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CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
"Thalamuthu Natarajan Building", No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the **Thiru N. TAMIL VANAN** has enrolled as **Registered Structural Engineer Grade-I (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E.,(Structural Engg.)** and experience in the relevant field for **5years**.

He has been given the Registration No **SE/GR-I/2024/02/005** on **18.02.2024**. He shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part-V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(Ms) No.18 MAWS (MA1)Dept. dated 04.02.2019.

This Registration is valid upto 17.02.2029



19/2/2024

(A. MEGANATHAN)
Superintendent

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CLASS 1 LICENSED SURVEYOUR

181/64, GANDHI ROAD
VELACHERY

STABILITY CERTIFICATE

Date: 26/01/2026

ROHAAN CONSTRUCTION PVT LTD SITE ADDRESS: PLOT.NO 90, 91,92,93 SURVEY NO. 663/2, 3 (TS.NO- 1/2,1/3) SRINIVASA 2ND STREET, SRINIVASA NAGAR, VELACHERY PART -1, VELACHERY TALUK,CHENNAI. 3. NO. OF FLOOR= S+5.

It is certified that the Proposed building STILT+5 Floor is designed as per the Indian Code of Practice for concrete construction IS – 456-2000 Where the grade of concrete used for all structural elements is M25. Loading standards followed for design are IS – 875 part- I (DEAD LOAD), IS – 875 part- II (LIVE LOAD), Thus Analysis check has been made and we found it structurally stable and safe for construction.

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CONSULTANT

STRUCTURAL DESIGN REPORT

ROHAAN CONSTRUCTION PVT LTD SITE ADDRESS: PLOT.NO 90, 91,92,93 SURVEY NO. 663/2, 3 (TS.NO- 1/2,1/3) SRINIVASA 2ND STREET, SRINIVASA NAGAR, VELACHERY PART -1, VELACHERY TALUK,CHENNAI. 3. NO. OF FLOOR= S+5.

STRUCTURAL CONSULTANT:

B&W STRUCTURAL DESIGN CONSULTANTS

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

VELACHERY,

CHENNAI-600042.

1. INTRODUCTION

The Structure is a Residential building. It is designed as RCC building supported on Pile Foundation at 10.5**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 Pile Foundation at 10.5**m** depth from Existing Ground Level and Pile Capacity is taken as 630 KN.

3. MATERIAL SPECIFICATIONS

3.1. CONCRETE AND REINFORCEMENT

1. Concrete Grades: **M30**

(Minimum cement content-460kg/m3, water cement ratio – 0.45).

2. TMT High:max **Fe 550**Grade 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)

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

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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 1.75*DL + 1.75*L.L
2. LOAD COMB 2 1.0*DL + 1.0*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 - 20 kN /m^3
2. Unit weight of steel - 78.5 kN /m^3
3. Floor finish considered - 1.5kN /m^2
5. Unit weight of aac block -10kN/m

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 : 3KN / 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 = 0.15m x 25 KN/m3 = 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 = 0.15m x 25 KN/m3 = 3.75 KN/m^2

Soil filling = 0.20*18 = 4.14 KN/m^2

Total load = 7.89 KN/m^2

3. Member load:

Grade beam	= (4.8m -0.38m) x 0.20m x 20 KN/ m^3	= 20 KN/m
Ground floor beam	= (3.5m -0.38m) x 0.20m x 20 KN/ m^3	= 14 KN/m
Parapet wall	= 0.9m x 0.20m x 20 KN/ m^3	= 4 KN/m

PILE CAP DESIGN CALCULATIONS

Design Code	:	IS Code	
Pilecap No	:	PC1	
Column No	:	C1	(300mm X 600mm)
Member Ref. No	:	47	
Concrete Grade	:	M30	
Steel Grade	:	Fe550	
Clear Cover	:	50	mm
Top of pile-cap below ground	:	0	M
Density of Soil	=	18	KN/cuM
Founding Depth	=	0.20	M
Pile Capacity in compression	=	700	KN
Pile Capacity in tension	=	75	KN
Pile Capacity Reduction	=	0	%
Pile Overloading	=	10	%
Pile Group Overloading	=	10	%
Pile Capacity Increase for EQ	=	25	%
Pile Capacity Increase for Wind	=	25	%
Live Load Reduction	=	0	%
Consider Capacity Design	:	No	
Consider Overburden Pressure	:	Yes	
No. of Piles	=	2	
Pile Diameter	=	600	mm
Pile Spacing	=	2.5	x Ø
Pilecap Size	=	2400X900	mm
Pilecap Depth	=	750	mm
Soil Wt. + Pile-cap Wt.	=	40.5	KN

For design, moments along shorter direction of pile cap has been ignored

Check for Maximum Load on One Pile:

Critical Analysis Load Combination	:	3
Critical Load Combination	:	[1] : (LOAD 1: DL) +(LOAD 2: LL)

Pcomb	=	1168.72	KN
Ptotal	=	Pcomb + Soil Wt. + Pilecap Wt.	
	=	1209.22	KN
Mx	=	-1.49	KNM
My	=	3.55	KNM
P	=	Ptotal/ No. of Piles	
	=	604.61	KN
Pmx	=	1	KN
Pmy	=	0	KN
Maximum load on pile	=	605.61	KN
Allowable load on pile	=	700 X 1	
	=	770	KN

Check for Maximum Load on Pile Group:

Critical Analysis Load Combination	:	3	
Critical Load Combination	:	[1] : (LOAD 1: DL) +(LOAD 2: LL)	
Pcomb	=	1168.72	KN
Ptotal	=	Pcomb + Soil Wt. + Pilecap Wt.	
	=	1209.22	KN
Mx	=	-1.49	KNM
My	=	3.55	KNM
Maximum load on pile group	=	1209.22	KN
Allowable load on pile group	=	2 x 700 x 1.1	
	=	1540	KN

Check for Uplift Load on Pile:

No uplift in any pile

Design for Bending:

Bottom Steel Along Column-D

Critical Analysis Load Combination	:	4	
Critical Load Combination	:	[4] : 1.5 (LOAD 1: DL) +1.5 (LOAD 2: LL)	
Pcomb	=	1753.08	KN
Ptotal	=	Pcomb + Soil Wt. + Pilecap Wt.	
	=	1813.83	KN
Mx	=	-2.24	KNM
My	=	5.32	KNM
Ppile	=	Max Load on pile	

	=	908.4083	KN
Deff	=	690	mm
Beff	=	900	mm
DfCol	=	0.45	M
BMux	=	Ppile X DfCol	
	=	408.78	KNM
PtReq	=	0.23	%
AstReq (BM)	=	1587	Sqmm/M
AstPrv	=	T12 @ 150 c/c	
	=	1608	Sqmm/M

Top Steel Along Column-D

D	=	750	mm
	<=	1000	mm, Hence
AstReq (BM)	=	Min Pt for Top Steel X D X 1000	
	=	0.06% X 750 X 1000	
	=	450	Sqmm/M
AstPrv	=	T12 @ 150 c/c	
	=	462	Sqmm/M

Bottom Steel Along Column-B

AstReq (BM)	=	0.2 x (D/2) x B/100	
	=	0.2 x 375 x 900/100	
	=	675	Sqmm/M
AstPrv	=	T12 @ 150 c/c	
	=	683	Sqmm/M

Top Steel Along Column-B

D	=	750	mm
	<=	1000	mm, Hence
AstReq (BM)	=	Min Pt for Top Steel X D X 1000	
	=	0.06% X 750 X 1000	
	=	450	Sqmm/M
AstPrv	=	T12 @ 150 c/c	
	=	462	Sqmm/M

Design for One Way Shear:

Along Column-D

Critical Analysis Load Combination	:	4

Critical Load Combination	:	[4] : 1.5 (LOAD 1: DL) +1.5 (LOAD 2: LL)	
Pcomb	=	1753.08	KN
Ptotal	=	Pcomb + Soil Wt. + Pilecap Wt.	
	=	1813.83	KN
Mx	=	-2.24	KNM
My	=	5.32	KNM
Ppile	=	Max Load on pile	
	=	908.4083	KN

Location of critical section is at d/2 from face of column

Section Location from column center	=	645	mm

Data for Piles

Pile No	Load (KN)	% covered	Shear (KN)
P1	908.41	32.5	613.18
P2	905.42	32.5	611.16

Design Shear Force (Vu)	=	Max. of (Shear due to P1, P2)	
	=	613.18	KN
Deff	=	690	mm
Beff	=	900	mm
Tv	=	Vu/(Beff x Deff)	
	=	0.99	N/Sqmm
Tc	=	0.35	N/Sqmm
Av	=	105	mm
Shear enhancement factor	=	2 X Deff / Av	
	=	13.14	mm
Enhanced shear strength (Tce)	=	4.62	N/Sqmm
Tv	<	Tce, Hence Shear Reinforcement is not required	

Along Column-B

One way shear check do not applicable for 2 pile pile-cap design

Design of Face Reinforcement:

AsfrReq	=	SFR % X D X Beffsfr	
	=	0.05 X 750 X 500 / 100	
	=	188	Sqmm
Asfr Prv	=	3 - T10	
	=	236	Sqmm

Check for Load Transfer from Column to PileCap

Critical Analysis Load Combination	=	4	
Critical Load Combination	:	[4] : 1.5 (LOAD 1: DL) +1.5 (LOAD 2: LL)	
P	=	1753.08	KN
A2	=	0.18	sqM
A1	=	1.26	sqM
Base Area	=	1.26	sqM
A1	<	Base Area	
Modification Factor	=	SquareRoot(A1/A2) < = 2	
SquareRoot(A1/A2)	=	2.65	
Thus, Modification Factor	=	2	
Concrete Bearing Capacity	=	0.45 X Fck X Modication Factor X Column Area	
	=	4050	KN
Concrete Bearing Capacity	>	P, Hence Safe.	

COLUMN DESIGN CALCULATIONS

General Data

Column No.	:	C1	
Level	:	0m To 1.8m	
Design Code	=	IS Code	
Grade Of Concrete	=	M30	N/Sqmm
Grade Of Steel	=	Fe550	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 / 30	
	=	14.32	MM
Mminy	=	Pu x Minimum Eccentricity	
	=	34.83	KNM

Slenderness Check

Max Slenderness Ratio(L/B)	=	6	
	<	60	(Hence Ok)

Column Is Unbraced Along D

Slenderness Check Along D:

Effective Length Factor	=	1.2	
Slenderness Ratio	=	Effective Length / D	
	=	2.7, Column not Slender Along D	

Column Is Unbraced Along B

Slenderness Check Along B:

Effective Length Factor	=	1.2	
Slenderness Ratio	=	Effective Length / B	
	=	7.2, Column not Slender Along B	

Calculation of Design Moment

Direction	Manalysis	Mmin	Mdesign	MsIndx	Mdesign-

					final
	A	B	C	E	F
Major Axis - Mux	30.31	---	30.31	0	30.31
Minor Axis - Muy	10.07	34.83	34.83	0	34.83

Wher
e

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

Pu	=	550	KN
Mux	=	30.31	KNM
Muy	=	34.83	KNM

Biaxial Bending Check

Pt Calculated	=	2.07	
Steel Provided	=	4-T16 +2-T12	
Mux1	=	306.98	KNM
Muy1	=	154.32	KNM
Puz	=	0.45 x Fck x Ac + 0.75 x Fy x Asc	
	=	3378.02	KN
Pu/Puz	=	0.52	
Alpha	=	1.53	
Interaction Ratio	=	(Mux / Mux1)^Alpha + (Muy / Muy1)^Alpha)	
	=	0.13 < 1	

Design Of Shear

Design for shear along D

Critical Analysis Load Combination	:	4	
Critical Load Combination	=	[2] : 1.5 (LOAD 1: DL) +1.5	KN

		(LOAD 2: LL)	
Design shear force, Vuy	=	15.5958	KN
Pu	=	1741.62	
Design shear stress, Tvy	=	Vuy / (B x Deff)	N/Sqmm
	=	0.0945	N/Sqmm
Design shear strength, Tc	=	0.6493	N/Sqmm
Shear Strength Enhancement Factor	=	1 + 3 x Pu / (B x D x Fck)	
	=	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	=	Tvy < Tc x 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, Vux	=	-8.5535	kN
Pu	=	550	
Design shear stress, Tvx	=	Vux / (D x Beff)	kN
	=	0.057	N/Sqmm
Design shear strength, Tc	=	0.6493	N/Sqmm
Shear Strength Enhancement Factor	=	1 + 3 x Pu / (B x D x Fck)	
	=	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	=	Tvx < Tc x 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	
Provided spacing	= 150	mm

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	: 8190 mm
Breadth (B)	: 230 mm
Depth (D)	: 600 mm
Effective Depth (d)	: 395 mm
Design Code	: IS Code
Beam Type	: Regular Beam
Grade Of Concrete	: M30
Grade Of Steel	: Fe550

Clear Cover (Cmin) : 25 mm

Es : 2x10^5 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-T10	3-T12 2- T10	3-T12 2- T10	3-T12 2- T10	3-T12 2- T10	3-T12 2- T10

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

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Vut (KN)	87.85	50.25	90.81
Tv (N/Sqmm)	0.74	0.42	0.77
Tc (N/Sqmm)	0.61	0.55	0.61
Vc (KN)	72.1	65.5	72.1
Vus=Vut-Vc (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 <= 750 mm

Side Face Reinforcement
Not Required.

SLAB DESIGN CALCULATIONS

Level	=	4.2m	
Design Code	=	IS Code	
Grade Of Concrete	=	M30	N/Sqmm
Grade Of Steel	=	Fe550	N/Sqmm
Clear Cover	=	20.000	mm
Long Span, Ly	=	4730	M
Short Span, Lx	=	2890	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 Coefficient	=	0.043	
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	=	**T10@ 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	=	**T10@ 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	=	**T10@ 150 c/c**	
	=	1131.000	Sqmm/M

Distribution Steel @ 0.12% -

Area Of Steel Required	=	210.000	Sqmm
Steel Provided	=	**T10@ 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

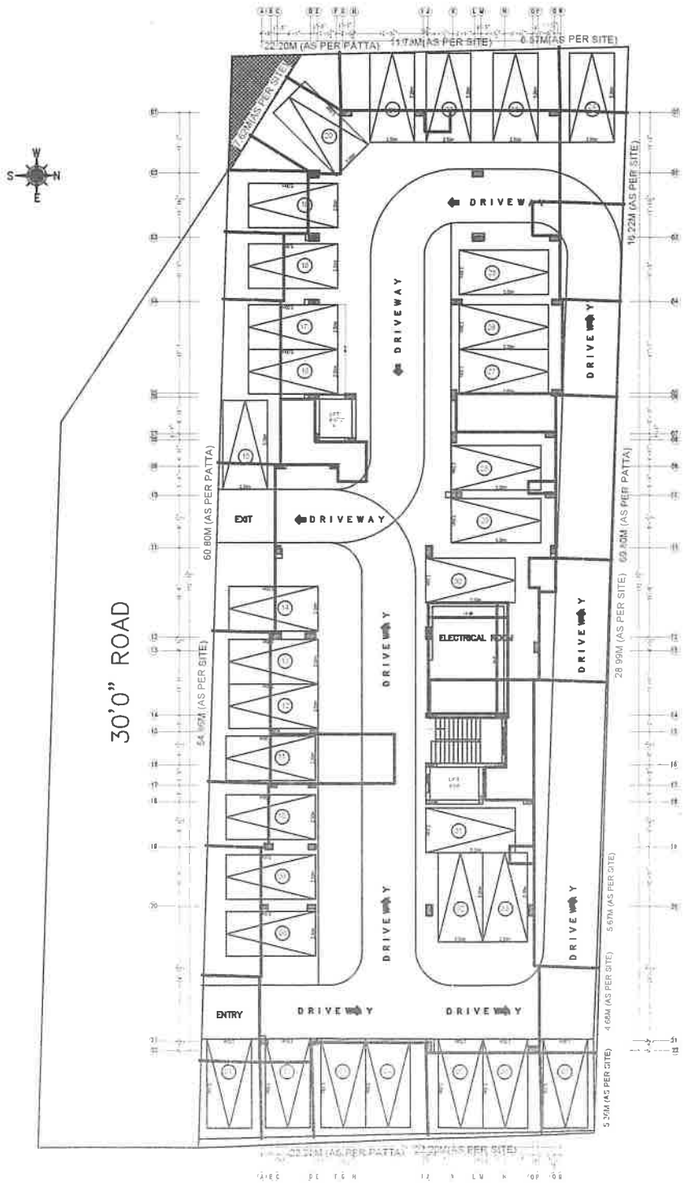
Shear Coefficient(Ly), SF2	=	0.360	
V = SF2 x TL x Lx	=	29.232	KN
Vu = 1.5 X V	=	43.848	KN
Shear Stress, Tv	=	0.266	N/Sqmm
Nominal Shear Stress, Tc	=	0.342	N/Sqmm
Modification Factor 'K'	=	1.200	
K x Tc	=	0.411	
	>	0.266	Slab Is Safe In Shear

Deflection Check:

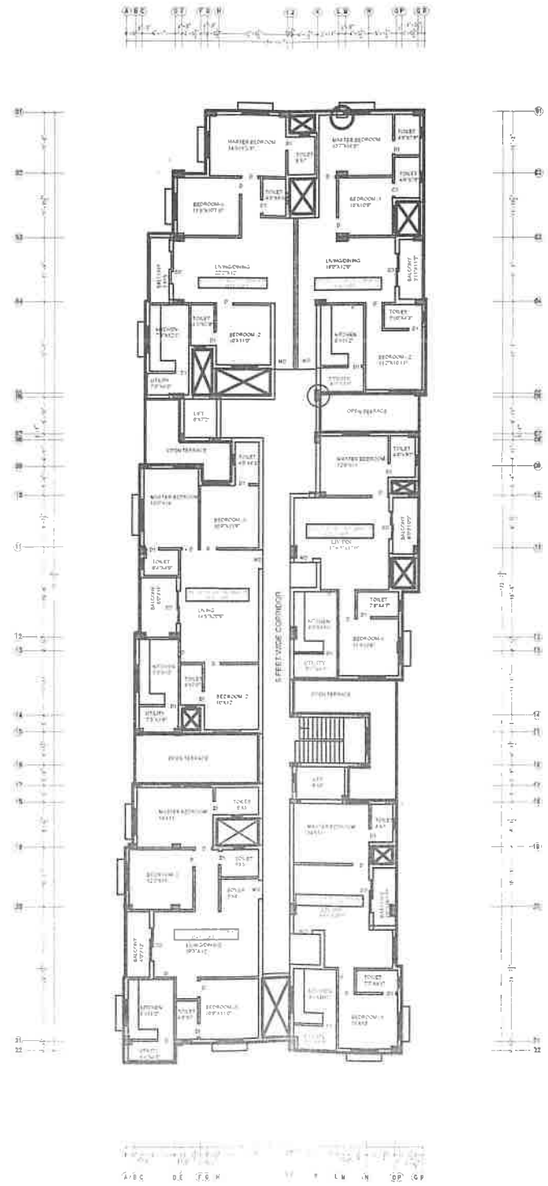
Basic Span To Depth Ratio	=	26	
Span Correction Factor	=	1.000	
Tensile Steel Factor	=	2.198	
Compression Steel Factor	=	1.000	
Flange Correction Factor	=	1.000	
Max Span To Depth Ratio	=	26.00 x 1.00 x 2.20 x 1.00 x 1.00	
	=	57.142	
Lx/d	=	33.143	
	<	57.142	Slab Is Safe In Deflection

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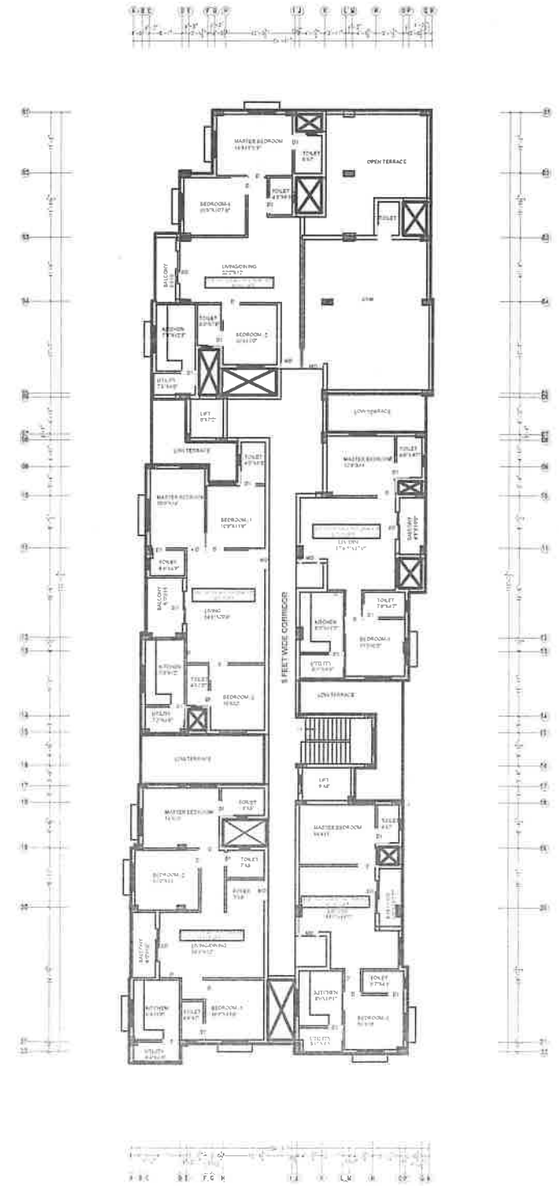
COLUMN LAYOUT + ARCHITECTURAL PLAN



SITE CUM STILT FLOOR PLAN

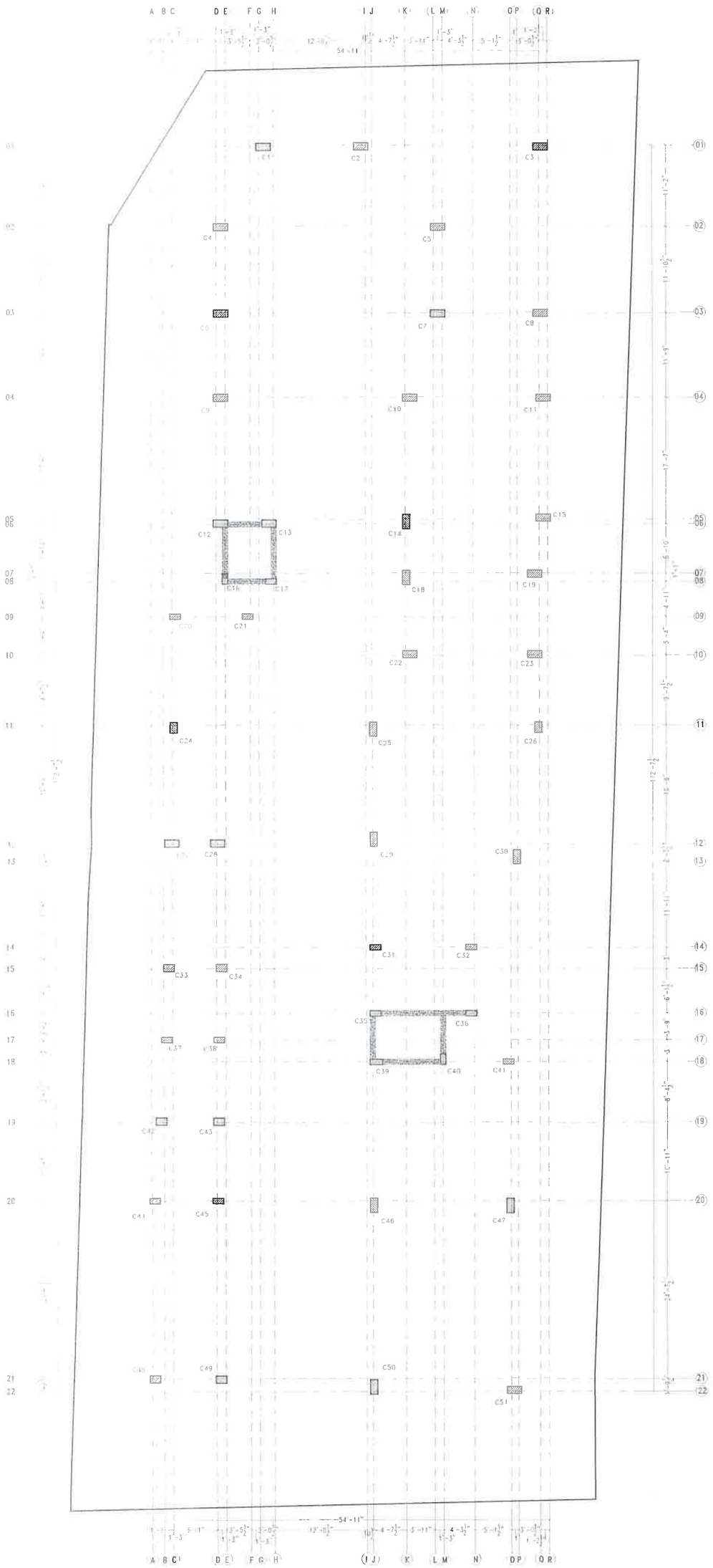


TYPCIAL 1 TO 4 FLOORS



5 TH FLOOR

APPORVAL ONLY

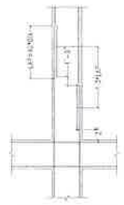


COLUMN SCHEDULE:-

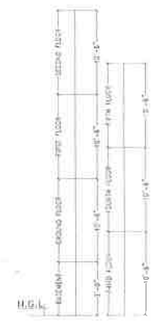
	Y8-6"C/C	Y8-6"C/C	Y8-6"C/C
	10-Y25 + 4-Y20	10-Y16	10-Y20
COLUMN MARKED	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C18, C19, C22, C23, C25, C27, C28, C29, C30, C46, C47 C50, C51	C16, C17, C20, C21, C31 C32, C35, C36, C37, C38, C39, C40, C41, C44, C45	C24, C26, C33, C34, C42 C43, C48, C49



LATERAL TIE DETAILS



LAPPING DISTANCE



FLOOR LEVELS

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ST-01

ST-2026/02/01/05/01/09

PROJECT:-
CLIENT: ROHAAN CONSTRUCTION PVT LTD
Site address: Plot.no 90, 91,92,93 Survey no. 663/2, 3 (Ts.No-1/2,1/3) Srinivasa 2nd street, Srinivasa nagar, Velachery part -1, Velachery taluk,chennai. 3. No. Of floor= G+5

ARCHITECT:-

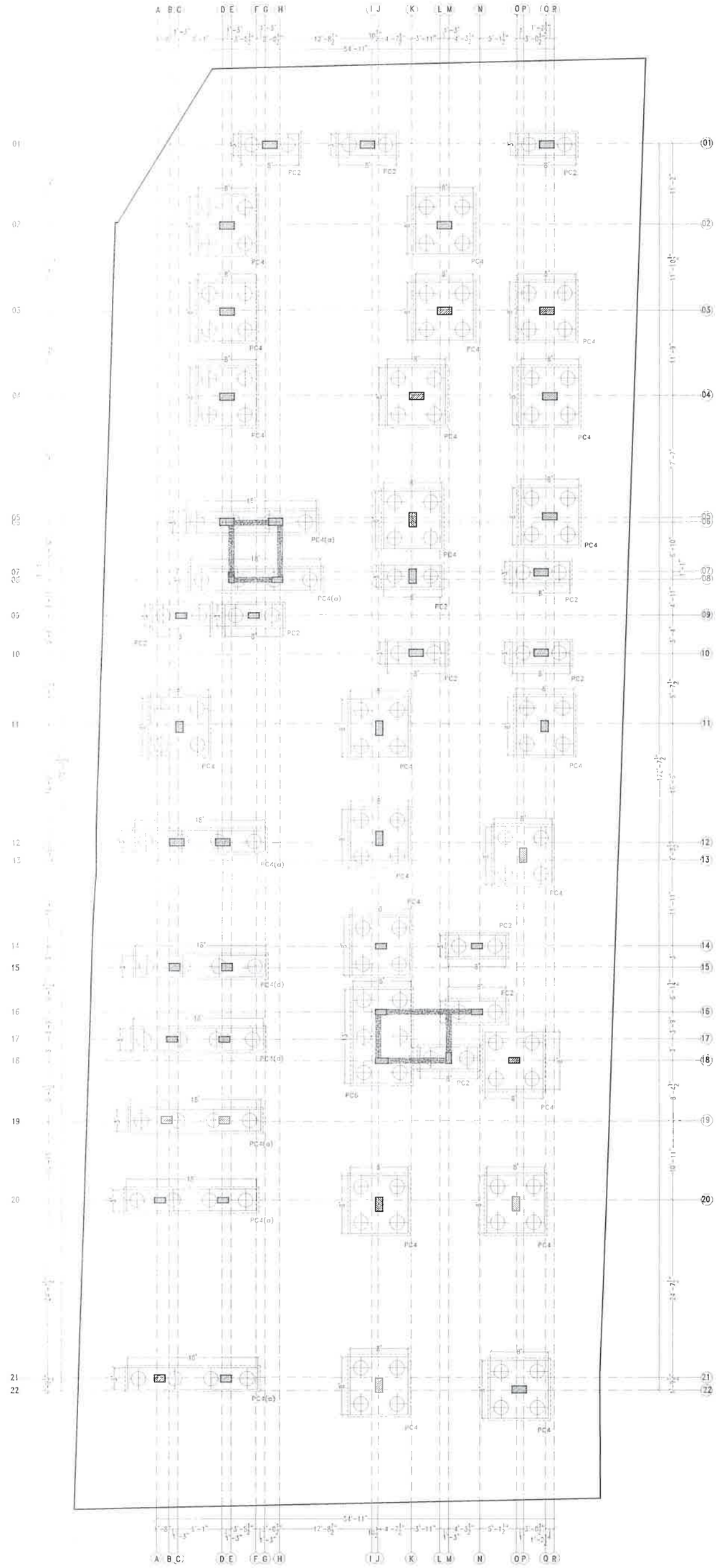
TITLE:-
COLUMN MARKING LAYOUT & REINFORCEMENT DETAILS

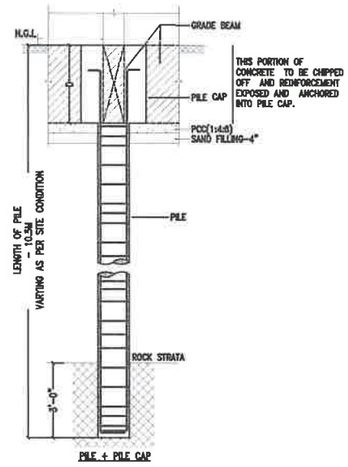
REVISION:-
R0

DIRECTION:-
W S N E

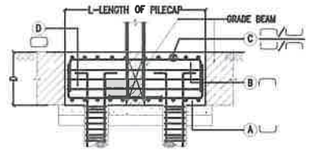
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APPROVAL ONLY

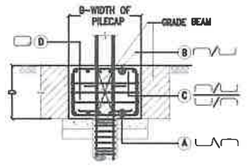




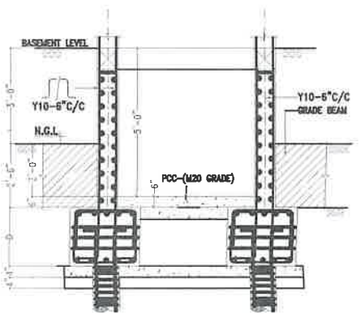
PILE + PILE CAP



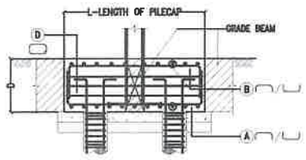
PC2-LONGITUDINAL SECTION DETAILS



PC2-CROSS SECTION DETAILS



LIFT PIT PILE - PILE CAP CROSS SECTION DETAILS



PC4 & PC6-CROSS SECTION DETAILS

PILE & PILE CAP-SCHEDULE:-

PILE CAP	THICKNESS	NOS		REINFORCEMENT	REINFORCEMENT	REINFORCEMENT	REINFORCEMENT
	D	PILE	PILE CAP	(A)	(B)	(C)	(D)
PC1	NOT AVAILABALE						
PC2	2'-6"	24	12	Y16-6"C/C	Y16-6"C/C	Y12-6"C/C	Y12-6"C/C
PC3	NOT AVAILABALE						
PC4	2'-6"	84	21	Y20-6"C/C	Y20-6"C/C	-------	Y16-6"C/C
PC4(a)	2'-6"	32	08	Y16-6"C/C	Y16-6"C/C	Y12-6"C/C	Y12-6"C/C
PC6	2'-6"	08	01	Y20-6"C/C	Y16-6"C/C	Y12-6"C/C	Y16-6"C/C

TOTAL- 146 42

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bwstructuraldesign@gmail.com

DATE:	26-01-2026	ST-02	PROJECT:- CLIENT: ROHAAN CONSTRUCTION PVT LTD Site address: Plot.no 90, 91,92,93 Survey no. 663/2, 3 (Ts.No-1/2,1/3) Srinivasa 2nd street, Srinivasa nagar, Velachery part -1, Velachery taluk,chennai. 3. No. Of floor= G+5
DRAWING BY:	SARATH		
DESIGN BY:	NTV		
PROJECT NO:	ST-2026/02/01/05/01/09		

ARCHITECT:-

TITLE:- PILE & PILE CAPE MARKING LAYOUT & REINFORCEMENT DETAILS

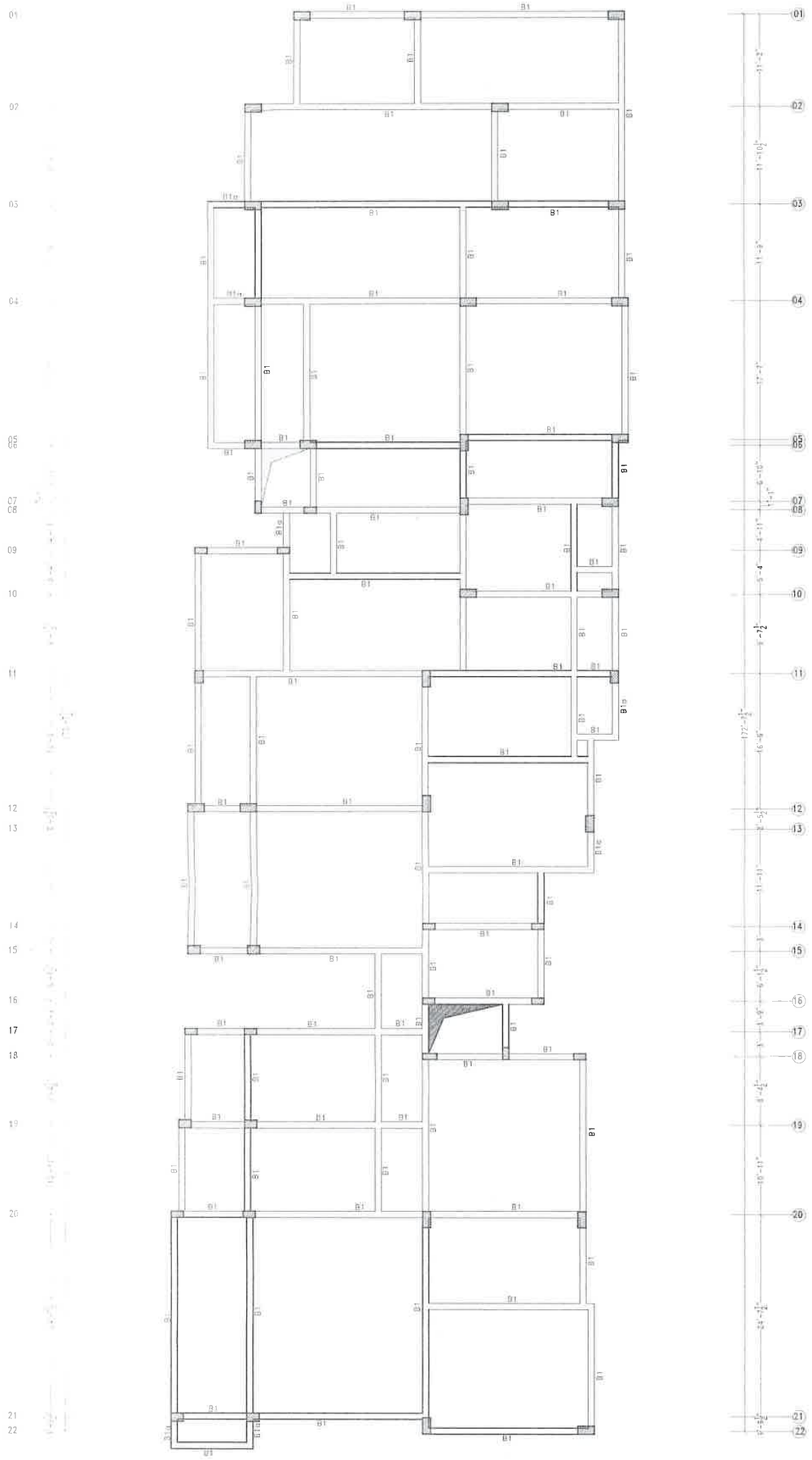
REVISION:- R0

DIRECTION:- W S N E

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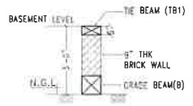
APPROVAL ONLY





GRADE BEAM REINFORCEMENT SCHEDULE:-

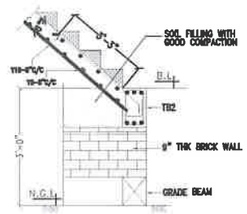
BEAM SIZE (B&D)	BEAM @ LEFT CANTILEVER	BEAM @ LEFT	BEAM @ MIDDLE	BEAM @ RIGHT	BEAM @ RIGHT CANTILEVER
0'-9"X2'-0"	3-Y12(T)	3-Y12(T)	3-Y12(T)	3-Y12(T)	3-Y12(T)
B1	2-Y10(T) Y8-5"C/C 2-Y10(T)	2-Y10(T) Y8-5"C/C 2-Y10(T)	2-Y10(T) Y8-7"C/C 2-Y10(T)	2-Y10(T) Y8-5"C/C 2-Y10(T)	2-Y10(T) Y8-5"C/C 2-Y10(T)
B1a	3-Y12(T)	3-Y12(T)	3-Y12(T)	3-Y12(T)	3-Y12(T)



BASEMENT LEVEL TIE BEAM

BASEMENT LEVEL BEAM REINFORCEMENT SCHEDULE:-

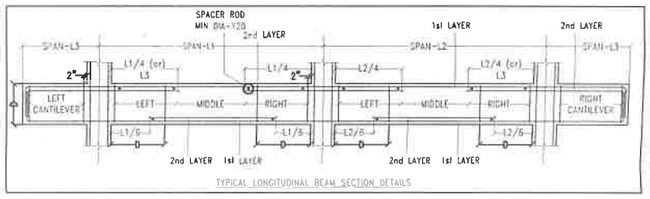
BEAM SIZE (B&D)	BEAM DETAILS
0'-9"x0'-6"	3-Y10(T)
TB1	Y8-6"C/C
	3-Y10(T)



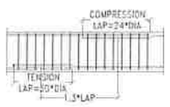
STAIRCASE SECTION - (1-1)

BASEMENT LEVEL BEAM REINFORCEMENT SCHEDULE:-

BEAM SIZE (B&D)	BEAM DETAILS
0'-9"x1'-3"	3-Y12(T)
TB2	Y8-6"C/C
	3-Y12(T)



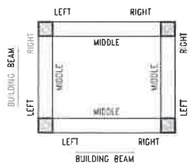
TYPICAL LONGITUDINAL BEAM SECTION DETAILS



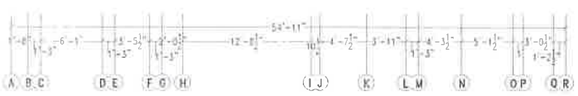
BEAM REINFORCEMENT LAPPING



ANCHORING ENDS OF STIRRUPS



DIRECTION OF BEAM ARRANGEMENT



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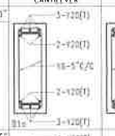
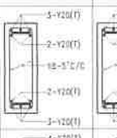
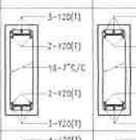
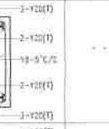
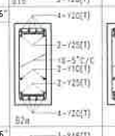
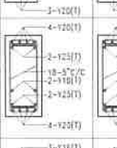
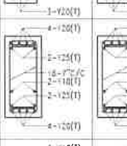
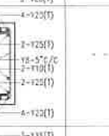
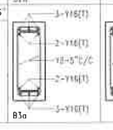
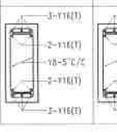
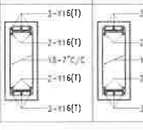
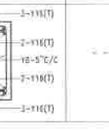
DATE:	26-01-2026	ST-03	PROJECT:- CLIENT: ROHAAN CONSTRUCTION PVT LTD Site address: Plot.no 90, 91,92,93 Survey no. 663/2, 3 (Ts.No-1/2,1/3) Srinivasa 2nd streel, Srinivasa nagar, Velachery part -1, Velachery taluk,chennai. 3. No. Of floor= G+5	ARCHITECT:-	TITLE:- GRADE BEAM LAYOUT & REINFORCEMENT DETAILS	REVISION:- R0	DIRECTION:- W S N E
DRAWING BY:	SARATH						
DESIGN BY:	NTV						
PROJECT NO:	ST-2026/02/01/05/01/09						

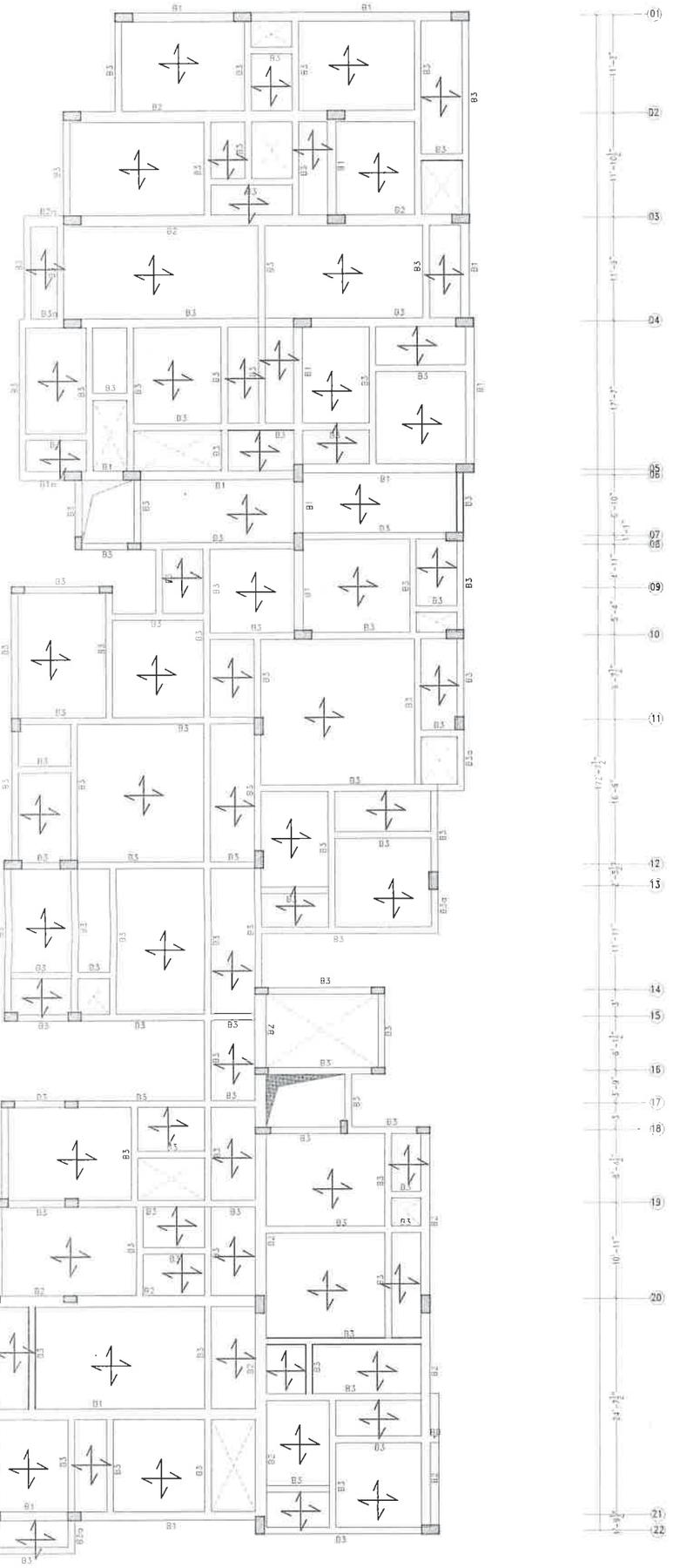
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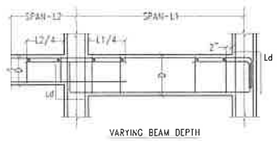
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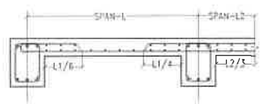


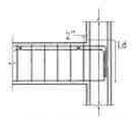
GROUND FLOOR ROOF BEAM REINFORCEMENT SCHEDULE:-

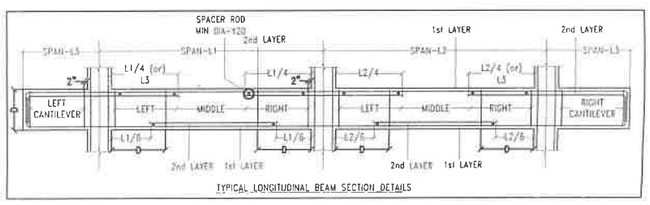
BEAM SIZE B&D	BEAM @ LEFT CANTILEVER	BEAM @ LEFT	BEAM @ MIDDLE	BEAM @ RIGHT	BEAM @ RIGHT CANTILEVER
1'-0"X2'-0"					- - - -
B1	3-Y20(T) 2-Y20(T) 18-5"C/C 2-Y20(T) 3-Y20(T) B1a	3-Y20(T) 2-Y20(T) 18-5"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) 18-7"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) 18-9"C/C 2-Y20(T) 3-Y20(T)	
1'-3"X2'-6"					- - - -
B2	4-Y20(T) 2-Y25(T) 18-5"C/C 2-Y10(T) 2-Y25(T) 4-Y20(T) B2a	4-Y20(T) 2-Y25(T) 18-5"C/C 2-Y10(T) 2-Y25(T) 4-Y20(T)	4-Y20(T) 2-Y25(T) 18-7"C/C 2-Y10(T) 2-Y25(T) 4-Y20(T)	4-Y20(T) 2-Y25(T) 18-9"C/C 2-Y10(T) 2-Y25(T) 4-Y20(T)	
0'-9"X1'-6"					- - - -
B3	3-Y16(T) 2-Y16(T) 18-5"C/C 2-Y16(T) 3-Y16(T) B3a	3-Y16(T) 2-Y16(T) 18-5"C/C 2-Y16(T) 3-Y16(T)	3-Y16(T) 2-Y16(T) 18-7"C/C 2-Y16(T) 3-Y16(T)	3-Y16(T) 2-Y16(T) 18-9"C/C 2-Y16(T) 3-Y16(T)	

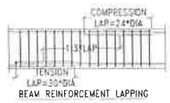


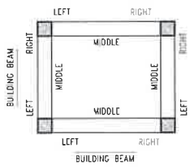




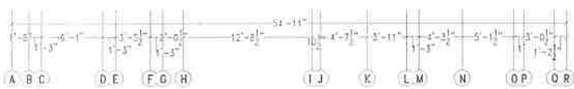








NOTE:
ALL SLAB THICK - 6" -Y10-6"C/C



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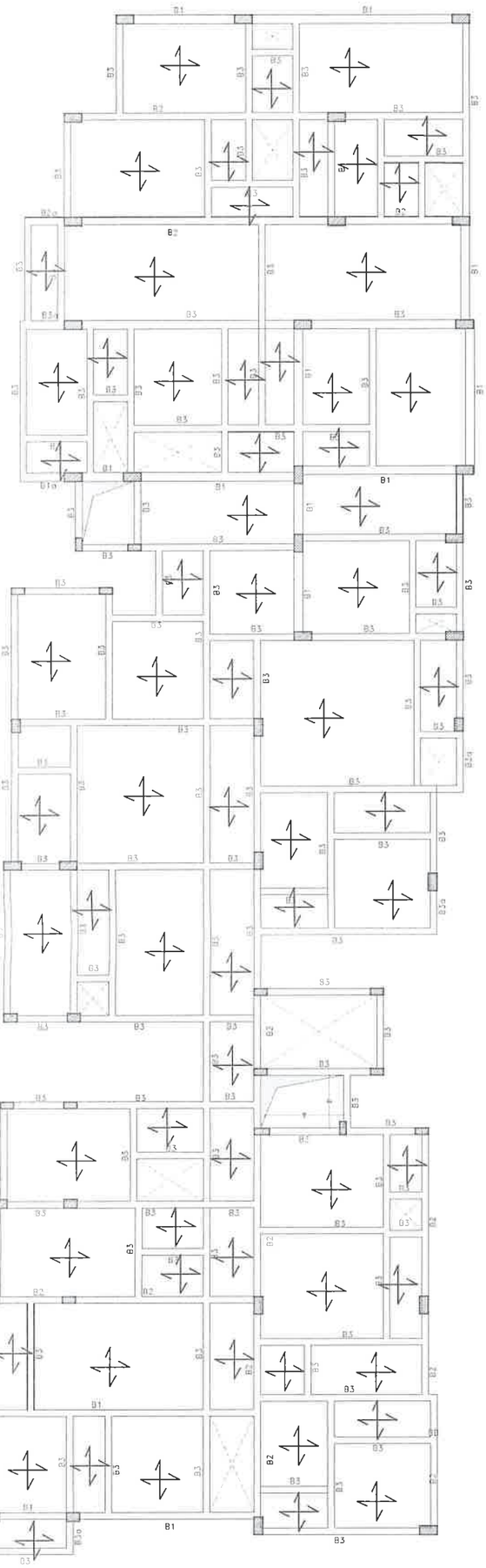
DATE:	26-01-2026	ST-04	PROJECT:- CLIENT: ROHAAN CONSTRUCTION PVT LTD Site address: Plot.no 90, 91,92,93 Survey no. 663/2, 3 (Ts.No-1/2,1/3) Srinivasa 2nd street, Srinivasa nagar, Velachery part -1, Velachery taluk,chennai. 3. No. Of floor= G+5	ARCHITECT:-	TITLE:- GROUND FLOOR ROOF BEAM LAYOUT & ROOF SLAB REINFORCEMENT DETAILS	REVISION:- R0	DIRECTION:- W S N E	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.
DRAWING BY:	SARATH					
DESIGN BY:	NTV					
PROJECT NO:	ST-2026/02/01/05/01/09					

APPROVAL ONLY

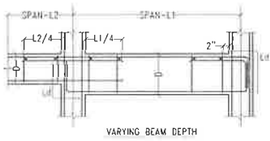


FIRST FLOOR ROOF BEAM REINFORCEMENT SCHEDULE:-

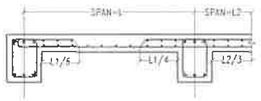
BEAM SIZE B&D	BEAM @ LEFT CANTILEVER	BEAM @ LEFT	BEAM @ MIDDLE	BEAM @ RIGHT	BEAM @ RIGHT CANTILEVER
0'-9"X2'-0"	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-7"C/C 2-Y20(T) 3-Y20(T)	3-Y20(T) 2-Y20(T) Y8-5"C/C 2-Y20(T) 3-Y20(T)	
B1	B1a				
0'-9"X2'-6"	4-Y20(T) 2-Y25(T) Y8-5"C/C 2-Y16(T) 2-Y25(T) 4-Y20(T)	4-Y20(T) 2-Y25(T) Y8-5"C/C 2-Y16(T) 2-Y25(T) 4-Y20(T)	4-Y20(T) 2-Y25(T) Y8-7"C/C 2-Y16(T) 2-Y25(T) 4-Y20(T)	4-Y20(T) 3-Y25(T) Y8-5"C/C 2-Y16(T) 3-Y25(T) 4-Y20(T)	
B2	B2a				
0'-9"X1'-6"	3-Y16(T) 2-Y16(T) Y8-5"C/C 2-Y16(T) 3-Y16(T)	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)	
B3	B3a				



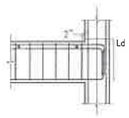




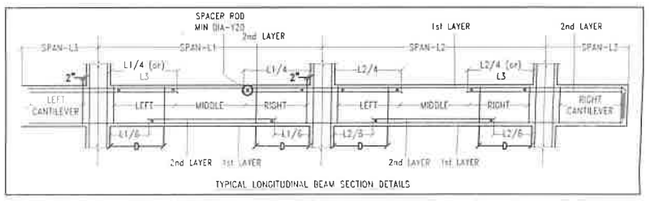
VARYING BEAM DEPTH



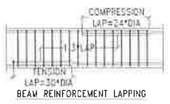
TYPICAL ROOF SLAB REINFORCEMENT DETAILS



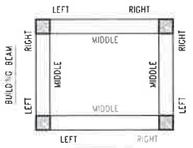
ANCHOR REINFORCEMENT DETAILS FOR END BEAM



TYPICAL LONGITUDINAL BEAM SECTION DETAILS

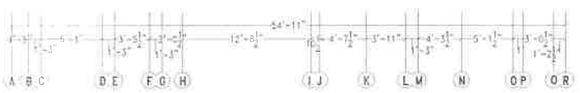


BEAM REINFORCEMENT LAPPING



DIRECTION OF BEAM ARRANGEMENT

NOTE:
ALL SLAB THICK - 6" -Y10-6"C/C



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DATE: 26-01-2026
DRAWN BY: SARATH
DESIGN BY: NTV
FILE NO: ST-2026/02/01/05/01/09

ST-05

PROJECT:-
CLIENT: ROHAAN CONSTRUCTION PVT LTD
Site address: Plot no 90, 91,92,93 Survey no. 663/2, 3 (Ts.No-1/2,1/3) Srinivasa 2nd street, Srinivasa nagar, Velachery part -1, Velachery taluk,chennai. 3. No. Of floor= G+5

ARCHITECT:-

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

REVISION:-
R0

DIRECTION:-
W S N E

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THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

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

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

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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.