)	4.99	4.99	4.99	4.99	4.99	4.99
Mud (KNm)	9.55	28.88	6.76	53.41	4.99	59

MuLim (KNm)	156	156	156	156	156	156
R	0.204	0.617	0.144	1.141	0.107	1.26
Ptmin (%)	0.2	0.2	0.2	0.2	0.2	0.2
Ptclc (%)	0.2	0.2	0.2	0.278	0.2	0.309
Pcclc (%)	0.002	0	0.016	0	0.025	0
PtPrv (%)	0.679	0.679	0.679	0.87	0.679	0.87
AstCalc (Sqmm)	237	237	237	329.24	237	366.11
AstPrv (Sqmm)	804.24	804.24	804.24	1030.44	804.24	1030.44
Reinforcement	3-T12 2-T12	3- T12 2-T12	3- T12 2-T12	3- T12 2-T12	3- T12 2-T12	3- T12 2-T12

Shear Design

	Left	Mid	Right
Critical L/C - Analysis	4	4	4
Critical L/C - RCDC	2	2	2
Vu (KN)	69.77	32.17	72.73
Tu (KNm)	3.39	3.39	3.39
V _{Tu} (KN)	18.08	18.08	18.08
V _{ut} (KN)	87.85	50.25	90.81
T _v (N/Sqmm)	0.74	0.42	0.77
T _c (N/Sqmm)	0.61	0.55	0.61
V _c (KN)	72.1	65.5	72.1
V _{us} =V _{ut} -V _c (KN)	15.75	0	18.71
Asv Torsion (Sqmm)	327.085	213.898	335.988
Asv Reqd (Sqmm)	332.364	332.364	332.364
Legs	2	2	2

Stirrup Dia	8	8	8
SvCalc (mm)	165	175	165
SvPrv (mm)	165	175	165
Asv Torsion Prv (Sqmm)	609.33	574.51	609.33
Asv Total Prv (Sqmm)	609.33	574.51	609.33

Maximum Spacing Criteria

Basic

Spc1 = $0.75d$ = 296 mm

Spc2 = 300 mm

For Torsion

(X1 = 260, Y1 = 410)

Spc3 = X1 = 260 mm

Spc4 = $(X1 + Y1)/4$ = 167.5 mm

SFR Design

Beam Width = 300 mm

Beam Depth = 450 mm

Web Depth = $450 \leq$ 750 mm

Side Face Reinforcement
Not Required.

SLAB DESIGN CALCULATIONS

Level	=	4.2m	
Design Code	=	IS Code	
Grade Of Concrete	=	M25	N/Sqmm
Grade Of Steel	=	Fe500	N/Sqmm
Clear Cover	=	20.000	mm
Long Span, Ly	=	5.19	M
Short Span, Lx	=	4.19	M
Imposed Load	=	1.000	KN/Sqm
Live Load	=	2.000	KN/Sqm
Slab Thickness	=	150.000	mm
Effective Depth Along LX, Deffx	=	125.000	mm
Effective Depth Along LY, Deffy	=	125.000	mm
Self Weight	=	5.000	KN/Sqm
Total Load, TL	=	14.000	KN/Sqm
Span	=	2-Way	
Panel Type	=	Two Adjacent Edge continuous	

Design Moments:

Short Span Positive Moment At Midspan -

Moment	=	0.043	
Coefficient	=		
BM	=	20.382	KNM
Mu = 1.5 X BM	=	30.573	KNM
Area Of Steel Required (Mu)	=	422.079	Sqmm/M
Steel Provided	=	T8 @ 150 c/c	
	=	931.000	Sqmm/M

Short Span Negative Moment At Continuous Support -

Moment	=	0.058	
Coefficient	=		
BM	=	27.176	KNM
Mu = 1.5 X BM	=	40.764	KNM
Area Of Steel Required (Mu)	=	573.231	Sqmm/M
Steel Provided	=	T8@ 150 c/c	
	=	931.000	Sqmm/M

Long Span Positive Moment At Midspan -

Moment Coefficient	=	0.028
BM	=	12.951 KNM
Mu = 1.5 X BM	=	19.427 KNM
Area Of Steel Required (Mu)	=	280.233 Sqmm/M
Steel Provided	=	T8@ 150 c/c
	=	1131.000 Sqmm/M

Long Span Negative Moment At Continuous Support -

Moment Coefficient	=	0.037
BM	=	17.269 KNM
Mu = 1.5 X BM	=	25.903 KNM
Area Of Steel Required (Mu)	=	378.325 Sqmm/M
Steel Provided	=	T8@ 150 c/c
	=	1131.000 Sqmm/M

Distribution Steel @ 0.12% -

Area Of Steel Required	=	210.000 Sqmm
Steel Provided	=	T8@ 150 c/c
	=	931.000 Sqmm/M

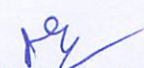
Shear Check :

Along Short Span

Shear Coefficient(Lx), SF1	=	0.447
V = SF1 x TL x Lx	=	36.316 KN
Vu = 1.5 X V	=	54.474 KN
Shear Stress, Tv	=	0.311 N/Sqmm
Nominal Shear Stress, Tc	=	0.410 N/Sqmm
Modification Factor 'K'	=	1.200
K x Tc	=	0.492
	>	0.311 Slab Is Safe In Shear

Along Long Span

Shear Coefficient(Ly),	=	0.360
------------------------	---	-------


N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

SF2

$$V = SF2 \times TL \times Lx = 29.232 \text{ KN}$$

$$Vu = 1.5 \times V = 43.848 \text{ KN}$$

$$\text{Shear Stress, } Tv = 0.266 \text{ N/Sqmm}$$

$$\text{Nominal Shear Stress, } Tc = 0.342 \text{ N/Sqmm}$$

$$\text{Modification Factor 'K'} = 1.200$$

$$K \times Tc = 0.411$$

$$> 0.266 \quad \text{Slab Is Safe In Shear}$$

Deflection Check:

$$\text{Basic Span To Depth Ratio} = 26$$

$$\text{Span Correction Factor} = 1.000$$

$$\text{Tensile Steel Factor} = 2.198$$

$$\text{Compression Steel Factor} = 1.000$$

$$\text{Flange Correction Factor} = 1.000$$

$$\text{Max Span To Depth Ratio} = \frac{26.00 \times 1.00 \times 2.20 \times 1.00 \times 1.00}{1.00}$$

$$= 57.142$$

$$Lx/d = 33.143$$

$$< 57.142 \quad \text{Slab Is Safe In Deflection}$$


N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com



PROJECT:-

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.

TECHNICAL NOTES:-

- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
- 2.0 GRADE:-
CONCRETE - M25 (1:1:2),
STEEL - FE 500.
- 3.0 COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3", RC WALL-1.5", WAIST SLAB-3".
- 4.0 DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR S+4 FLOORS ONLY.
- 5.0 SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

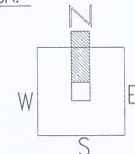
PROJECT NO: ST-2024/02/01/79/01 ST-01

TITLE:-
COLUMN MARKING LAYOUT

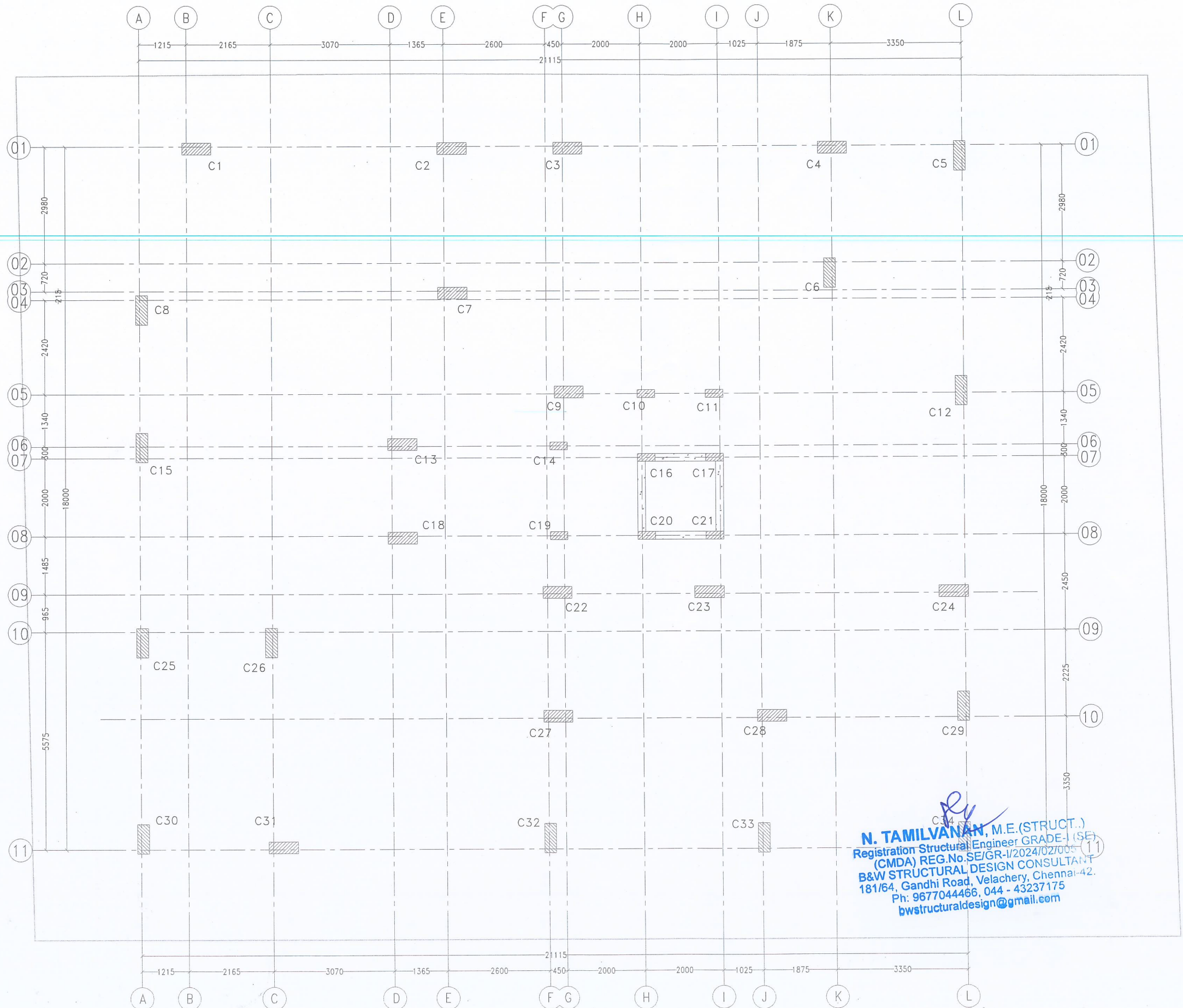
REVISION:-

RO

DIRECTION:-



N.TAMILVANAN M.E.(STRUCT.)
CMDA, CORPORATION & DTCP
Registered Structural Engineer GRADE-1(SE)
B&W STRUCTURAL DESIGN CONSULTANT
181/64, GANDHI ROAD, VELACHERY, CHENNAI-42.
9677044466, 9677044515, 044-43237175.
bwstructuraldesign@gmail.com,



PROJECT:-

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.

TECHNICAL NOTES:-

- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
- 2.0 GRADE:-
CONCRETE - M25 (1:1:2),
STEEL - FE 500.
- 3.0 COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3", RC WALL-1.5", WAIST SLAB-3".
- 4.0 DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR S+4 FLOORS ONLY.
- 5.0 SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

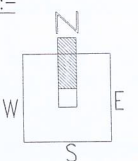
PROJECT NO: ST-2024/02/01/79/01 ST-02

TITLE:- FOOTING MARKING LAYOUT

REVISION:-

DIRECTION:-

R0



N.TAMILVANAN M.E.(STRUCT.)

CMDA, CORPORATION & DTCP

Registered Structural Engineer GRADE-1(SE)

B&W STRUCTURAL DESIGN CONSULTANT

181/64, GANDHI ROAD, VELACHERY, CHENNAI-42.

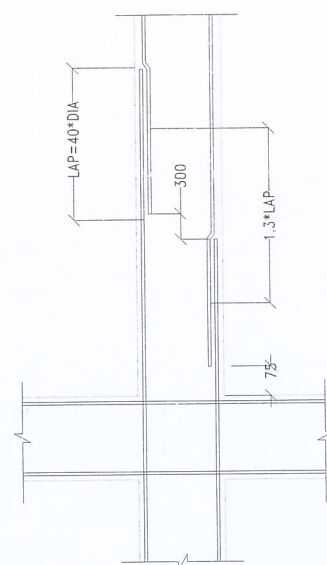
9677044466, 9677044515, 044-43237175.

bwstructuraldesign@gmail.com,

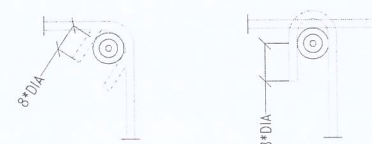
N. TAMILVANAN, M.E.(STRUCT.)
 Registration Structural Engineer GRADE-I (SE)
 (CMDA) REG.No. SE/GR-I/2024/02/005
 B&W STRUCTURAL DESIGN CONSULTANT
 181/64, Gandhi Road, Velachery, Chennai-42.
 Ph: 9677044466, 044 - 43237175
 bwstructuraldesign@gmail.com

COLUMN SCHEDULE:-

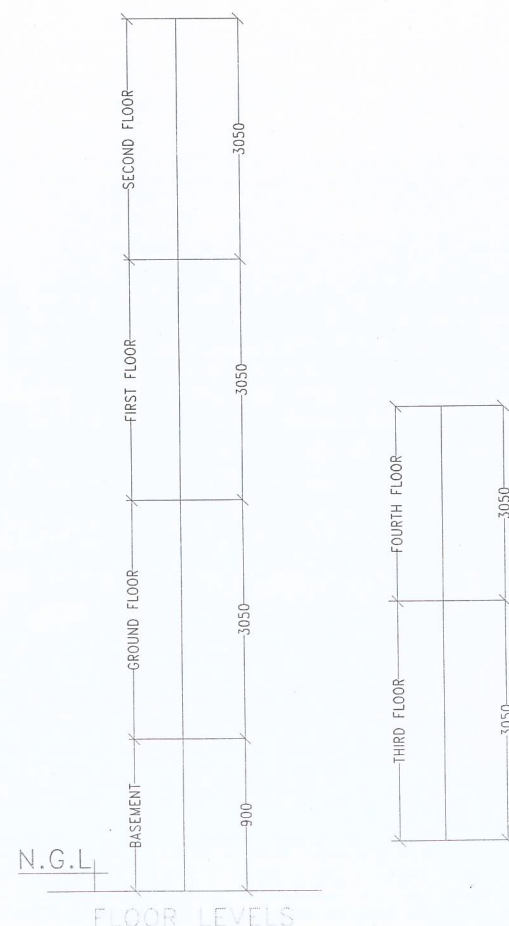
GROUND FLOOR ROOF TO TERRACE FLOOR			
	Y8-6"C/C	Y8-6"C/C	Y8-6"C/C
	14-Y25	12-Y20	10-Y16
UP TO GROUND FLOOR ROOF			
	Y8-6"C/C	Y8-6"C/C	Y8-6"C/C
	14-Y25	12-Y20	10-Y16
COLUMN MARKED	C1, C2, C3, C4, C5, C6, C9, C12, C15, C18, C22, C23, C24, C25, C28, C29, C32, C33, C34	C7, C8, C13, C14, C26, C27, C30, C31	C10, C11, C14, C16, C17, C19, C20, C21



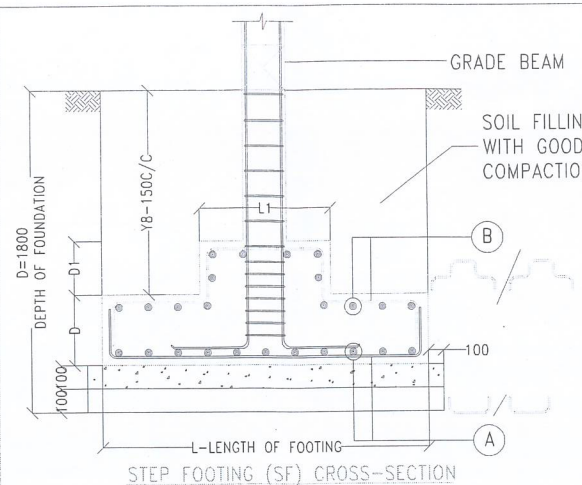
LAPPING DISTANCE



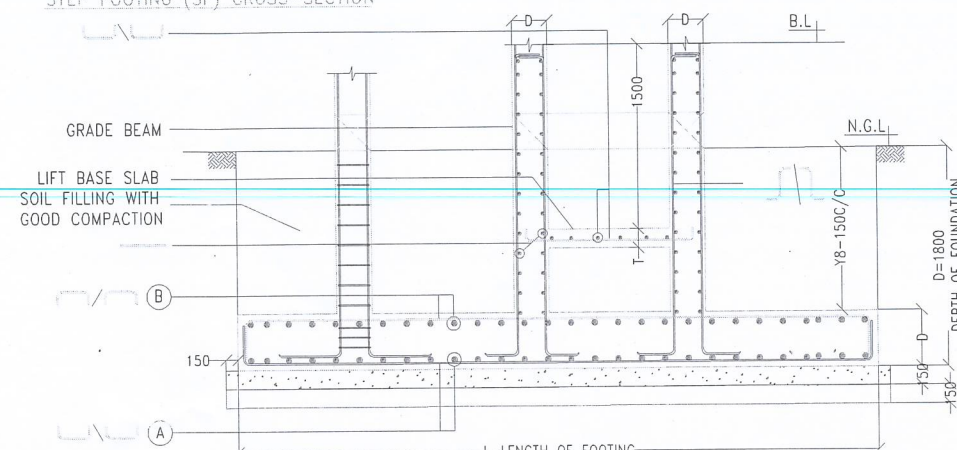
LATERAL TIE DETAILS



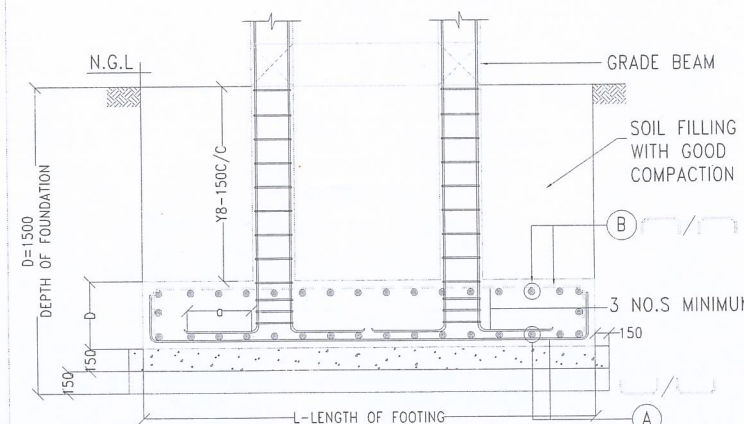
FLOOR LEVELS



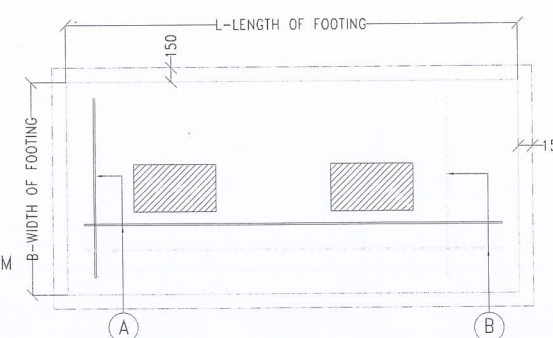
STEP FOOTING (SF) CROSS-SECTION



RAFT FOOTING (RF) CROSS-SECTION



COMBINED FOOTING (CF) CROSS-SECTION



COMBINED FOOTING (CF)-PLAN

STEP FOOTING (SF)-SCHEDULE:-

FOOTING	SIZE OF FOOTING		THICKNESS		NO.S	BOTTOM REINFORCEMENT (A)	TOP REINFORCEMENT (B)
	L x B	L1 x B1	D1	D2			
SF1	2200x2200	1200x1200	450	450	10	Y16-100C/C	Y16-100C/C
SF2	3050x3050	1650x1650	450	450	08	Y16-100C/C	Y16-100C/C

TOTAL - 18

RAFT FOOTING (RF)-SCHEDULE:-

FOOTING	SIZE OF FOOTING	THICKNESS	NO.S	BOTTOM REINFORCEMENT	TOP REINFORCEMENT
	L x B	D		(A)	
RF1	"REFER ST-02"	450	01	Y16-100C/C	

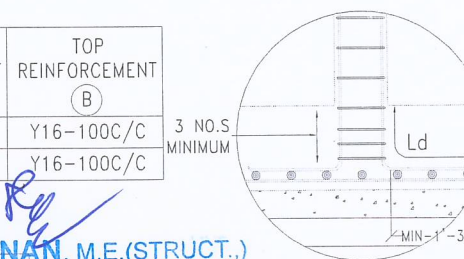
TOTAL - 01

COMBINED FOOTING (CF)-SCHEDULE:-

FOOTING	SIZE OF FOOTING L x B	THICKNESS	NO.S	BOTTOM REINFORCEMENT (A)	TOP REINFORCEMENT (B)
		D			
CF1	4700x2750	450	01	Y16-100C/C	Y16-100C/C
CF2	5650x2750	450	01	Y16-100C/C	Y16-100C/C

TOTAL - 02

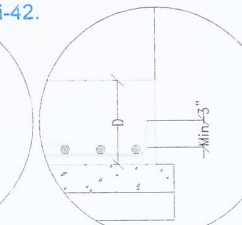
N. TAMILVANAN, M.E.(STRUCT.)
 Registration Structural Engineer GRADE-1 (SE)
 (CMDA) REG. NO. SE/GR-I/2024/02/005
 B&W STRUCTURAL DESIGN CONSULTANT
 181/64, Gandhi Road, Velachery, Chennai-42.
 Ph: 9677044466, 044 - 43237175
 bwstructuraldesign@gmail.com



DEVELOPMENT LENGTH



AT END ANCHORAGE



AT END ANCHORAGE

DRAWING RELEASED FOR:-

APPROVAL ONLY

PROJECT:-

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.
 a - MINIMUM= 1'-3"

TECHNICAL NOTES:-

- ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
- GRADE:-
CONCRETE - M25 (1:1:2).
STEEL - FE 500.
- COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3", RC WALL-1.5", WAIST SLAB-3".
- DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR S+4 FLOORS ONLY.
- SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

PROJECT NO: ST-2024/02/01/79/01 ST-01A

TITLE:-
COLUMN & FOOTING REINFORCEMENT DETAILS

REVISION:-

DIRECTION:-



N. TAMILVANAN, M.E.(STRUCT.)
 CMDA, CORPORATION & DTC
 Registered Structural Engineer GRADE-1(SE)
 B&W STRUCTURAL DESIGN CONSULTANT
 181/64, GANDHI ROAD, VELACHERY, CHENNAI-42.
 9677044466, 9677044515, 044-43237175.
 bwstructuraldesign@gmail.com.

DRAWING RELEASED FOR:-
APPROVAL ONLY



PROJECT:-

PLAN SHOWING THE PROPOSED CONSTRUCTION
OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT)
RESIDENTIAL BUILDING WITH 14 DWELLING
UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 &
47, OLD DOOR NO.25 & 26, RUKMANI ROAD,
KALACHATRA COLONY, BESANT NAGAR, CHENNAI
600090 COMPRISED IN OLD S.NO. 161/2 & 161/3
(PART), AND T.S.NO.21, BLOCK NO.51 OF
THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF
GREATER CHENNAI CORPORATION.

TECHNICAL NOTES:-

- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
- 2.0 GRADE:-
CONCRETE - M25 (1:1:2).
STEEL - FE 500.
- 3.0 COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3", RC WALL-1.5", WAIST SLAB-4".
- 4.0 DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR
S+4 FLOORS ONLY.
- 5.0 SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

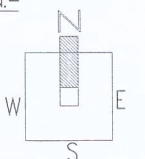
PROJECT NO: ST-2024/02/01/79/01 ST-03

TITLE:-
GRADE BEAM MARKING LAYOUT

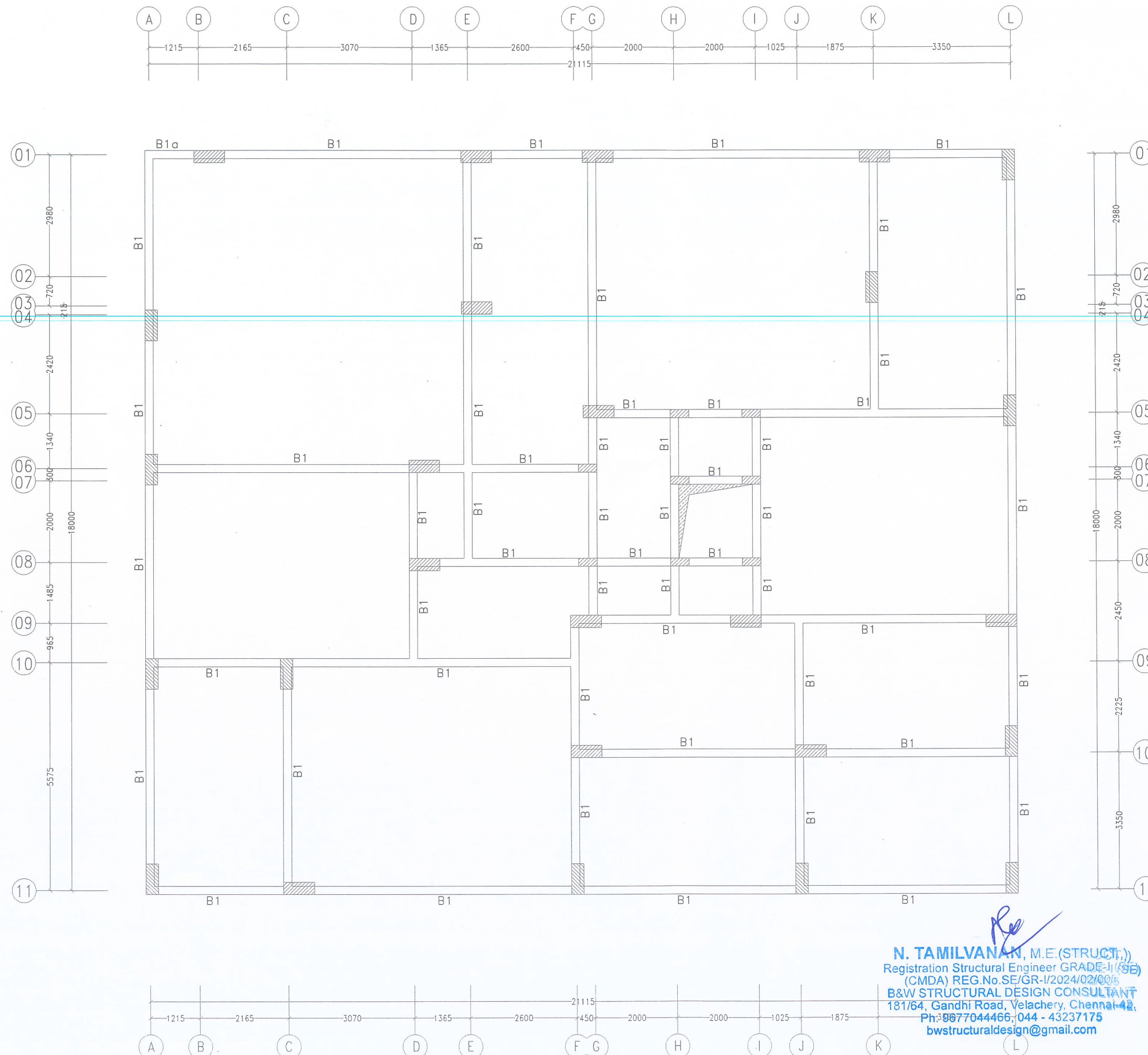
REVISION:-

R0

DIRECTION:-



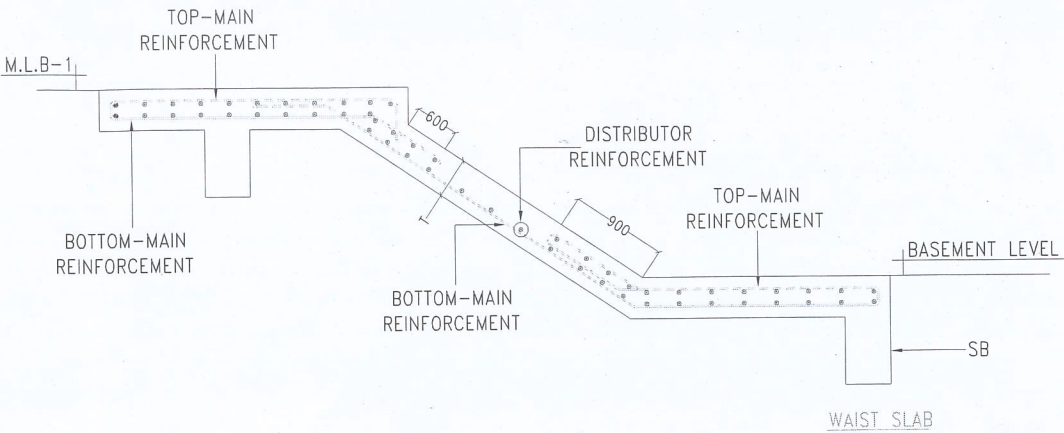
N.TAMILVANAN M.E.(STRUCT.)
CMDA, CORPORATION & DTCP
Registered Structural Engineer GRADE-1(SE)
B&W STRUCTURAL DESIGN CONSULTANT
181/64,GANDHI ROAD, VELACHERY, CHENNAI-42.
9677044466, 9677044515, 044-43237175.
bwstructuraldesign@gmail.com,



N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-1(SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph:9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

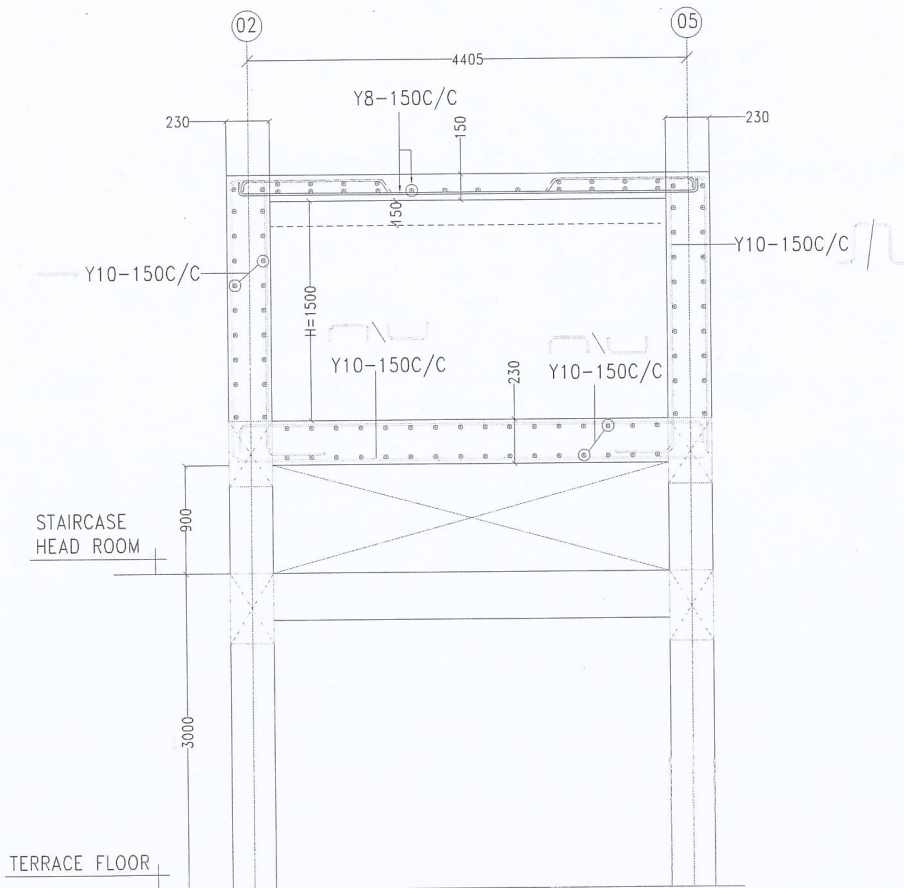
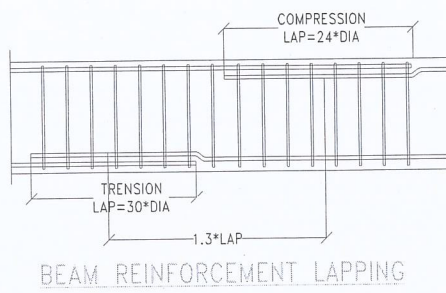
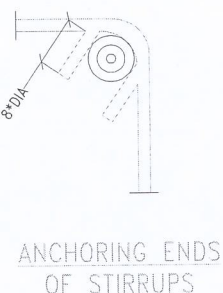
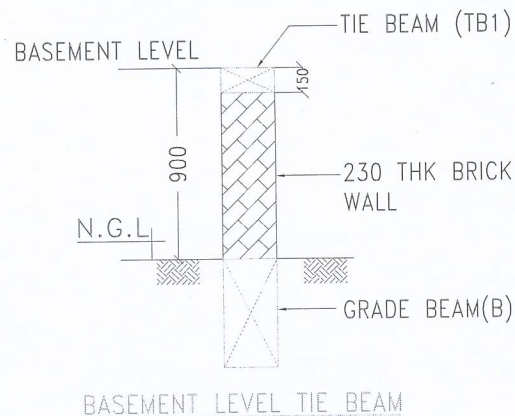
GRADE BEAM REINFORCEMENT SCHEDULE:-

BEAM SIZE B&D	BEAM @ LEFT CANTILEVER	BEAM @ LEFT	BEAM @ MIDDLE	BEAM @ RIGHT	BEAM @ RIGHT CANTILEVER
200X750	3-Y12(T) 2-Y12(T) Y8-5"C/C 2-Y12(T) 2-Y12(T) 3-Y12(T)	3-Y12(T) 2-Y12(T) Y8-5"C/C 2-Y12(T) 2-Y12(T) 3-Y12(T)	3-Y12(T) 2-Y12(T) Y8-7"C/C 2-Y12(T) 2-Y12(T) 3-Y12(T)	3-Y12(T) 2-Y12(T) Y8-5"C/C 2-Y12(T) 2-Y12(T) 3-Y12(T)	
B1					
B1a					



DRAWING RELEASED FOR:-
APPROVAL ONLY

PROJECT:-
PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.



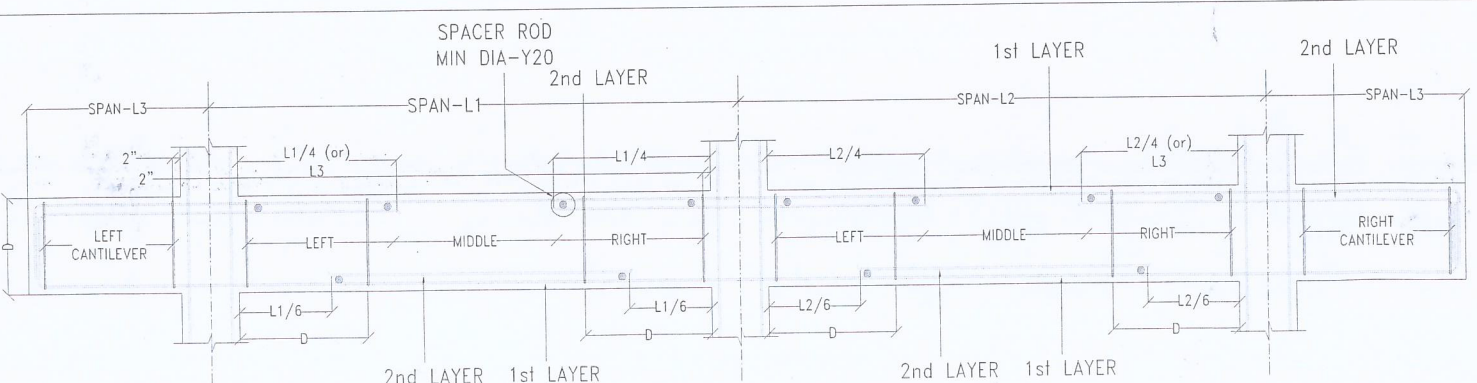
- TECHNICAL NOTES:-
- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
 - 2.0 GRADE:-
CONCRETE - M25 (1:1:2),
STEEL - FE 500.
 - 3.0 COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3/4", RC WALL-1.5", WAIST SLAB-3/4".
 - 4.0 DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR
S+4 FLOORS ONLY.
 - 5.0 SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

PROJECT NO: ST-2024/02/01/79/01 ST-03A

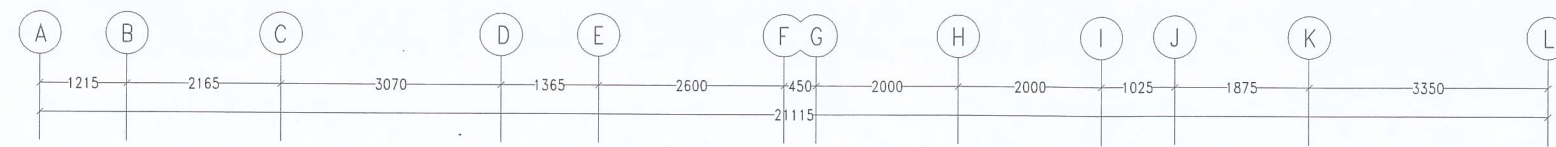
TITLE:- GRADE BEAM & REINFORCEMENT DETAILS

REVISION:-
DIRECTION:-
R0

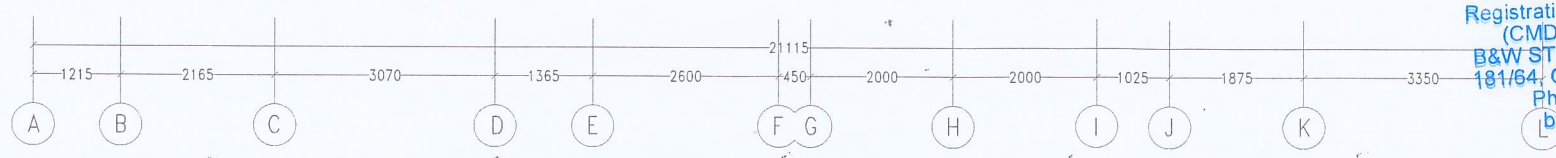
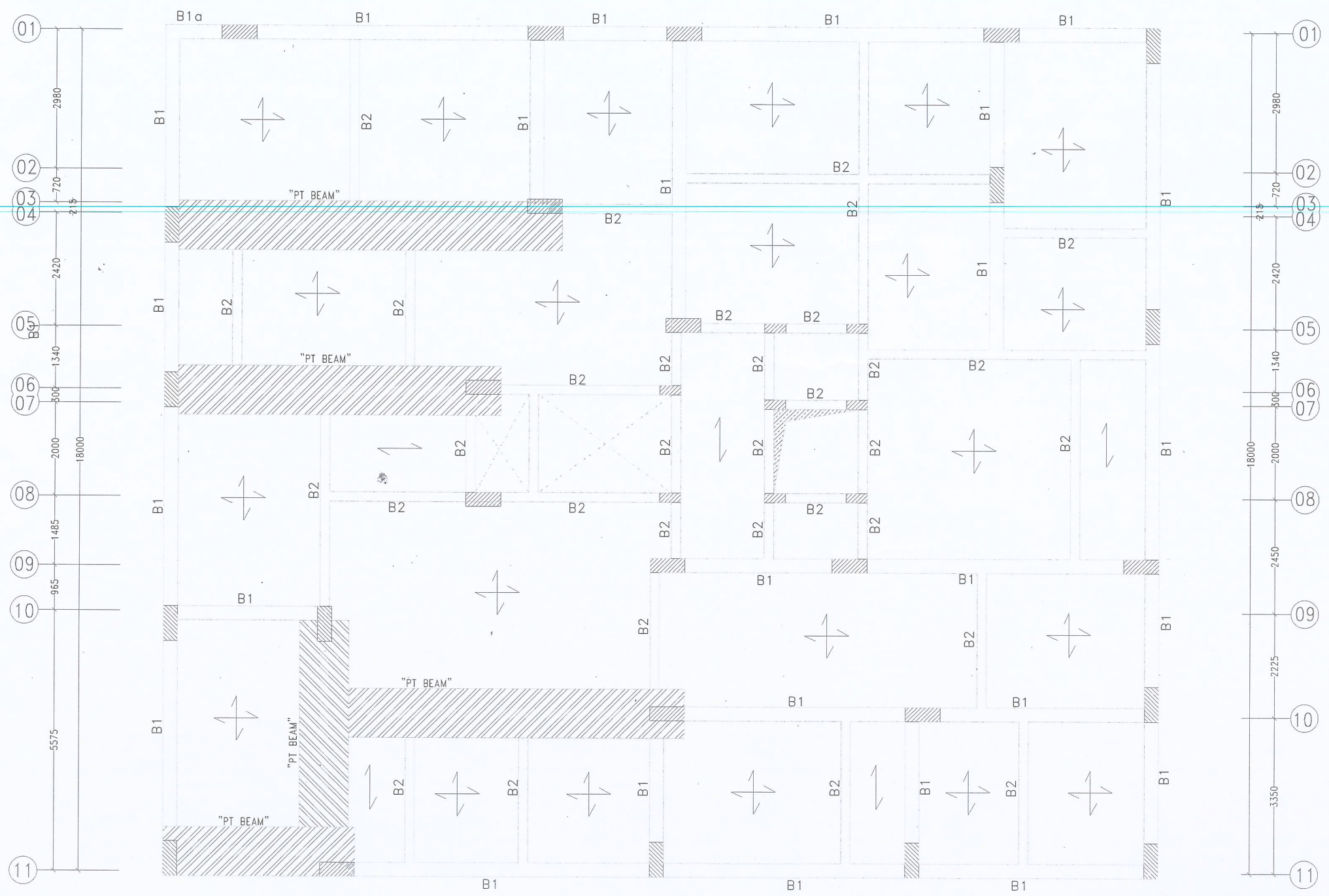
N.TAMILVANAN, M.E.(STRUCT.)
CMDA, CORPORATION & DTCP
Registered Structural Engineer GRADE-1(SE)
B&W STRUCTURAL DESIGN CONSULTANT
181/64, GANDHI ROAD, VELACHERY, CHENNAI-42.
9677044466, 9677044515, 044-43237175.
bwstructuraldesign@gmail.com,



N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com



- ↗ TWO WAY-150 - SHORTER DIRECTION - Y10-150C/C
↘ TWO WAY-150 - LONGER DIRECTION - Y10-150C/C
↓ ONE WAY-150 - SHORTER DIRECTION - Y10-150C/C
↔ ONE WAY-150 - DISTRIBUTOR - Y10-150C/C
↔ CANTILVER-150 - TOP REINFORCEMENT - Y10-150C/C



DRAWING RELEASED FOR:-
APPROVAL ONLY

PROJECT:-
PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT) RESIDENTIAL BUILDING WITH 14 DWELLING UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 & 47, OLD DOOR NO.25 & 26, RUKMANI ROAD, KALACHATRA COLONY, BESANT NAGAR, CHENNAI 600090 COMPRISED IN OLD S.NO. 161/2 & 161/3 (PART), AND T.S.NO.21, BLOCK NO.51 OF THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION.

- TECHNICAL NOTES:-**
- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
 - 2.0 **GRADE:-**
CONCRETE - M25 (1:1:2),
STEEL - FE 500.
 - 3.0 **COVER:-**
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-1", RC WALL-1.5", WAIST SLAB-1".
 - 4.0 **DESIGNED:-**
FOUNDATION & COLUMN ARE DESIGNED FOR
S+4 FLOORS ONLY.
 - 5.0 **SOIL TEST:-**
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

PROJECT NO: ST-2024/02/01/79/01 ST-04

TITLE:- TYPICAL GROUND, FIRST, SECOND, THIRD FLOOR ROOF BEAM LAYOUT & SLAB REINFORCEMENT DETAILS

REVISION:-
RO

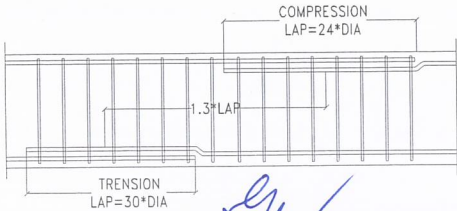
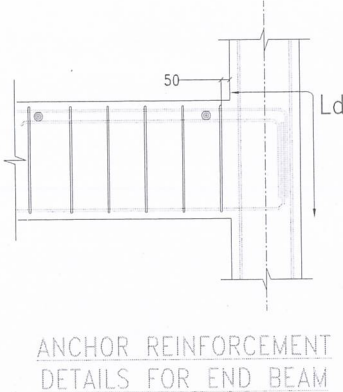
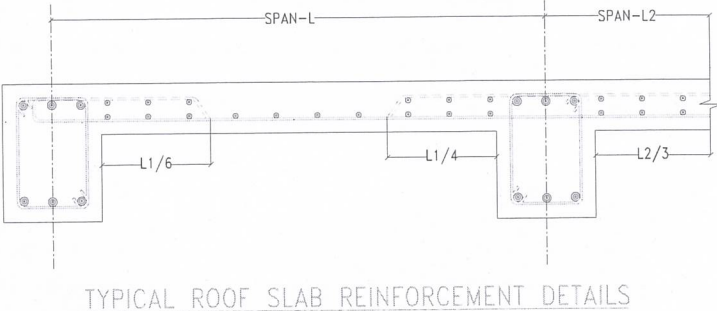
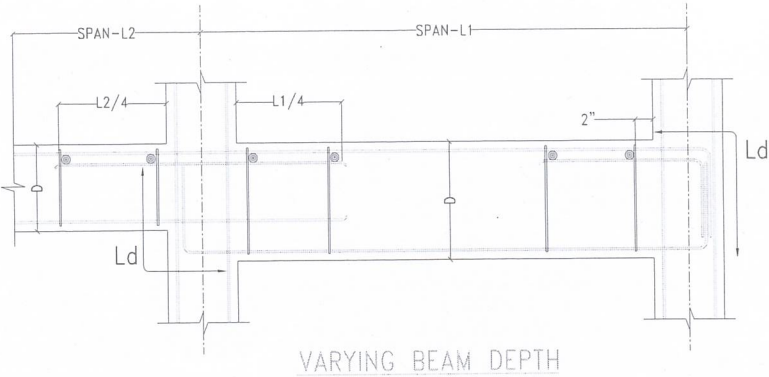
DIRECTION:-

N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

N.TAMILVANAN M.E(STRUCT.)
CMDA, CORPORATION & DTCP
Registered Structural Engineer GRADE-I(SE)
B&W STRUCTURAL DESIGN CONSULTANT
181/64,GANDHI ROAD, VELACHERY, CHENNAI-42.
9677044466, 9677044515, 044-43237175.
bwstructuraldesign@gmail.com,

TYPICAL GROUND, FIRST, SECOND, THIRD FLOOR ROOF & TERRACE FLOOR BEAM REINFORCEMENT SCHEDULE:-

BEAM SIZE B&D	BEAM @ LEFT CANTILEVER	BEAM @ LEFT	BEAM @ MIDDLE	BEAM @ RIGHT	BEAM @ RIGHT CANTILEVER
300X600	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) B1a 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-7"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) 3-Y20(T)	
200X450		3-Y16(T) 2-Y16(T) Y8-5"C/C 2-Y16(T) 3-Y16(T)	3-Y16(T) 2-Y16(T) Y8-7"C/C 2-Y16(T) 3-Y16(T)	3-Y16(T) 2-Y16(T) Y8-5"C/C 2-Y16(T) 3-Y16(T)	
B2					
PT BEAM	"REFER PT BEAM"				



N. TAMILVANAN, M.E.(STRUCT.)
Registration Structural Engineer GRADE-I (SE)
(CMDA) REG.No.SE/GR-I/2024/02/005
B&W STRUCTURAL DESIGN CONSULTANT
181/64, Gandhi Road, Velachery, Chennai-42.
Ph: 9677044466, 044 - 43237175
bwstructuraldesign@gmail.com

DRAWING RELEASED FOR:-
APPROVAL ONLY



PROJECT:-
PLAN SHOWING THE PROPOSED CONSTRUCTION
OF STILT FLOOR + 4 FLOORS (16.0M HEIGHT)
RESIDENTIAL BUILDING WITH 14 DWELLING
UNITS AT PLOT NO. 10 & 11, NEW DOOR NO.45 &
47, OLD DOOR NO.25 & 26, RUKMANI ROAD,
KALACHATRA COLONY, BESANT NAGAR, CHENNAI
600090 COMPRISED IN OLD S.NO. 161/2 & 161/3
(PART), AND T.S.NO.21, BLOCK NO.51 OF
THIRUVANMIYUR VILLAGE WITHIN THE LIMIT OF
GREATER CHENNAI CORPORATION.

- TECHNICAL NOTES:-
- 1.0 ALL DIMENSIONS ARE IN MM
LEVELS ARE IN MM
 - 2.0 GRADE:-
CONCRETE - M25 (1:1:2).
STEEL - FE 500.
 - 3.0 COVER:-
FOOTING-2", COLUMN-1.5", BEAM-1",
SLAB-3/4", RC WALL-1.5", WAIST SLAB-3/4".
 - 4.0 DESIGNED:-
FOUNDATION & COLUMN ARE DESIGNED FOR
S+4 FLOORS ONLY.
 - 5.0 SOIL TEST:-
AS PER SOIL TEST REPORT THE
SBC OF SOIL IS TAKEN AS 250 kN/M2.
AT DEPTH OF 2000MM FROM NGL.

PROJECT NO: ST-2024/02/01/79/01 ST-04A

TITLE:- TYPICAL GROUND, FIRST, SECOND, THIRD
FLOOR ROOF BEAM & TERRACE FLOOR
BEAM REINFORCEMENT DETAILS

REVISION:-
DIRECTION:-
RO
N
W
E
S

N.TAMILVANAN M.E(STRUCT.)
CMDA, CORPORATION & DTCP
Registered Structural Engineer GRADE-1(SE)
B&W STRUCTURAL DESIGN CONSULTANT
181/64,GANDHI ROAD, VELACHERY, CHENNAI-42.
9677044466, 9677044515, 044-43237175.
bwstructuraldesign@gmail.com,