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DESIGN CALCULATION

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

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1.0 DESIGN BRIEF:

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

2.0 GENERAL DESIGN CRITERIA

2.1. Description of the structure

The Residential Building consists of Stilt Floor + 5 Upper floors and the structure is designed as a RCC framed structure.

1. Size of the building : 35.00 x 20.50M
2. Height of the building : 18.00M
3. Number of storeys above GL : Stilt Floor +5 upper floors
4. Floor to floor height of this building : Stilt and First floors - 3.0m
   : Typical floor – 3.0m
5. Type of foundation : Shallow foundation as per geotechnical report

2.2. Materials Used

Following materials are generally used in the design of the various components of the structure.
For Concrete Structure

- M25 grade concrete for all reinforced concrete parts of the structure
- Fe500 grade Structural reinforcement steel
- Masonry for all walls : Brick / Block

2.3. Design Codes & Standards

Following codes and specifications have been generally used in the design of the members of the structure.

- IS 456 : 2000 Code of practice for Plain and Reinforced concrete
- SP: 16 Design Aids for Reinforced concrete
- IS 875 : 1987 Design Loads for building and structures
- IS 1893 : 2002 Criteria for Earthquake Resistant design of structures
- IS 13920: 1993 Ductile Detailing of R.C structures subjected to Seismic forces
- SP: 34 Handbook on Concrete Reinforcement & Detailing
- IS 800 : 1984 Code of practice for general construction in steel
- IS 2062 : 1999 Steel for general structural purposes specification
- IS 1786: 1985 Specification for high strength deformed bars and wires for concrete reinforcement

3.0 LOADING

Primary Load:

- Dead Load (DL)
- Live Load (LL)

3.1. Dead load (DL)

Material weight

- Density of Concrete =25 kN/m^3
- D.L. due to partitions
  (Light Partition as per IS 875) =1.50 kN/m^2

- D.L due to floor finish 50mm thick = 0.05x25 = 1.25 kN/m^2

3.2. Live load (LL)

Minimum Uniformly Distributed Live Loads:

Occupancy or use	Live Load (kn/m^2)
• All rooms and kitchens	2.00
• Toilet and bath rooms	3.00
• Corridors, passages, staircases	3.00
• Balconies	3.00
• Terrace Floor	1.50
• Basic wind speed	=50 m/sec
• Seismic Zone	=Zone III

3.5 Loading Combinations

The following combinations of Loads as per IS 1893 is considered in the STAAD Analysis

- 1.5(DL +LL)
- 1.2(DL + LL)

The below load combinations are used to check the structure in serviceability condition.

- 1.0(DL +LL)

4.0 STRUCTURAL MATERIAL:

4.1 Concrete Material Specifications:

Concrete compressive cube strength	- 25 N/mm^2
Minimum cement content	- Refer standard drawings for general & Legends
Cement type	- OPC
Free water cement ratio	- 0.5 (Maximum)
Nominal maximum size of aggregate	- 20mm UNO

4.2 Reinforcement:

Steel reinforcement shall be deformed bars, the characteristic of reinforcement bars shall conform to the following specification:

Grade of Steel	Actual Yield Strength (MPa)
Grade Fe500	Minimum 500 MPa,

4.4 Concrete cover:

Cover for Reinforcement is considered as per Table 16A of NBC, for a Fire resistance of 2 hrs.

- Raft Slab = 50mm
- Footing = 50mm
- RC Wall = 30mm
- Columns = 40mm
- Beams = 30mm

- Slabs = 25mm

5.0 Structural Description

5.1. Method of analysis

Structure analysis & design:

The structure is analyzed as a Space frame structure in STADD Pro Vi8. Columns, Footing, Basement walls, slabs, Beams and Staircases are designed as reinforced concrete members.

5.2. Framing System, Analysis and Design

Limit State concept of design will be used as per IS: 456-2000 & SP - 16. The detailing of reinforcement shall be done satisfying the requirements of IS: 456-2000, SP-16, IS: 13920, IS: 4326-1993 and SP-34.

The Slabs and beams are checked for deflection as per IS 456:2000. Cover for Reinforcement is considered as per Table 16A of NBC, for a Fire resistance of 2 hrs.

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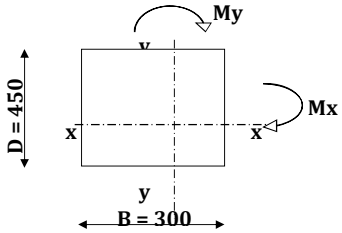
APPENDIX I

Design Calculations

Column Design

PROJECT	RESIDENTIAL BUILDING(S+5) AT PLOT NO.82, PADAVATTAMMAN KOIL STREET, KOSAPET.	DOCUMENT. NO.	DATE	DESIGNED	DATE
TITLE	Design for a Short Column with Biaxial Bending	REVISION	DATE	CHECKED	DATE

CL. NO.	DESIGN CALCULATIONS	REFERENCES



Column No:

CRITICAL LOAD CASE:

1.0 Basic Data

1.1 Material Data

Grade of Concrete M **25**

Grade of Steel Fe **500**

1.2 Codal Data

Nominal Cover = **40** mm — Cl 26.4.2.1,IS456:2000

Diameter of the Bar = **25** mm ≥ 12 mm

d' = 52.5 mm

1.3 Basic Dimensions

Unsupported Length of the Column

L_{ox} = **3000** mm

L_{oy} = **3000** mm

L_{ex} = **3000** mm — Table 28 , IS456:2000

L_{ey} = **3000** mm

Size of the Column B X D = **300** x **450** mm

1.4 Analysis Results

Factored Axial Load P_u = **780.0** kN — STAAD OUTPUT

Factored Moment M_{ux} = **22.00** kNm

Factored Moment M_{uy} = **71.00** kNm

2.0 Check for Slenderness

Slenderness Ratio about Major Axis L_{ex} / D = 6.667

Slenderness Ratio about Minor Axis L_{ey} / B = 10.000

Since Leff / LLD <12 Designed as Short Column — Cl 25.1.2, IS456:2000

3.0 Check for Eccentricity

Minimum Eccentricit e_x = L_{ox} / 500 + D / 30 = 21.0 mm >20 — Cl 25.4 IS456:2000

e_y = L_{oy} / 500 + B / 30 = 16.0 mm <20

3.1 Moments Due to Minimum Eccentricity

Me_x = 16.38 kN.m

Me_y = 15.60 kN.m

4.0 Design Moment

Design Moment about X axis M_{ux} = 22.00 kN.m

Design Moment about Y axis M_{uy} = 71.00 kN.m

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CL. NO.	DESIGN CALCULATIONS	REFERENCES
5.0	**Uniaxial Moment Carrying capacity of the Section about X & Y- axis**	
	d' / D = 0.117	
	d' / B = 0.175	
	Assume the Reinforcement Percentage p = **1.00**	
	p / f_{ck} = 0.040	
	$p_u / f_{ck}BD$ = 0.231	
	Reinforcement distributed equally on four sides = **4**	
	$M_{ux1} / f_{ck}BD^2$ = 0.094	Chart 43 - 46
	$M_{uy1} / f_{ck}DB^2$ = 0.085	SP 16 : 1980
	Moment carrying capacity about X axis M_{ux1} = 143.31 kN.m	
	Moment carrying capacity about Y axis M_{uy1} = 86.17 kN.m	
	Pu < Axial Load Carrying capacity ; Hence O.K	
6.0	**Calculation of P_{uz}**	
	$P_{uz} = 0.45 f_{ck} A_c + 0.75 f_y A_{sc}$ = 2009.81 kN	Cl 39.6 , IS456:2000
	P_u/P_{uz} = 0.388	
	a_n = 1.313	Cl 39.6 , IS456:2000
7.0	**Criteria for Biaxial Bending (Bresler's Formulation)**	
	$(M_{ux}/M_{ux1})^{an} + (M_{uy}/M_{uy1})^{an}$ = **0.861** < 1	Cl 39.6 , IS456:2000
	Hence Safe	
8.0	**Longitudinal Reinforcement**	
	Area of compression Steel $A_{sc,reqd}$ = **1350** mm^2	
	10 No Y16 + No Y20 $A_{sc,pro}$ = **2011** mm^2	
8.1	**Check for Minimum & Maximum Area of Steel**	
	Minimum Area of ste (0.8 % of A_g dir) = **441** mm^2	Cl 26.5.3.1 a & b ,
	(Based on the area of concrete reqd to resist direct stress)	IS 456 : 2000
	Maximum Area of ste (4 % of A_g) = **5400** mm^2	
	441 < 2011 < 5400 mm^2	
	Area of Steel is with in the permissible limit ; Hence O.K	
9.0	**Transverse Reinforcement**	
9.1	Diameter of Transverse Reinforcement = **8** mm ≥ 6 mm	Cl 26.5.3.2 c 2) ,
9.2	**Spacing of Lateral Ties :**	
	i) Least Lateral Dimension of the column = 300 mm	Cl 26.5.3.2 c 1) ,
	ii) 16 times the Smallest dia of Longitudinal Steel = 256 mm	IS 456 : 2000
	iii) = 300 mm	
	Reqd. Spacing of Ties (Minimum of the above) = 256 mm	
	Provide 8 mm dia Lateral Ties @ **300** mm Spacing	
	Provide closer spacing on either side of the column above and below beam / slab.	

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Plinth Beam Design

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TITLE		REVISION	DATE	CHECKED RMK	DATE

CL. NO.	BEAM DESIGN CALCULATIONS	REFERENCES

1.1 **Geomentry Data**

Beam Number		=	PB3		
Type of Beam		=	Rectangular Beam		
Support Condition		=	Continuous Beam		
Width of beam	b	=	230	mm	
Overall Depth of Beam	D	=	450	mm	
Dia of bar	Φ	=	25	mm	
Nominal Cover	cc	=	30	mm	IS 456:2000 Table 19
Effective Depth	d	=	407.5	mm	IS 456:2000
Effective Cover		=	42.5	mm	Cl 23.0
Effective Span of beam	l_{eff}	=	4500	mm	
Concrete grade		=	M 25		
Steel Grade		=	Fe 500		
$p_{t,lim}$		=	0.944 %		
$p_{t,min}$		=	0.170 %		IS 456:2000
p_t & p_{cmax}		=	4.00 %		Cl 26.5.1.1

1.2 **Force Input**

Left negative moment	(Support 1)	=	84	kNm
Mid span positive moment		=	84	kNm
Right negative moment	(Support 2)	=	84	kNm
Shear @ (Support 1)		=	149	kN
Shear @ (Span)		=	149	kN
Shear @ (Support 2)		=	149	kN

1.3 **Limiting Moment**

M_{ulim} = $0.133\ f_{ck}\ b\ d^2$ = 126.99 kNm

1.4 **Area of Steel**

Minimum Area of Steel = 0.17% b d = 159.33 mm^2

Support 1

Negative moment	(Support 1)	=	84	kNm

Hence the Section is designed as Singly Reinforced Section

	M_u/bd^2	=	2.199	
Percentage of tension steel reqd	p_t	=	0.013	%
Percentage of compression steel reqd	p_c	=	0	%
Required Area of tension steel	$A_{st\ reqd}$	=	159.33	mm^2
Required Area of compression steel	$A_{sc\ reqd}$	=	0.00	mm^2

Detail of bars

	I st Layer		II nd Layer	
	Nos	Dia	Nos	Dia
Tension Reinforcement	3	16	3	#

A_{st} provided = ##### mm^2

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CL. NO.	**BEAM DESIGN CALCULATIONS**				**REFERENCES**

	Nos	Dia	Nos	Dia		
Compression Reinforceme	3	16	3	#		
	A_{sc} provided	=	#####	mm^2		
Percentage of tension steel provided	p_t	=	1.287	%	**Hence O.K**	
Percentage of compression steel provi	p_c	=	1.287	%	**Hence O.K**	

Check for Shear

Shear		=	149	kN	
Nominal Shear Stress	tv	=	1.59	N/mm^2	Cl 40.1, IS456:2000
Permissible Shear Stress	tc	=	0.92	N/mm^2	β = 1.000
Maximum Shear Stress	tc,max	=	2.5	N/mm^2	Table 19, IS456:2000
Diameter of the Stirrup bar		=	8	mm	Table 20, IS456:2000
Number of Legs		=	2		
Spacing of Shear reinforcement Required		=	280.0		Cl 40.4, IS456:2000
Maximum Spacing of Shear Reinforcement		=	300		Cl 26.5.1.5,IS456:2000

Provide 8 mm dia 2 legged stirrups @ 280mm c/c spacing

Support 2

Negative moment		=	84	kNm	
Hence the Section is designed as Doubly Reinforced Section					
	M_u/bd^2	=	2.199		
Percentage of tension steel reqd	p_t	=	0.013	%	
Percentage of compression steel reqd	p_c	=	0	%	
Required Area of tension steel	$A_{st\ reqd}$	=	159.33	mm^2	
Required Area of compression steel	$A_{sc\ reqd}$	=	0	mm^2	

Detail of bars

	I st Layer			II nd Layer		
	Nos	Dia	Nos	Dia		
Tension Reinforcement	3	16	3	#		
	A_{st} provided	=	1206.4	mm		
	Nos	Dia	Nos	Dia		
Compression Reinforceme	3	16	3	#		
	A_{sc} provided	=	#####	mm		
Percentage of tension steel provided	p_t	=	1.287	%	**Hence O.K**	
Percentage of compression steel provi	p_c	=	1.287	%	**Hence O.K**	

Check for Shear

Shear		=	149	kN	
Nominal Shear Stress	tv	=	1.59	N/mm^2	Cl 40.1, IS456:2000
Permissible Shear Stress	tc	=	0.92	N/mm^2	β = 1.000
Maximum Shear Stress	tc,max	=	2.5	N/mm^2	Table 19, IS456:2000
Diameter of the Stirrup bar		=	8	mm	Table 20, IS456:2000

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Number of Legs = 2

Spacing of Shear reinforcement Required = 280.0 — Cl 40.4, IS456:2000

Maximum Spacing of Shear Reinforcement = 300 — Cl 26.5.1.5,IS456:2000

Provide 8 mm dia 2 legged stirrups @ 280mm c/c spacing

Span

Positive moment (Span) = 84 kNm

Hence the Section is designed as Singly Reinforced Section

M_u/bd^2 = 3.325

Percentage of tension steel reqd p_t = 0.02 %

Percentage of compression steel reqd p_c = 0 %

Required Area of tension steel $A_{st\ reqd}$ = 159.33 mm²

Required Area of compression steel $A_{sc\ reqd}$ = 0 mm

Detail of bars

	I st Layer		II nd Layer		
	Nos	Dia	Nos	Dia	
Tension Reinforcement	3	16	3	#	
A_{st} provided = ##### mm²					
Compression Reinforceme	3	16	3	#	
A_{sc} provided = ##### mm²					

Percentage of tension steel provided p_t = 1.287 % **Hence O.K**

Percentage of compression steel provi p_c = 1.287 % **Hence O.K**

Check for Shear

Shear = 149 kN

Nominal Shear Stress tv = 1.59 N/mm² — Cl 40.1, IS456:2000

Permissible Shear Stress tc = 0.92 N/mm² — β = 1.000

Maximum Shear Stress tc,max = 2.5 N/mm² — Table 19, IS456:2000

Diameter of the Stirrup bar = 8 mm — Table 20, IS456:2000

Number of Legs = 2

Spacing of Shear reinforcement Required = 280.0 — Cl 40.4, IS456:2000

Maximum Spacing of Shear Reinforcement = 300 — Cl 26.5.1.5,IS456:2000

Provide 8 mm dia 2 legged stirrups @ 280mm c/c spacing

Check For Deflection

Basic Value = 26 — Cl.23.2, IS456:2000

Service Stress in Steel f_s = **38.30** N/mm²

Modification Factor(Tension Reinforcement) F_1 = 2.00

Allowable Span/Depth = 52.00

Actual Span/Depth = 11.04 **Hence Safe**

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Floor Beam Design

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TITLE		**REVISION**	**DATE**	**CHECKED** RMK	**DATE**
CL. NO.	**BEAM DESIGN CALCULATIONS**			**REFERENCES**	

1.1 **Geomentry Data**

Beam Number		=	B7		
Type of Beam		=	Rectangular Beam		
Support Condition		=	Continuous Beam		
Width of beam	b	=	230	mm	
Overall Depth of Beam	D	=	450	mm	
Dia of bar	Φ	=	25	mm	
Nominal Cover	cc	=	30	mm	IS 456:2000 Table 19
Effective Depth	d	=	407.5	mm	IS 456:2000
Effective Cover		=	42.5	mm	Cl 23.0
Effective Span of beam	l_{eff}	=	3700	mm	
Concrete grade		=	M 25		
Steel Grade		=	Fe 500		
$p_{t,lim}$		=	0.944 %		
$p_{t,min}$		=	0.170 %		IS 456:2000
p_t & p_{cmax}		=	4.00 %		Cl 26.5.1.1

1.2 **Force Input**

Left negative moment	(Support 1)	=	214	kNm
Mid span positive moment		=	154	kNm
Right negative moment	(Support 2)	=	154	kNm
Shear @ (Support 1)		=	141	kN
Shear @ (Span)		=	141	kN
Shear @ (Support 2)		=	141	kN

1.3 **Limiting Moment**

M_{ulim} = 0.133 f_{ck} b d^2 = 126.99 kNm

1.4 **Area of Steel**

Minimum Area of Ste = 0.17% b d = 159.3325 mm^2

Support 1

Negative moment (Support 1) = 214 kNm

Hence the Section is designed as Doubly Reinforced Section

	M_u/bd^2	=	5.603	
Percentage of tension steel reqd	p_t	=	1.529	%
Percentage of compression steel reqd	p_c	=	0.638	%
Required Area of tension steel	$A_{st\ reqd}$	=	1433.06	mm^2
Required Area of compression steel	$A_{sc\ reqd}$	=	597.97	mm^2

Detail of bars

	I st Layer		II nd Layer		
	Nos	Dia	Nos	Dia	
Tension Reinforcement	3	16	3	20	
	A_{st} provided =		1545.66	mm^2	
	Nos	Dia	Nos	Dia	
Compression Reinforceme	3	16	3	20	

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A_{sc} provided = 1545.66 mm^2

Percentage of tension steel provided p_t = 1.649 % **Hence O.K**

Percentage of compression steel provided p_c = 1.649 % **Hence O.K**

Check for Shear

Shear = 141 kN

Nominal Shear Stress	tv	=	1.50	N/mm^2	Cl 40.1, IS456:2000
Permissible Shear Stress	tc	=	0.92	N/mm^2	β = 1.000
Maximum Shear Stress	tc,max	=	2.5	N/mm^2	Table 19, IS456:2000
Diameter of the Stirrup bar		=	8	mm	Table 20, IS456:2000
Number of Legs		=	2		
Spacing of Shear reinforcement Required		=	320.0		Cl 40.4, IS456:2000
Maximum Spacing of Shear Reinforcement		=	300		Cl 26.5.1.5,IS456:2000

Provide 8 mm dia 2 legged stirrups @ 300mm c/c spacing

Support 2

Negative moment = 154 kNm

Hence the Section is designed as Doubly Reinforced Section

	M_u/bd^2	=	4.032	
Percentage of tension steel reqd	p_t	=	1.126	%
Percentage of compression steel reqd	p_c	=	0.198	%
Required Area of tension steel	$A_{st\ reqd}$	=	1055.34	mm^2
Required Area of compression steel	$A_{sc\ reqd}$	=	185.58	mm^2

Detail of bars

	I st Layer		II nd Layer	
	Nos	Dia	Nos	Dia
Tension Reinforcement	3	16	3	20

A_{st} provided = 1545.664 mm^2

	I st Layer		II nd Layer	
	Nos	Dia	Nos	Dia
Compression Reinforceme	3	16	3	20

A_{sc} provided = 1545.66 mm^2

Percentage of tension steel provided p_t = 1.649 % **Hence O.K**

Percentage of compression steel provided p_c = 1.649 % **Hence O.K**

Check for Shear

Shear = 141 kN

Nominal Shear Stress	tv	=	1.50	N/mm^2	Cl 40.1, IS456:2000
Permissible Shear Stress	tc	=	0.92	N/mm^2	β = 1.000
Maximum Shear Stress	tc,max	=	2.5	N/mm^2	Table 19, IS456:2000
Diameter of the Stirrup bar		=	8	mm	Table 20, IS456:2000
Number of Legs		=	2		
Spacing of Shear reinforcement Required		=	320.0		Cl 40.4, IS456:2000
Maximum Spacing of Shear Reinforcement		=	300		Cl 26.5.1.5,IS456:2000

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TITLE		**REVISION**	**DATE**	**CHECKED** RMK	**DATE**
CL. NO.	**BEAM DESIGN CALCULATIONS**			**REFERENCES**	

Provide 8 mm dia 2 legged stirrups @ 300mm c/c spacing

Span

Positive moment (Span) = 154 kNm

Hence the Section is designed as Doubly Reinforced Section

M_u/bd^2 = 3.325

Percentage of tension steel reqd p_t = 1.126 %

Percentage of compression steel reqd p_c = 0.198 %

Required Area of tension steel $A_{st\ reqd}$ = 1055.34 mm^2

Required Area of compression steel $A_{sc\ reqd}$ = 185.58 mm^2

Detail of bars

	I st Layer		II nd Layer	
	Nos	Dia	Nos	Dia
Tension Reinforcement	3	16	3	20

A_{st} provided = 1545.66 mm^2

	I st Layer		II nd Layer	
	Nos	Dia	Nos	Dia
Compression Reinforceme	3	16	3	20

A_{sc} provided = 1545.66 mm^2

Percentage of tension steel provided p_t = 1.649 % **Hence O.K**

Percentage of compression steel provided p_c = 1.649 % **Hence O.K**

Check for Shear

Shear = 141 kN

Nominal Shear Stress	tv	=	1.50	N/mm^2	Cl 40.1, IS456:2000
Permissible Shear Stress	tc	=	0.92	N/mm^2	β = 1.000
Maximum Shear Stress	tc,max	=	2.5	N/mm^2	Table 19, IS456:2000
Diameter of the Stirrup bar		=	8	mm	Table 20, IS456:2000
Number of Legs		=	2		
Spacing of Shear reinforcement Required		=	320.0		Cl 40.4, IS456:2000
Maximum Spacing of Shear Reinforcement		=	300		Cl 26.5.1.5,IS456:2000

Provide 8 mm dia 2 legged stirrups @ 300mm c/c spacing

Check For Deflection

Basic Value		=	26		Cl.23.2, IS456:2000
Service Stress in Steel	f_s	=	**198.00**	N/mm^2	
Modification Factor(Tension Reinforcement)	F_1	=	1.00		
Allowable Span/Depth		=	26.00		
Actual Span/Depth		=	9.08	**Hence Safe**	

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Floor Slab Design

PROJECT	RESIDENTIAL BUILDING(S+5) AT PLOT NO.82, PADAVATTAMMAN KOIL STREET, KOSAPET.	DOCUMENT.NO	DATE	DESIGNED	DATE
TITLE	TWO WAY SLAB DESIGN	REVISION	DATE	CHECKED	DATE

CL. NO.	DESIGN CALCULATIONS	REFERENCES

1.0 Design of Two Way Slab S3

1.0.1 Basic Input Data

Grade of concrete		=	**M 25**	
Grade of steel		=	**Fe 500**	
Thickness of slab	D	=	**150**	mm
Clear cover	cc	=	**25**	mm
Effective thickness of slab (d_{eff})	150 - 25 - 5	=	120	mm
Unit weight of concrete		=	25	KN/m^3
Effective Shorter Span	L_x	=	**5**	m
Effective Longer Span	L_y	=	**7.7**	m
Aspect ratio	L_y/L_x	=	1.54 < 2	

Hence designed as Two way slab

Edge Conditio **One Long edge Discontinuous**

1.0.2 Load Data

Self Weight of Slab	= 0.150 x 25	=	3.750	KN/m^2
Floor finish		=	**1.500**	KN/m^2
Partition Load		=	**0.000**	KN/m^2
Sunken Filling		=	**0.000**	KN/m^2
Imposed Load		=	**3.000**	KN/m^2
Extra Load, (if Any)		=	**0.000**	KN/m^2
Total load		=	8.250	KN/m^2
Design load (Wu) = 1.5 x 8.25		=	**12.375**	KN/m^2

IS 875 (Part 2) -1987

Table 18 Cl 36.4.1 IS 456 -2000

1.0.3 Moment and Shear Calculations

Short Span Direction

a_x for positive moment	1.5	→	0.051	
	1.75	→	0.059	
	for 1.54 a_x	=	0.052	
Positive moment	0.052 x 12.38 x 5 ^2	=	**16.17**	KN-m
a_x for negative moment	1.5	→	0.067	
	1.75	→	0.077	
	for 1.54 a_x	=	0.069	
Negative moment	0.069 x 12.38 x 5 ^2	=	**21.22**	KN-m

Table 26 Cl D-1.1, IS 456 -2000

Table 26 Cl D-1.1, IS 456 -2000

Table 16 Cl.26.4.2 , IS 456 -2000

Cl 19.2.1, IS 456-2000

Cl D-1.11, IS 456-2000

PROJECT	RESIDENTIAL BUILDING(S+5) AT PLOT NO.82, PADAVATTAMMAN KOIL STREET, KOSAPET.	DOCUMENT.NO	DATE	DESIGNED	DATE
TITLE	TWO WAY SLAB DESIGN	REVISION	DATE	CHECKED	DATE

CL. NO.	DESIGN CALCULATIONS	REFERENCES
	Long Span Direction	
	For positive moment a_y = 0.028	Table 26 Cl D-1.1,
	Positive moment 0.028 x 12.38 x 5 ^2 = **8.66** KN-m	IS 456 -2000
	For negative moment a_y = 0.037	Table 26 Cl D-1.1,
	Negative moment 0.037 x 12.38 x 5 ^2 = **11.45** KN-m	IS 456 -2000
	Shear force V = 12.38 x 5 x 1 = **30.94** KN	
1.0.4	**Check Effective Depth for Max.Bending Moment**	
	Depth require = $(M_u/(0.133x\ fck\ x\ b))^{1/2}$ = 79.89 mm	Table C,SP 16 :1980
	Depth provide = 150 - 25 - 10 /2 = 120 mn > ### mn	Cl 2.3
	Hence the section is Safe against Bending	
1.0.5	**Check Depth for Shear**	
	Nominal Shear Stress $t_v = V_u / b\ d$ = 0.26 N/mm^2	Cl.40.1, IS 456:2000
	Design shear stre (t_c) = 0.46 N/mm^2	Table 19 , IS 456:2000
	k = 1.30	Cl.40.2.1.1,
	k * t_c = 0.60 N/mm^2	IS 456:2000
	t_v < k * t_c **Hence the section is Safe against Shear**	
1.0.6	**Check for Maximum Shear Stress:**	
	Nominal Shear Stress $t_v = V_u / b\ d$ = 0.26 N/mm^2	Cl.40.1, IS 456:2000
	Maximum Shear Stre ($t_{c,max}$) = 3.1 N/mm^2	Table 20 , IS 456:2000
	# $t_{c,max}$ = 1.55 N/mm^2	
	t_v < 1 $t_{c,max}$ **Hence the section is Safe against Max.Shear Stres**	Cl.40.2.3.1, IS 456:200
1.0.7	**Reinforcement calculations**	
	Short Span Direction @ Support	
	Mu/bd = $\frac{21.22 \times 10^6}{1000 \times \# \times 120}$ = **1.474**	
	Pt = **0.37** %	Table 2-4, SP16 :1980

PROJECT	RESIDENTIAL BUILDING(S+5) AT PLOT NO.82, PADAVATTAMMAN KOIL STREET, KOSAPET.	DOCUMENT.NO	DATE	DESIGNED	DATE
TITLE	TWO WAY SLAB DESIGN	REVISION	DATE	CHECKED	DATE

CL. NO.	DESIGN CALCULATIONS	REFERENCES

Area of steel = 0.0037 x 1000 x 120 = 439 mm^2
Minimum area of 0.001 x 1000 x 150 = #### mm^2 Cl:26.5.2.1
Spacing of # bar 78.54 x 1000 / 438.88 = 179 mm IS 456 -2000

Check for Spacing

Minimum of
1) 3d = 360 mm
2) = 300 mm Cl:26.3.3.(b).1
3) = 178.86 mm IS 456 -2000

Therefore provid # @ **170** mm C/C

Short Span Direction @ Mid Span

$$Mu/bd = \frac{16.17 \times 10 \wedge 6}{1000 \times \# \times 120} = 1.123$$

Pt = 0.273 % SP16 :1980 Table 2-4

Area of steel = 0.0027 x 1000 x 120 = 328 mm^2 IS 456:2000
Minimum area of 0.001 x 1000 x 150 = #### mm^2 Cl:26.5.2.1
Spacing of # bar 78.54 x 1000 / 327.93 = 239 mm

Check for Spacing

Minimum of
1) 3d = 360 mm IS 456:2000
2) = 300 mm Cl:26.3.3.(b).1
3) = 239.38 mm

Therefore provid # @ **150** mm C/C 150
Provided % of Tension Reinforcement (pt) = **0.436** %

Long Span Direction @ Support

$$Mu/bd = \frac{11.45 \times 10 \wedge 6}{1000 \times \# \times 120} = 0.795$$

Pt = 0.190 % SP16 :1980 Table 2-4

Area of steel = 0.0019 x 1000 x 120 = 228 mm^2 IS 456:2000
Minimum area of 0.001 x 1000 x 150 = #### mm^2 Cl:26.5.2.1
Spacing of # bar 78.54 x 1000 / 228.07 = 344 mm

PROJECT	RESIDENTIAL BUILDING(S+5) AT PLOT NO.82, PADAVATTAMMAN KOIL STREET, KOSAPET.	DOCUMENT.N(	DATE	DESIGNEI	DATE
TITLE	TWO WAY SLAB DESIGN	REVISION	DATE	CHECKED	DATE

CL. NO.	DESIGN CALCULATIONS	REFERENCES

Check for Spacing

Minimum of 1) 3d = 360 mm — IS 456:2000
2) = 300 mm — Cl:26.3.3.(b).1
3) = 344.20 mm
Therefore provid # @ **300** mm C/C

Long Span Direction @ mid Span

$$Mu/bd = \frac{8.66 \times 10 \wedge 6}{1000 \times \# \times 120} = 0.602$$

Pt = 0.142 % — SP16 :1980 Table 2-4

Area of steel = 0.0014 x 1000 x 120 = 171 mm^2 — IS 456:2000
Minimum area of 0.001 x 1000 x 150 = #### mm^2 — Cl:26.5.2.1
Spacing of # bar 78.54 x 1000 / 180.00 = 436 mm

Check for Spacing

Minimum of 1) 3d = 360 mm — IS 456:2000
2) = 300 mm — Cl:26.3.3.(b).1
3) = 436.11 mm
Therefore provid # @ **300** mm C/C

1.0.8 **<u>Check for Deflection:</u> (Simplified Approach)**

Basic Span/depth Ratio = **26** — IS 456:2000 Cl:23.2.1
% of Tension Reinforcement provided (p_t) = 0.436 %
Service stress of stee 0.58 fy (Ast_R/Ast_P) = 181.63 N/mm^2 — IS456:2000 Fig 4
Modification Factor for Tension Reinforcen = 1.71 — Page 38
Allowable Span / Effective Depth Ratio = 44.47 — IS 456:2000 Cl:23.2.1
Actual Span/Eff Dept = 5 x 1000 / 120 = 41.67

Hence Safe against Deflection

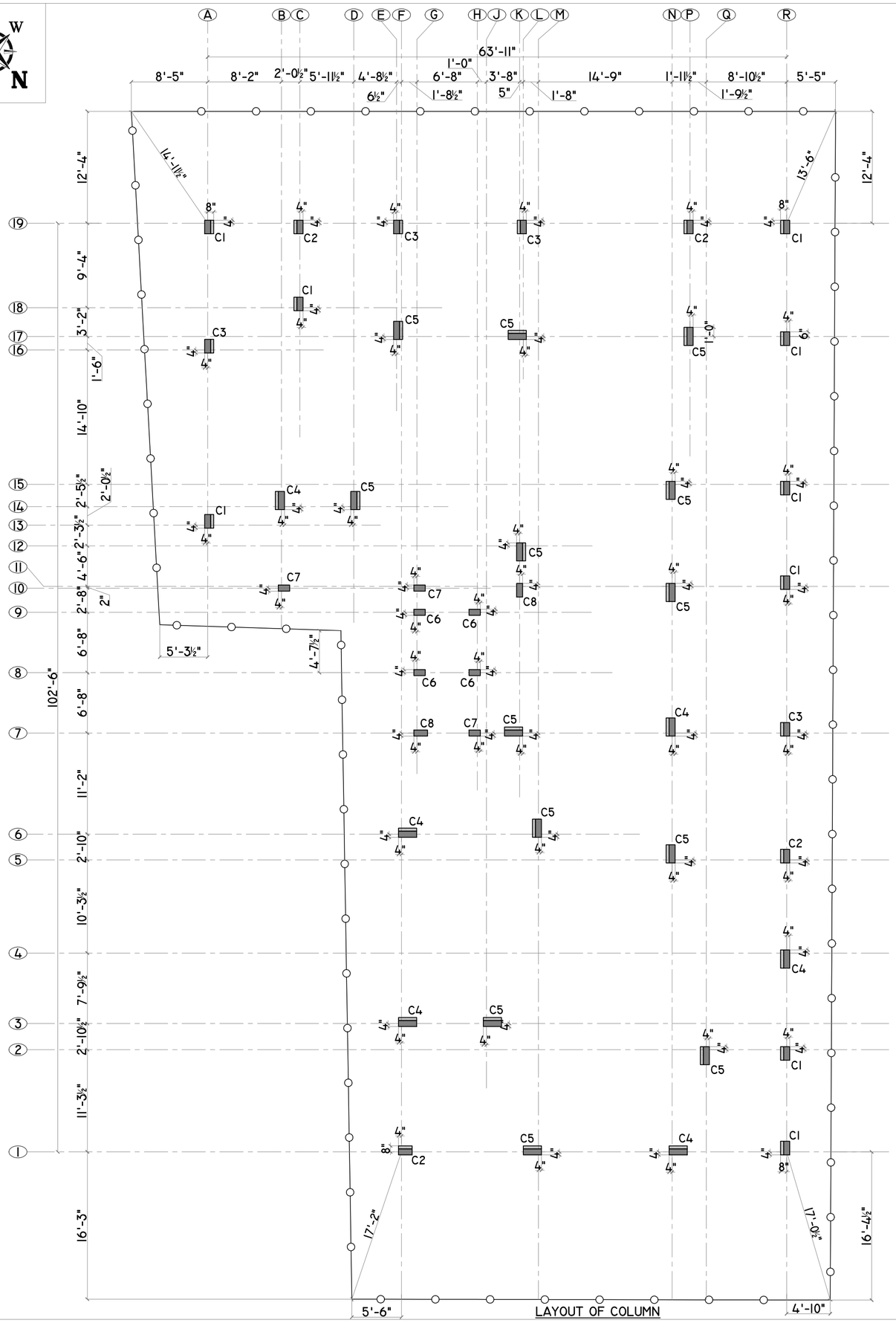
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APPENDIX II

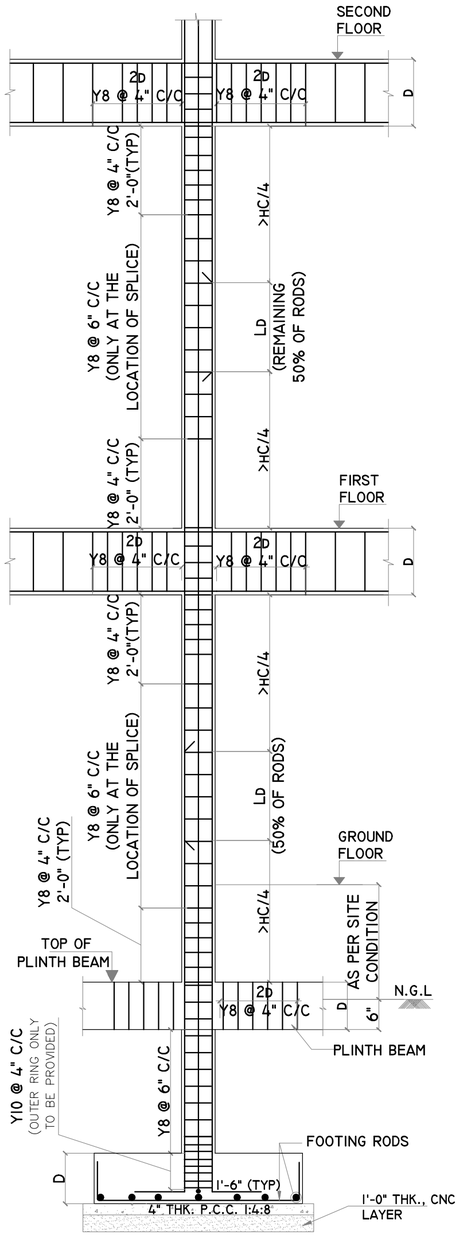
GENERAL ARRANGEMENT DRAWINGS

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LAYOUT OF COLUMN



REINFORCEMENT DETAILING COLUMN

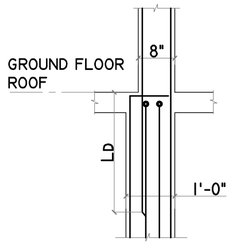
(ALTERNATE RODS TO BE LAPPED IN ALTERNATE FLOORS)

NOTE:

FOR COLUMN REINFORCEMENT DETAILS REFER DWG: 001A

COLUMN SCHEDULE

S.NO.	NAME	SIZE	
		UPTO GROUND ROOF	GROUND ROOF TO TOP
1.	C1	1'-0" X 1'-6"	0'-8" X 1'-6"
2.	C2	1'-0" X 1'-6"	0'-8" X 1'-6"
3.	C3	1'-0" X 1'-6"	0'-8" X 1'-6"
4.	C4	1'-0" X 2'-0"	0'-8" X 2'-0"
5.	C5	1'-0" X 2'-0"	0'-8" X 2'-0"
6.	C6	0'-8" X 1'-3"	0'-8" X 1'-3"
7.	C7	0'-8" X 1'-3"	0'-8" X 1'-3"
8.	C8	0'-8" X 1'-6"	0'-8" X 1'-6"



TYPICAL COLUMN REDUCTION DETAILS

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OF1.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (LD) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) COLUMN = 1½ "
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. COLUMNS AND FOOTINGS ARE DESIGNED FOR S+5 FLOOR LOADS AND SBC OF THE SOIL IS 110KN/SQM. @ 7'-6" BELOW N.G.L.
7. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
8. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR REVIEW PURPOSE	M.R	R.M	08.07.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF COLUMN

CLIENT :- RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
08.07.25	1" : 9'	-------	001

ARCHITECT / CONSULTANTS :-

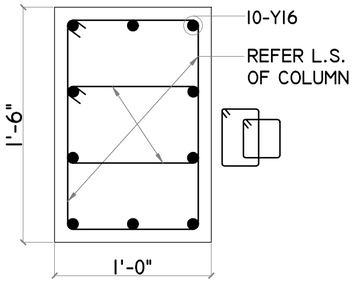
F3 DESIGNS
ARCHITECTURE I INTERIOR DESIGNS I MASTER PLANNING
F3 DESIGNS
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velacherry, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

STRUCTURAL CONSULTANTS :-

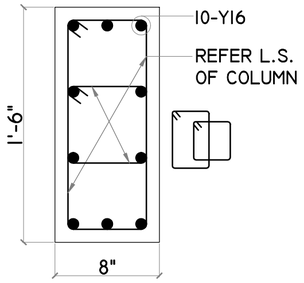
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A2

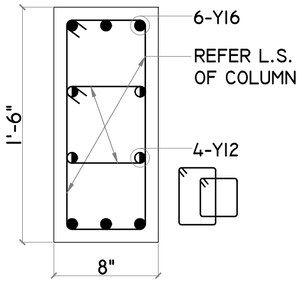
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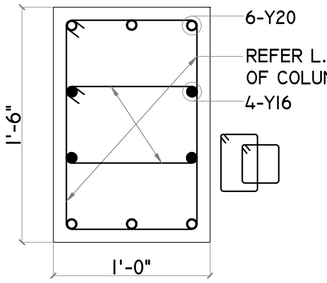
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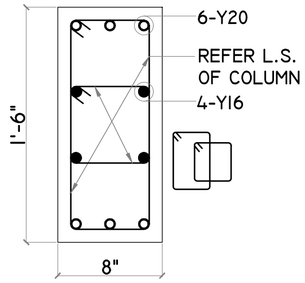
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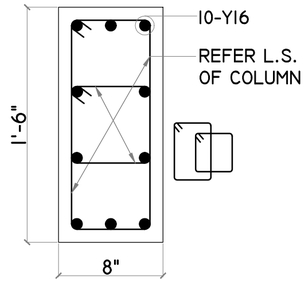
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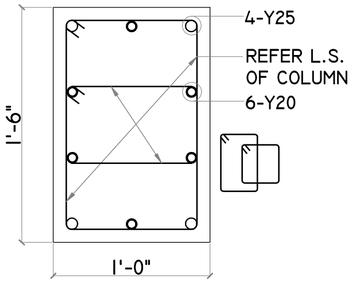
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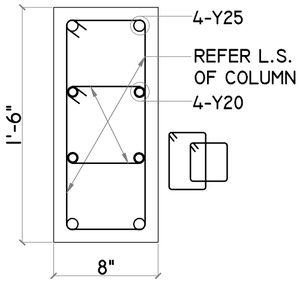
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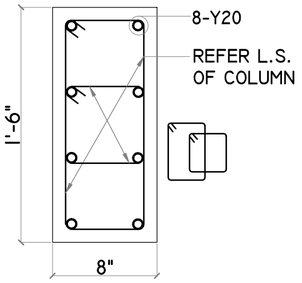
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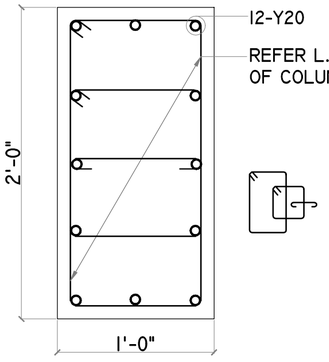
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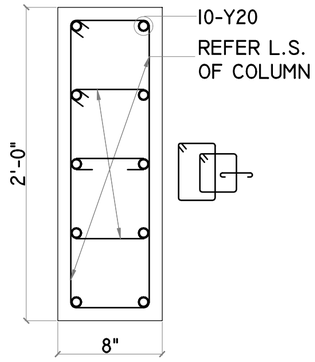
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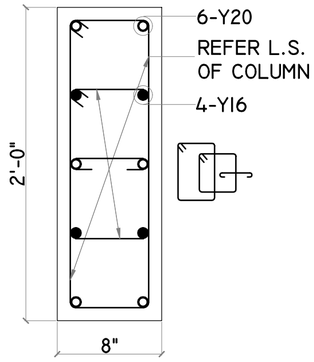
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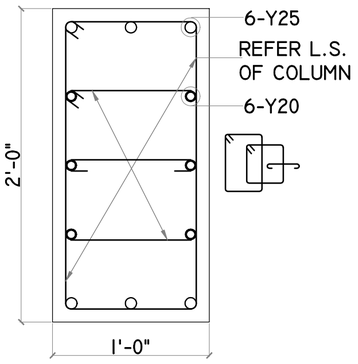
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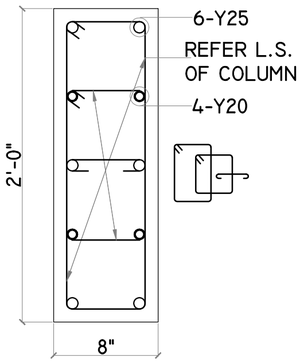
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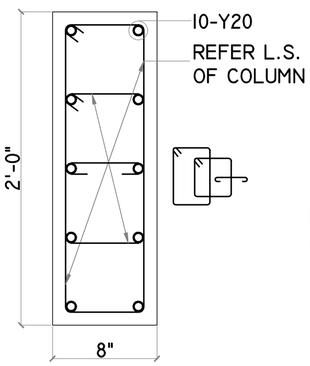
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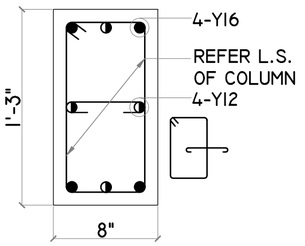
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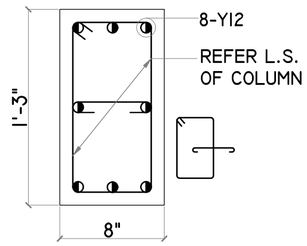
C.S. OF COLUMN "C5"
(0'-8" x 2'-0")
(GFR TO SFR)



C.S. OF COLUMN "C5"
(0'-8" x 2'-0")
(SFR TO TOP)



C.S. OF COLUMN "C6"
(0'-8" x 1'-3")
(UPTO SFR)



C.S. OF COLUMN "C6"
(0'-8" x 1'-3")
(SFR TO TOP)

NOTE:

N.G.L - NATURAL GROUND LEVEL.

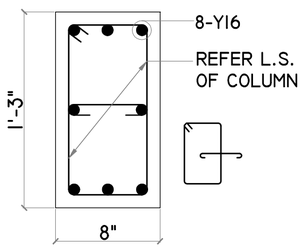
G.F.R - GROUND FLOOR ROOF.

F.F.R - FIRST FLOOR ROOF.

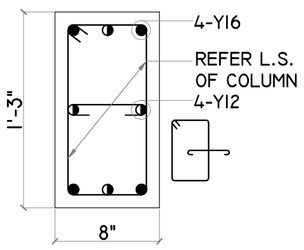
S.F.R - SECOND FLOOR ROOF.

WHEREVER LAP SPLICES AND CONFINING TIES ARE NOT REQUIRED, SPACING OF LATERAL TIES SHALL BE Y8 @ 200 C/C.

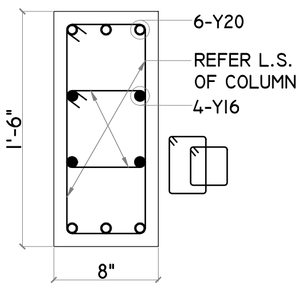
ALL HOOKS SHOULD BE BENT TO AN ANGLE OF 135° WITH A LENGTH NOT LESS THAN 75 MM



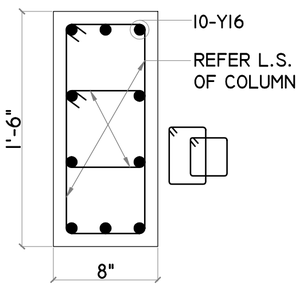
C.S. OF COLUMN "C7"
(0'-8" x 1'-3")
(UPTO SFR)



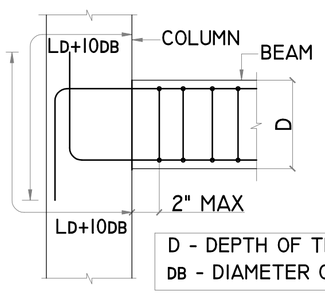
C.S. OF COLUMN "C7"
(0'-8" x 1'-3")
(SFR TO TOP)



C.S. OF COLUMN "C8"
(0'-8" x 1'-6")
(UPTO SFR)

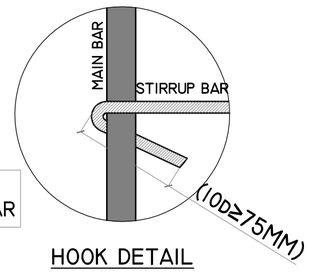


C.S. OF COLUMN "C8"
(0'-8" x 1'-6")
(SFR TO TOP)



D - DEPTH OF THE BEAM
DB - DIAMETER OF THE BAR

TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION



HOOK DETAIL

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OF1.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (LD) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) COLUMN = 1½ "
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. COLUMNS AND FOOTINGS ARE DESIGNED FOR S+5 FLOOR LOADS AND SBC OF THE SOIL IS 110KN/SQM. @ 7'-6" BELOW N.G.L.
7. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
8. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR REVIEW PURPOSE	M.R	R.M	08.07.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF COLUMN

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
08.07.25	1" : 7'	-------	001A

ARCHITECT / CONSULTANTS :-

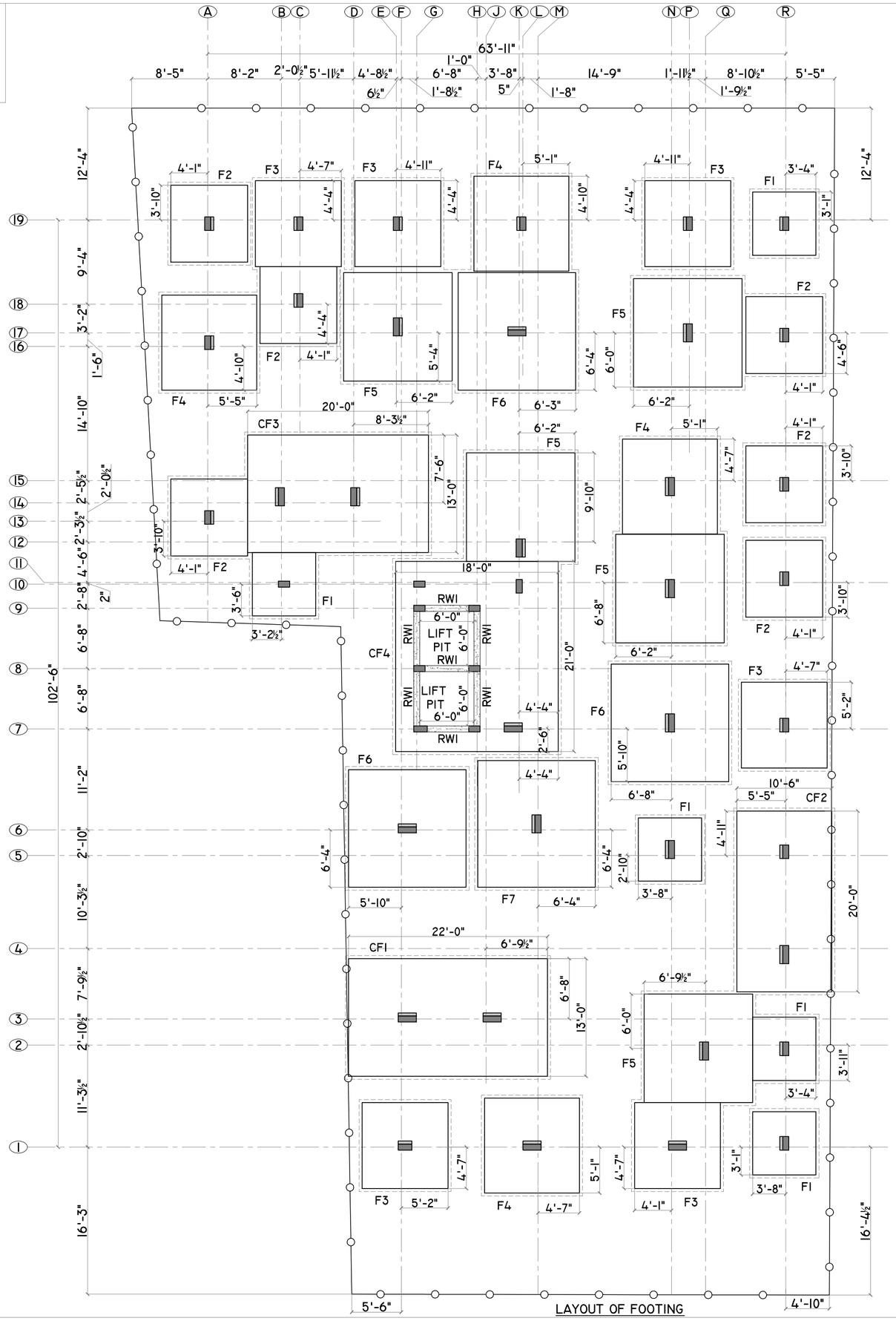
F3 DESIGNS
ARCHITECTURE I INTERIOR DESIGNS I MASTER PLANNING
F3 DESIGNS
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

STRUCTURAL CONSULTANTS :-

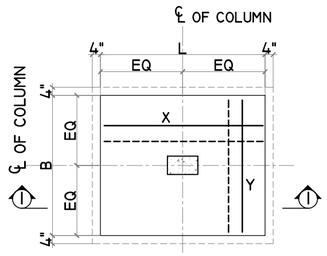
aura
ENGINEEERING CONSULTANTS
AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
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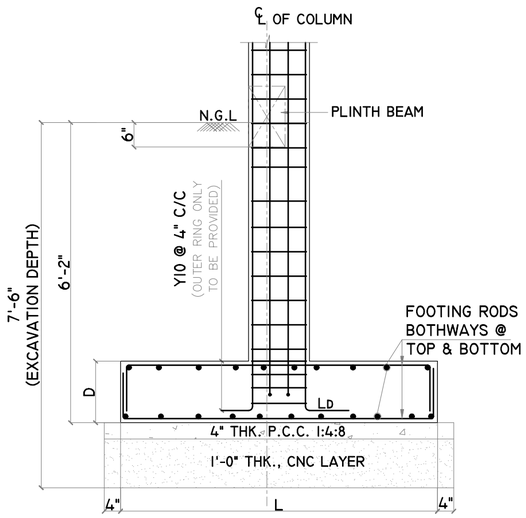
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LAYOUT OF FOOTING



TYPICAL PLAN OF FLAT FOOTING



SECTION "1-1"

NOTE:

FOR COMBINED FOOTING REINFORCEMENT DETAILS REFER DWG: 002A

N.G.L - NATURAL GROUND LEVEL.

CNC - CAN BE NON PLASTIC WELL GRADED CLEAN RIVER SAND/ SAND:GRAVEL MIX

Sl.	FOOTING NAME	FOOTING SIZE	FOOTING REINFORCEMENT X =MAIN REINFD Y =DISTRIBUTOR REINFD
01	F1	7'-0" X 7'-0" D=1'-9" FLAT FOOTING	Y12 @ 6" C/C BOTHWAYS @ BOTTOM
02	F2	8'-6" X 8'-6" D=2'-0" FLAT FOOTING	Y12 @ 5" C/C BOTHWAYS @ BOTTOM
03	F3	9'-6" X 9'-6" D=2'-3" FLAT FOOTING	Y12 @ 4" C/C BOTHWAYS @ BOTTOM
04	F4	10'-6" X 10'-6" D=2'-6" FLAT FOOTING	Y12 @ 4" C/C BOTHWAYS @ BOTTOM
05	F5	12'-0" X 12'-0" D=2'-9" FLAT FOOTING	Y16 @ 5" C/C BOTHWAYS @ BOTTOM Y12 @ 6" C/C BOTHWAYS @ TOP
06	F6	13'-0" X 13'-0" D=2'-9" FLAT FOOTING	Y16 @ 5" C/C BOTHWAYS @ BOTTOM Y12 @ 6" C/C BOTHWAYS @ TOP
07	F7	13'-0" X 14'-0" D=2'-9" FLAT FOOTING	Y16 @ 4" C/C BOTHWAYS @ BOTTOM Y12 @ 6" C/C BOTHWAYS @ TOP

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

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GENERAL NOTES:

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3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) FOOTING = 2 " B) R.C WALL = 1 "
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. COLUMNS AND FOOTINGS ARE DESIGNED FOR S+5 FLOOR LOADS AND SBC OF THE SOIL IS 110KN/SQM. @ 7'-6" BELOW N.G.L.
7. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
8. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR REVIEW PURPOSE	M.R	R.M	08.07.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT OF FOOTING

CLIENT :- RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
08.07.25	1" : 9'	-------	002

ARCHITECT / CONSULTANTS :-

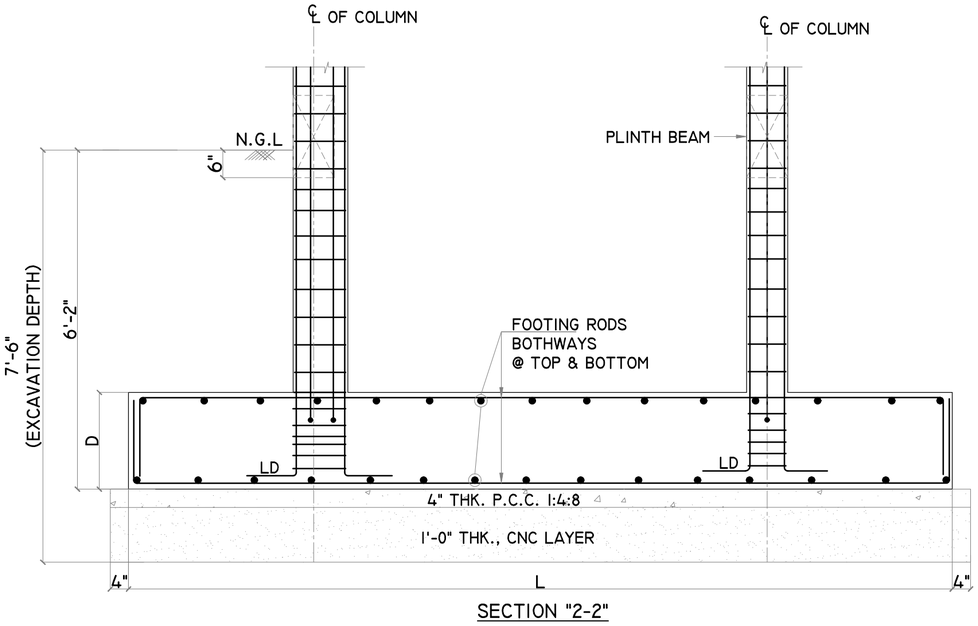
F3 DESIGNS
ARCHITECTURE | INTERIOR DESIGNS | MASTER PLANNING
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velacherry, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

STRUCTURAL CONSULTANTS :-

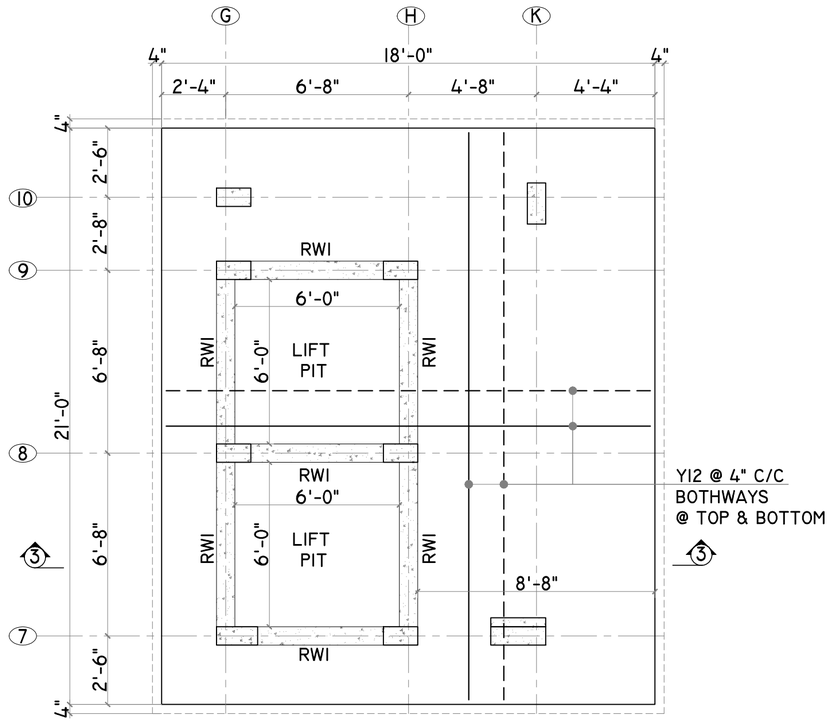
AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
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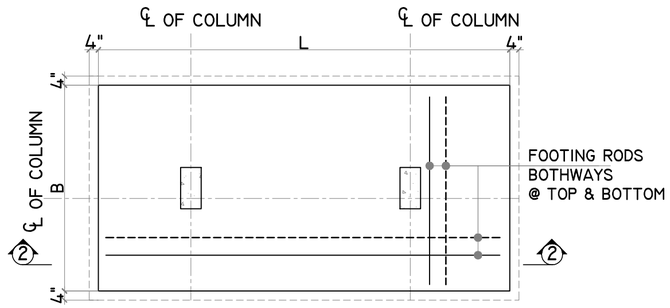
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SECTION "2-2"



PLAN OF COMBINED FOOTING -"CF4"



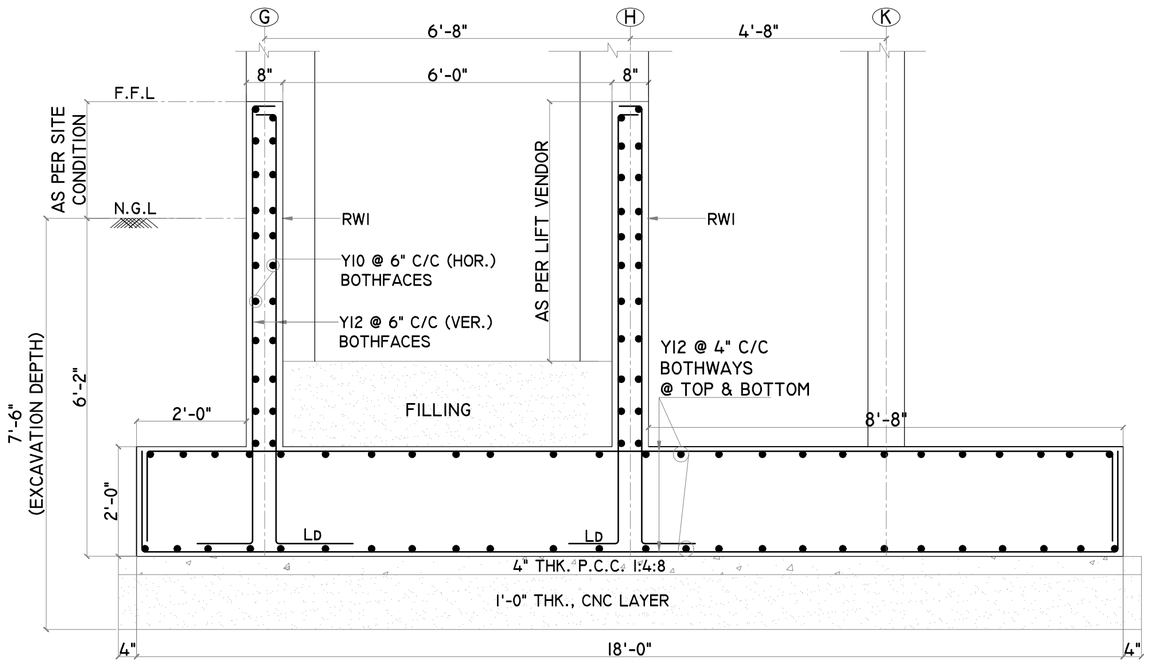
TYPICAL PLAN OF COMBINED FOOTING

NOTE:

N.G.L - NATURAL GROUND LEVEL.	CNC - CAN BE NON PLASTIC WELL GRADED CLEAN RIVER SAND/ SAND:GRAVEL MIX
F.F.L - FLOOR FINISH LEVEL	

COMBINED FOOTINGS SCHEDULE:-

SI.	FOOTING NAME	FOOTING SIZE	FOOTING REINFORCEMENT
01	CF1	22'-0" X 13'-0" X 2'-0"	Y16 @ 5" C/C BOTHWAYS @ TOP & BOTTOM
02	CF2	10'-6" X 20'-0" X 1'-9"	Y12 @ 5" C/C BOTHWAYS @ TOP & BOTTOM
03	CF3	20'-0" X 13'-0" X 2'-0"	Y16 @ 5" C/C BOTHWAYS @ TOP & BOTTOM
04	CF4	18'-0" X 21'-0" X 2'-0"	Y12 @ 4" C/C BOTHWAYS @ TOP & BOTTOM



SECTION "3-3"

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

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REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR REVIEW PURPOSE	M.R	R.M	08.07.25

PROJECT :- THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-
R.C DETAILS OF FOOTING

CLIENT :-
RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
08.07.25	1" : 7'	-------	002A

ARCHITECT / CONSULTANTS :-

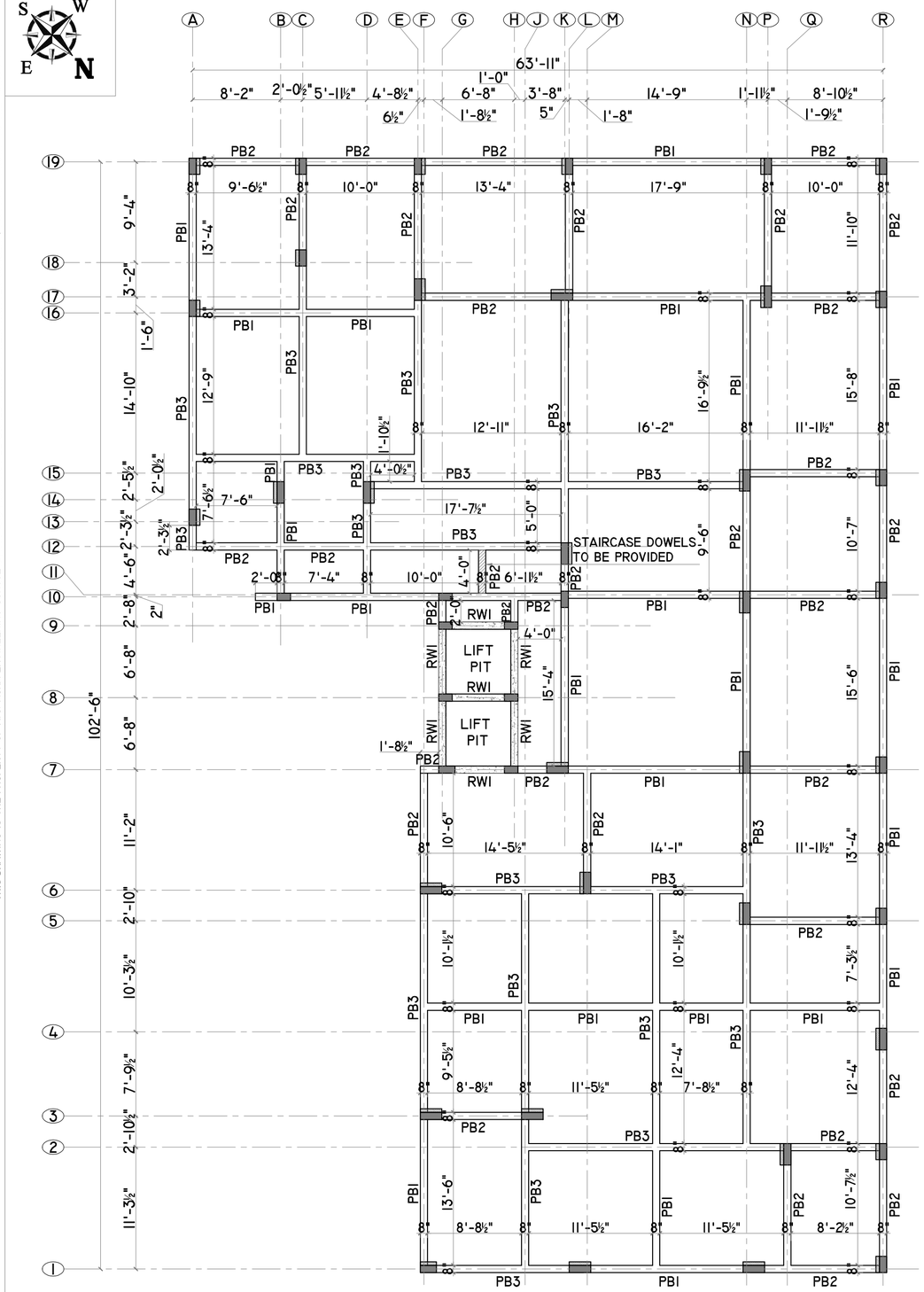
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ARCHITECTURE I INTERIOR DESIGNS I MASTER PLANNING
F3 DESIGNS
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

STRUCTURAL CONSULTANTS :-

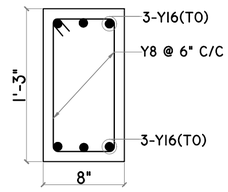
aura
ENGINEEERING CONSULTANTS
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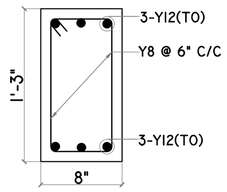
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LAYOUT OF PLINTH BEAM

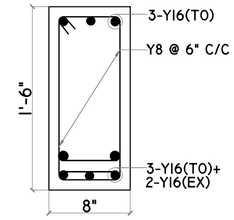


PLINTH BEAM "PB1"
(0'-8" x 1'-3")

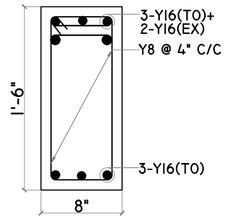


PLINTH BEAM "PB2"
(0'-8" x 1'-3")

BEAM SCHEDULE		
SL.NO	NAME	SIZE
01	PB1	0'-8" x 1'-3"
02	PB2	0'-8" x 1'-3"
03	PB3	0'-8" x 1'-6"



PLINTH BEAM "PB3"
(0'-8" x 1'-6")
(@ MID SUPPORT)

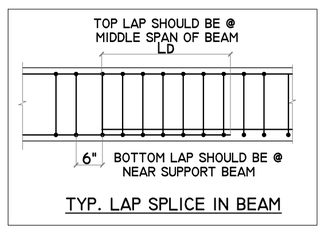


PLINTH BEAM "PB3"
(0'-8" x 1'-6")
(@ END SUPPORT)

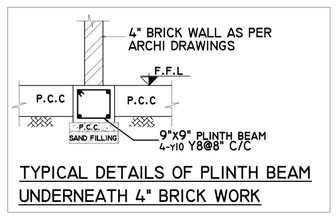
NOTE:

N.G.L - NATURAL GROUND LEVEL.

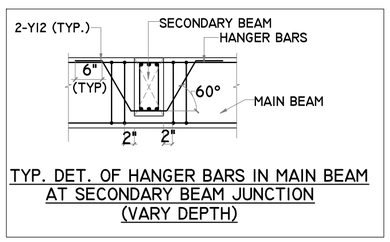
F.F.L - FLOOR FINISH LEVEL



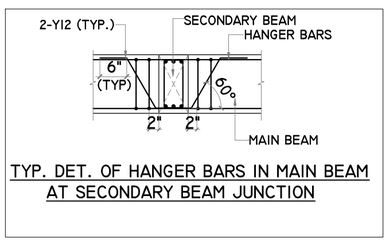
TYP. LAP SPLICE IN BEAM



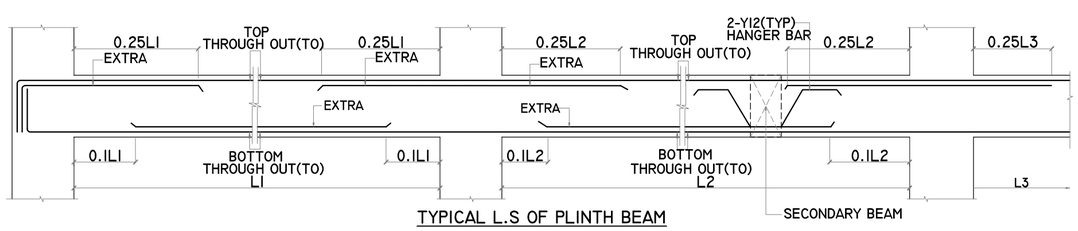
TYPICAL DETAILS OF PLINTH BEAM UNDERNEATH 4" BRICK WORK



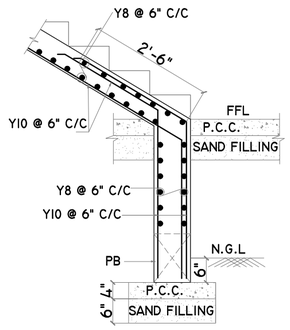
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



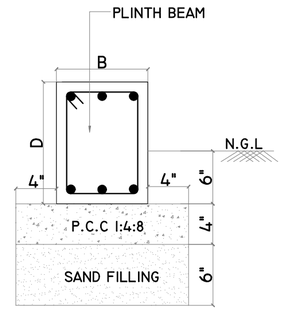
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION



TYPICAL L.S OF PLINTH BEAM



TYP. DETAIL OF STAIRCASE DOWELS



TYPICAL DETAIL OF PLINTH BEAM

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OF1.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (LD) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM =1 " B) R.C WALL = 1 "
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. COLUMNS AND FOOTINGS ARE DESIGNED FOR S+5 FLOOR LOADS AND SBC OF THE SOIL IS 110KN/SQM. @ 7'-6" BELOW N.G.L.
7. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
8. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR REVIEW PURPOSE	M.R	R.M	08.07.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF PLINTH BEAM

CLIENT :- RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
08.07.25	1" : 9'	-------	003

ARCHITECT / CONSULTANTS :-

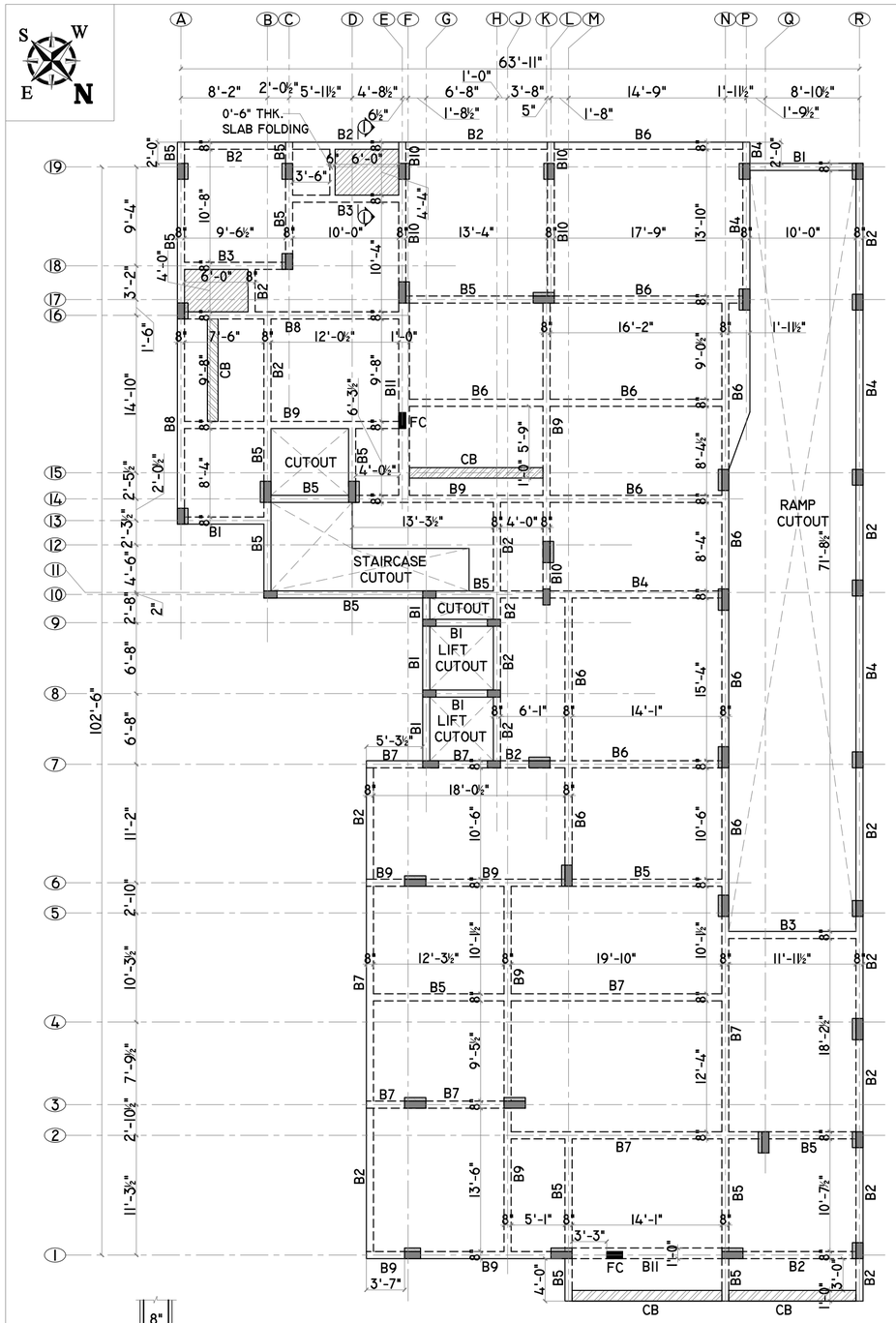
F3 DESIGNS
ARCHITECTURE | INTERIOR DESIGNS | MASTER PLANNING
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velacherry, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

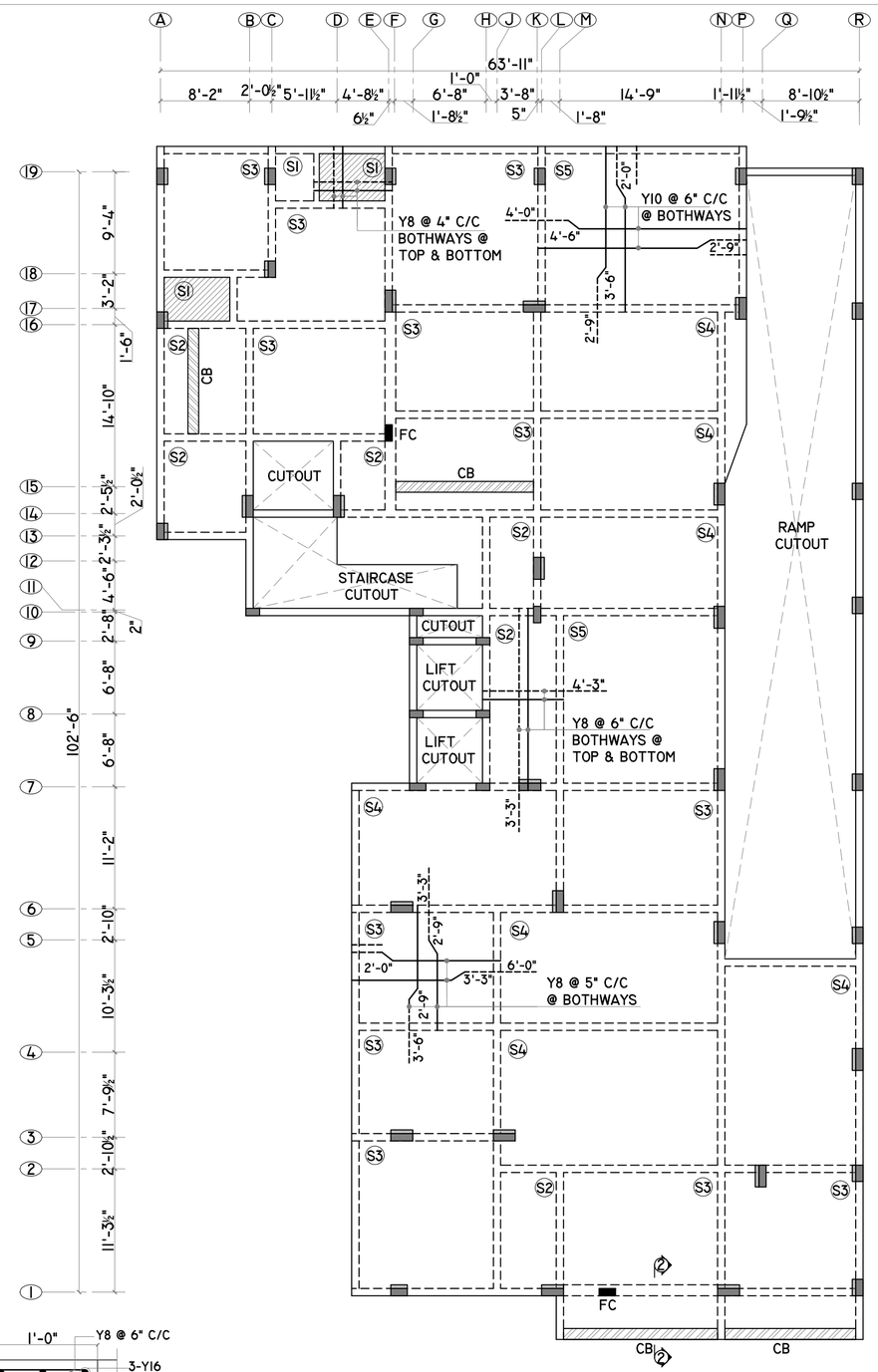
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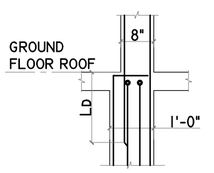
AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
ENGINEEERING CONSULTANTS

A2

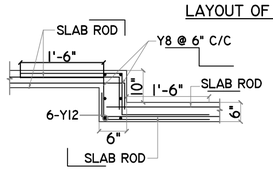
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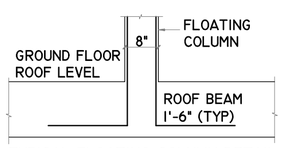


TYPICAL COLUMN REDUCTION DETAILS

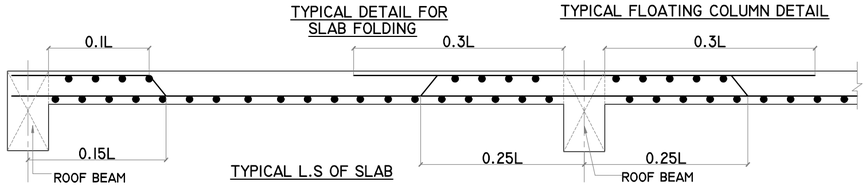


TYPICAL DETAIL FOR SLAB FOLDING

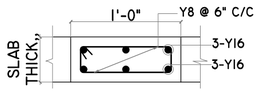
LAYOUT OF GROUND FLOOR ROOF BEAM & SLAB



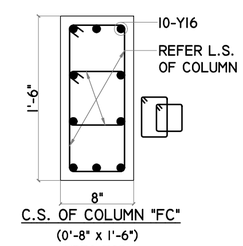
TYPICAL FLOATING COLUMN DETAIL



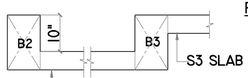
TYPICAL L.S OF SLAB



C.S OF CONCEALED BEAM-"CB"
(1'-0" X "SLAB THICKNESS")



C.S. OF COLUMN "FC"
(0'-8" x 1'-6")
(UPTO TOP)



SECTION "1-1"

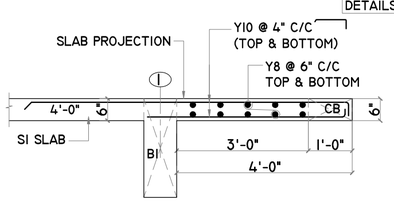
R.C LAYOUT OF GROUND FLOOR ROOF BEAM & SLAB

NOTE:

SLAB SUNK BY 0'-10"

PROVIDE Y8 @ 8" C/C AS DISTRIBUTORS WHERE EVER REQUIRED

FOR BEAM REINFORCEMENT DETAILS REFER DWG.NO : 005



SECTION "2-2"

SLAB SCHEDULE

SL.NO	NAME	THICK
01	SI	5" THK.
02	S2	5" THK.
03	S3	5" THK.
04	S4	5" THK.
05	S5	6" THK.

BEAM SCHEDULE

SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 2'-0"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 1'-3"
11	B11	1'-0" x 2'-0"

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

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LAP JOINTS FOR REINFORCEMENT BARS :

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II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

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GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF GROUND FLOOR ROOF SLAB & BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	004

ARCHITECT / CONSULTANTS :-

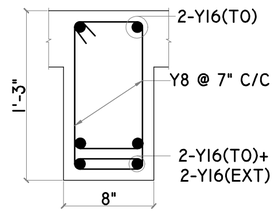
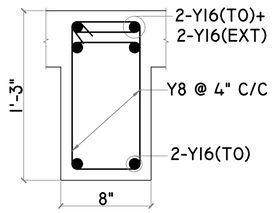
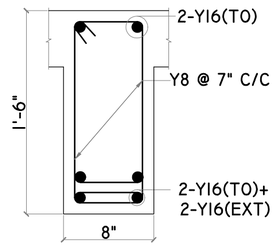
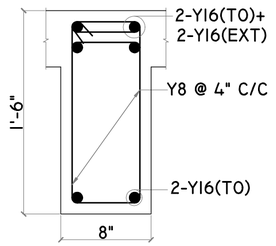
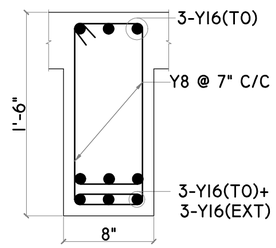
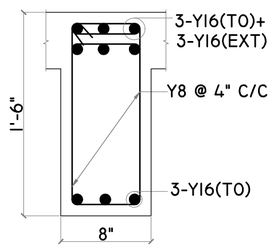
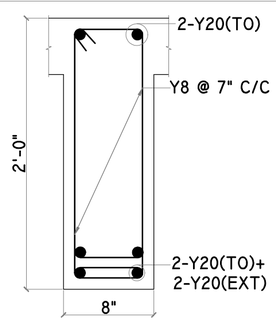
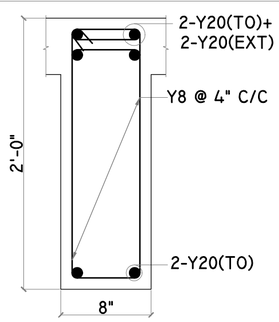
F3 DESIGNS
ARCHITECTURE | INTERIOR DESIGNS | MASTER PLANNING
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

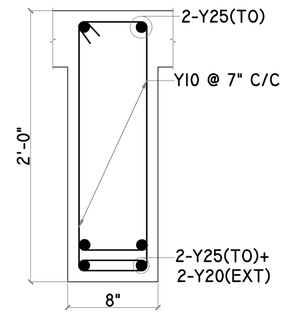
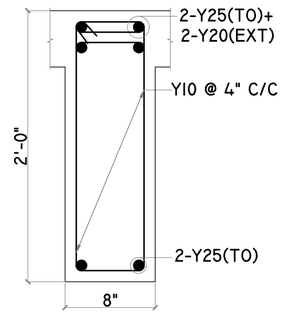
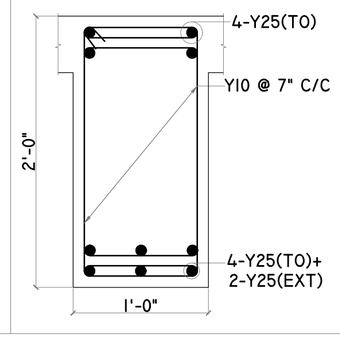
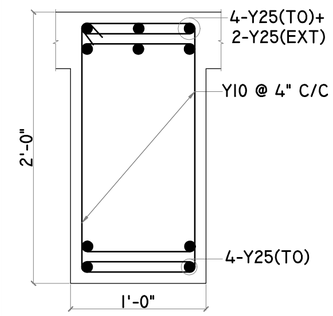
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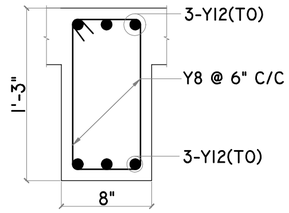
AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
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A2

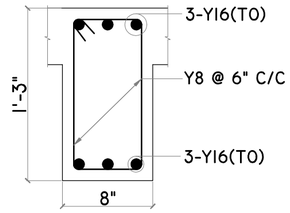
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NAME	MID SPAN	END SUPPORT
B5 (0'-8" X 1'-3")		
B6 (0'-8" X 1'-6")		
B7 (0'-8" X 1'-6")		
B8 (0'-8" X 2'-0")		

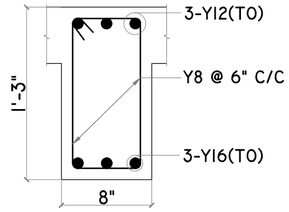
NAME	MID SPAN	END SUPPORT
B9 (0'-8" X 2'-0")		
B11 (1'-0" X 2'-0")		



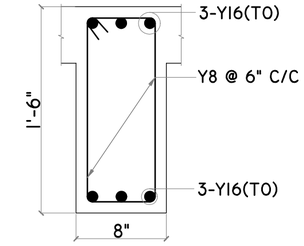
C.S. OF BEAM "B1"
(0'-8" X 1'-3")



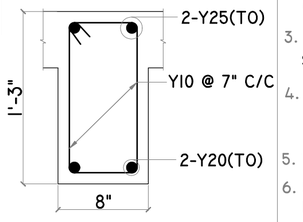
C.S. OF BEAM "B2"
(0'-8" X 1'-3")



C.S. OF BEAM "B3"
(0'-8" X 1'-3")



C.S. OF BEAM "B4"
(0'-8" X 1'-6



C.S. OF BEAM "B10"
(0'-8" X 1'-3")

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF GROUND FLOOR ROOF BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	005

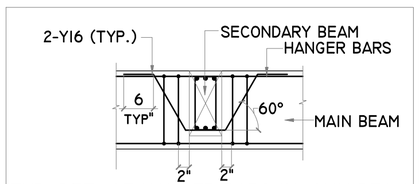
ARCHITECT / CONSULTANTS :-

F3 DESIGNS
ARCHITECTURE | INTERIOR DESIGNS | MASTER PLANNING
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

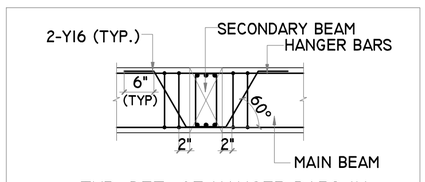
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
ENGINEEERING CONSULTANTS

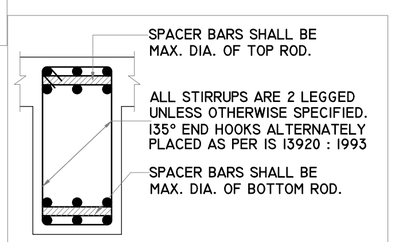
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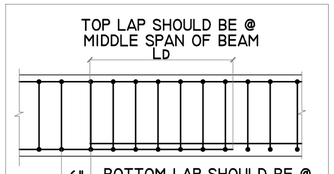
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



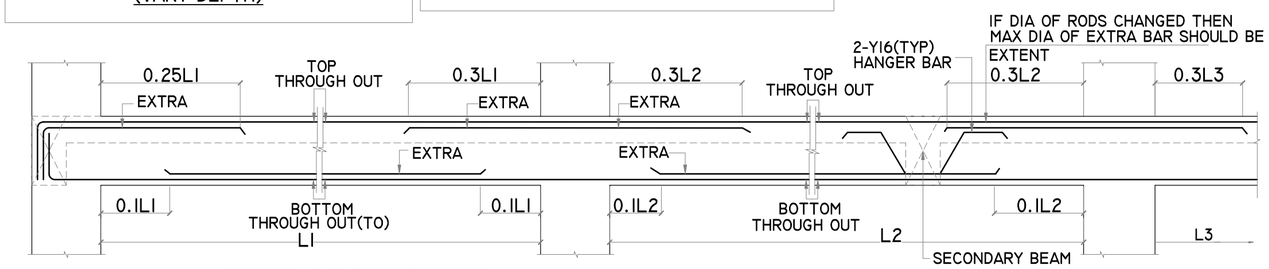
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION



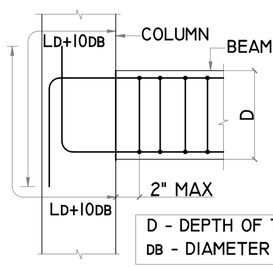
TYP. DETAIL



TYP. LAP SPLICE IN BEAM



TYPICAL L.S OF ROOF BEAM



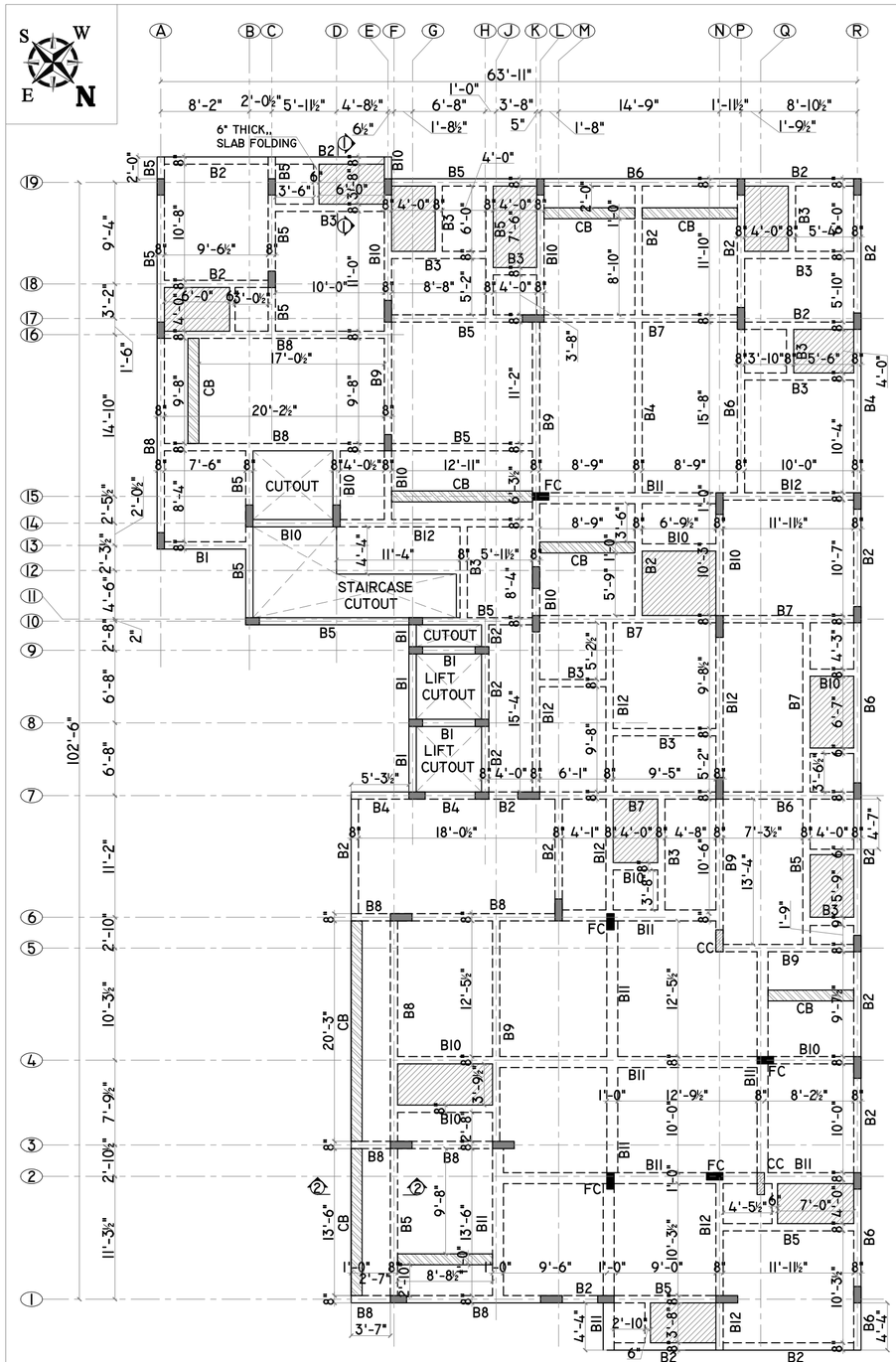
D - DEPTH OF THE BEAM
DB - DIAMETER OF THE BAR

TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION

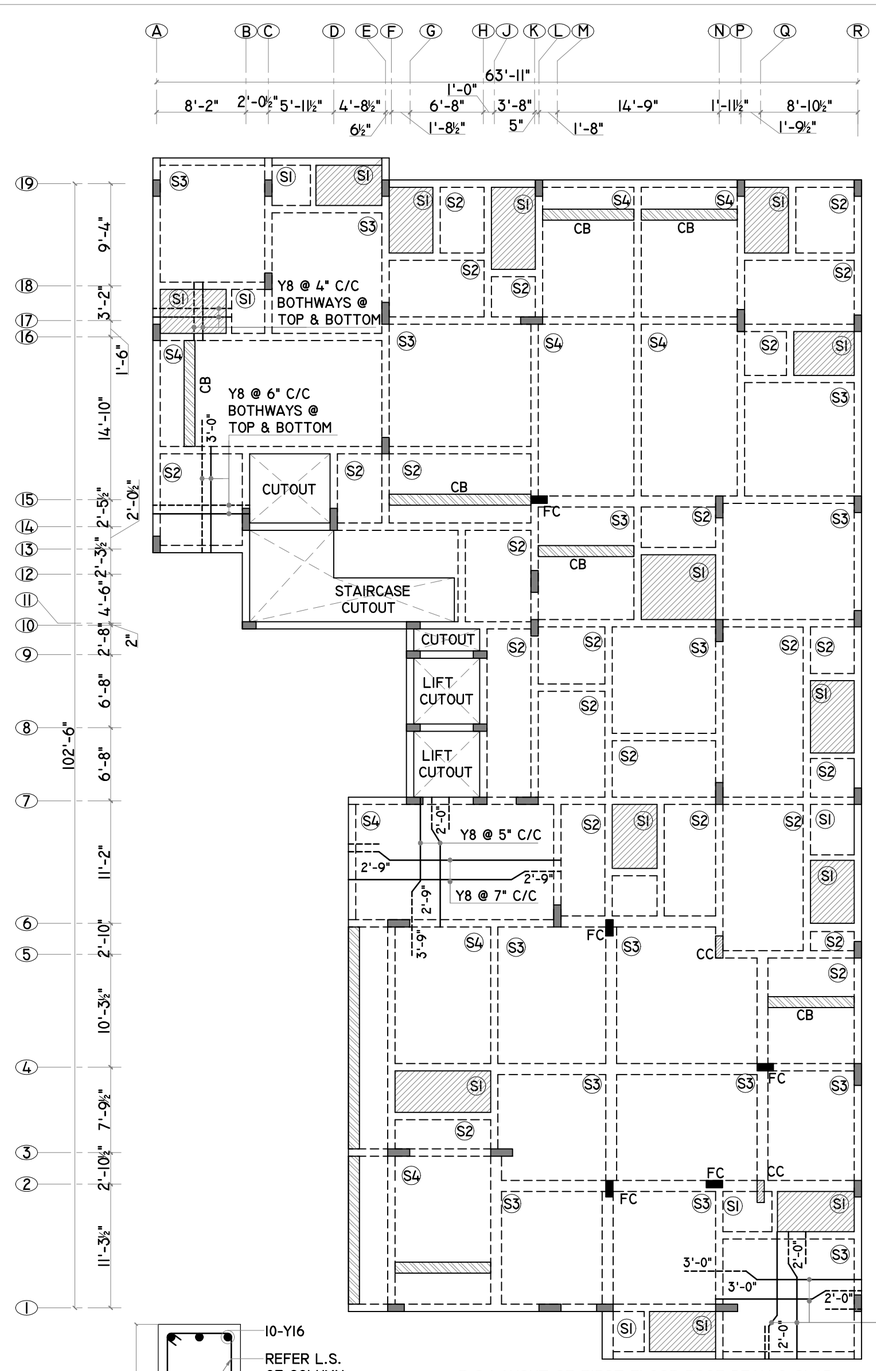
BEAM SCHEDULE

SL.NO	NAME	SIZE
01	B1	0'-8" X 1'-3"
02	B2	0'-8" X 1'-3"
03	B3	0'-8" X 1'-3"
04	B4	0'-8" X 1'-6"
05	B5	0'-8" X 1'-3"
06	B6	0'-8" X 1'-6"
07	B7	0'-8" X 1'-6"
08	B8	0'-8" X 2'-0"
09	B9	0'-8" X 2'-0"
10	B10	0'-8" X 1'-3"
11	B11	1'-0" X 2'-0"

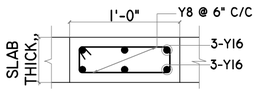
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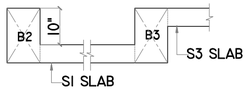
LAYOUT OF FIRST FLOOR ROOF BEAM & SLAB



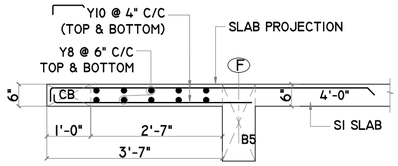
R.C LAYOUT OF FIRST FLOOR ROOF BEAM & SLAB



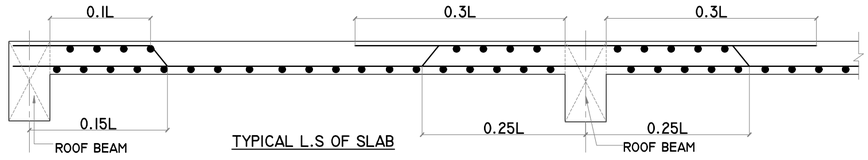
C.S OF CONCEALED BEAM-"CB"
(1'-0" X "SLAB THICKNESS")



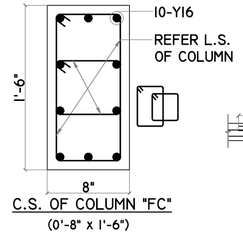
SECTION "1-1"



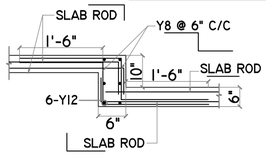
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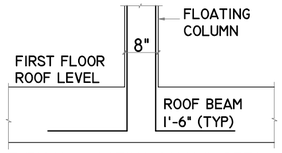
TYPICAL L.S OF SLAB



C.S. OF COLUMN "FC"
(0'-8" x 1'-6")



TYPICAL DETAIL FOR SLAB FOLDING



TYPICAL FLOATING COLUMN DETAIL

SLAB SCHEDULE		
SL.NO	NAME	THICK
01	SI	5" THK.
02	S2	5" THK.
03	S3	5" THK.
04	S4	5" THK.

NOTE:

- SLAB SUNK BY 0'-10"
- PROVIDE Y8 @ 8" C/C AS DISTRIBUTORS WHERE EVER REQUIRED
- FOR BEAM REINFORCEMENT DETAILS REFER DWG.NO : 005
- CC - COLUMN CURTAILED & RODS TO BE BEND IN TO TOP OF THE SLAB

BEAM SCHEDULE		
SL.NO	NAME	SIZE
01	BI	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
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10	B10	0'-8" x 1'-3"
11	B11	1'-0" x 2'-0"
12	B12	0'-8" x 1'-6"
13	B13	0'-8" x 2'-0"

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OFI.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (Ld) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

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REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF FIRST FLOOR ROOF SLAB & BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	006

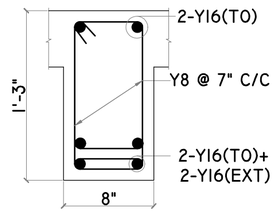
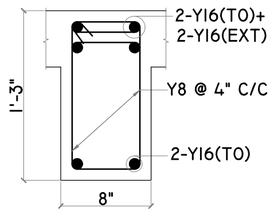
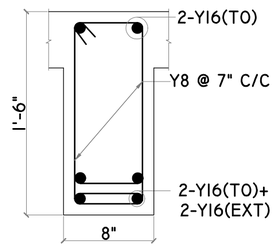
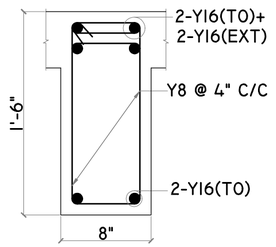
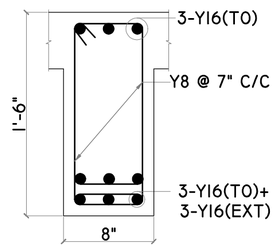
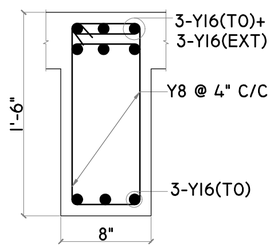
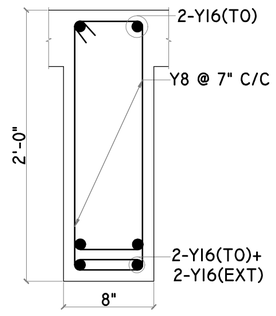
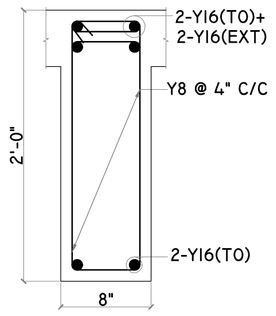
ARCHITECT / CONSULTANTS :-

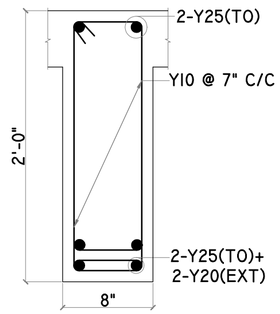
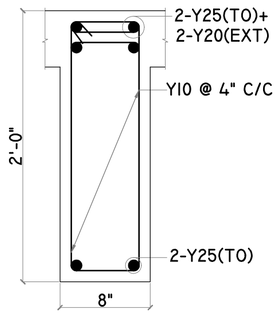
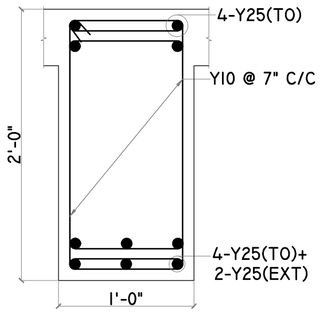
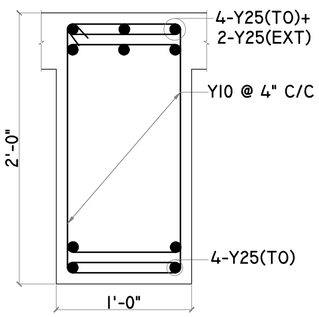
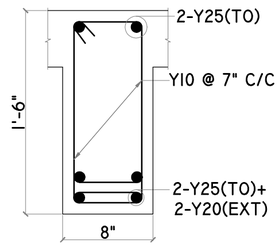
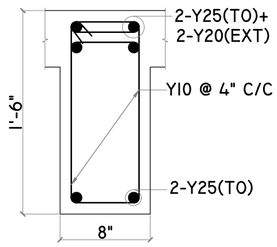
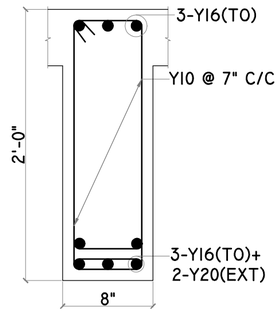
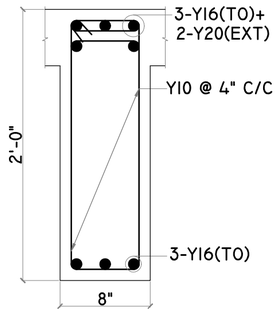
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119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

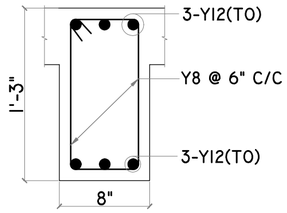
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
aura ENGINEEERING CONSULTANTS

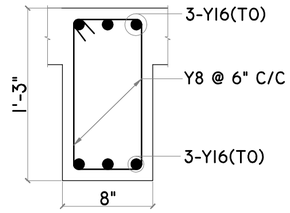
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NAME	MID SPAN	END SUPPORT
B5 (0'-8" X 1'-3")		
B6 (0'-8" X 1'-6")		
B7 (0'-8" X 1'-6")		
B8 (0'-8" X 2'-0")		

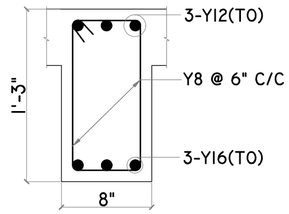
NAME	MID SPAN	END SUPPORT
B9 (0'-8" X 2'-0")		
B11 (1'-0" X 2'-0")		
B12 (0'-8" X 1'-6")		
B13 (0'-8" X 2'-0")		



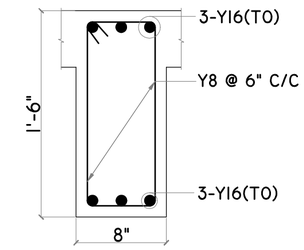
C.S. OF BEAM "B1"
(0'-8" X 1'-3")



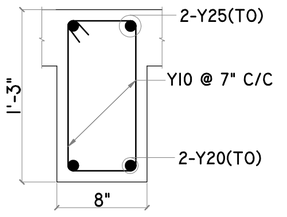
C.S. OF BEAM "B2"
(0'-8" X 1'-3")



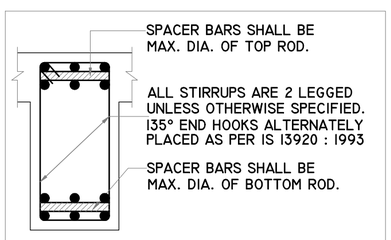
C.S. OF BEAM "B3"
(0'-8" X 1'-3")



C.S. OF BEAM "B4"
(0'-8" X 1'-6

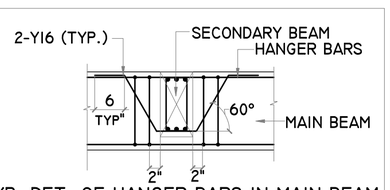


C.S. OF BEAM "B10"
(0'-8" X 1'-3")

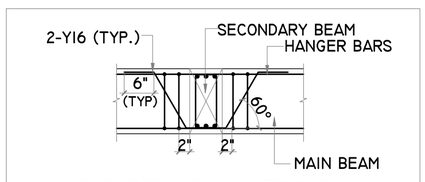


TYP. DETAIL

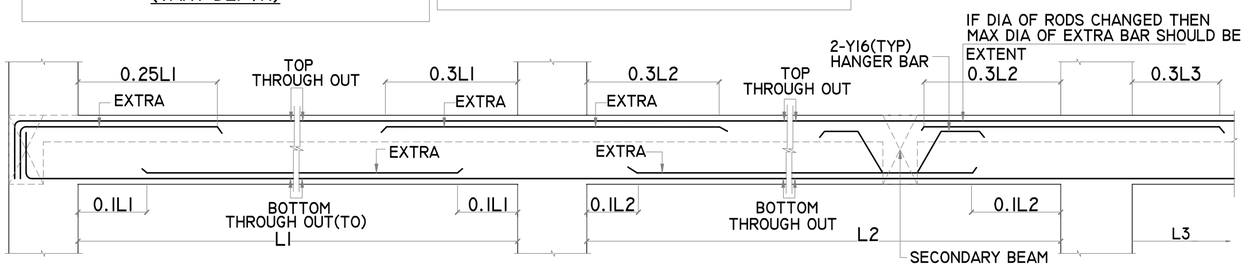
BEAM SCHEDULE		
SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 2'-0"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 1'-3"
11	B11	1'-0" x 2'-0"
12	B12	0'-8" x 1'-6"
13	B13	0'-8" x 2'-0"



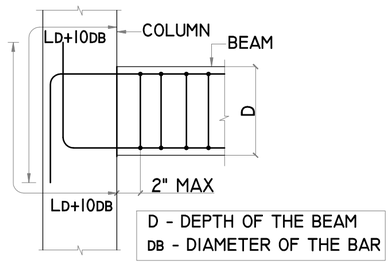
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION

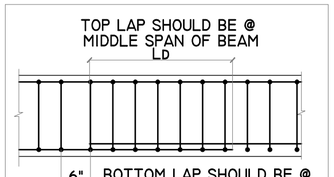


TYPICAL L.S OF ROOF BEAM



D - DEPTH OF THE BEAM
DB - DIAMETER OF THE BAR

TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION



TYP. LAP SPLICE IN BEAM

00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25
REV.	DESCRIPTIONS	DRN	CHK	DATE

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF FIRST FLOOR ROOF BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 8'	------	007

ARCHITECT / CONSULTANTS :-

F3 DESIGNS
ARCHITECTURE | INTERIOR DESIGNS | MASTER PLANNING
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

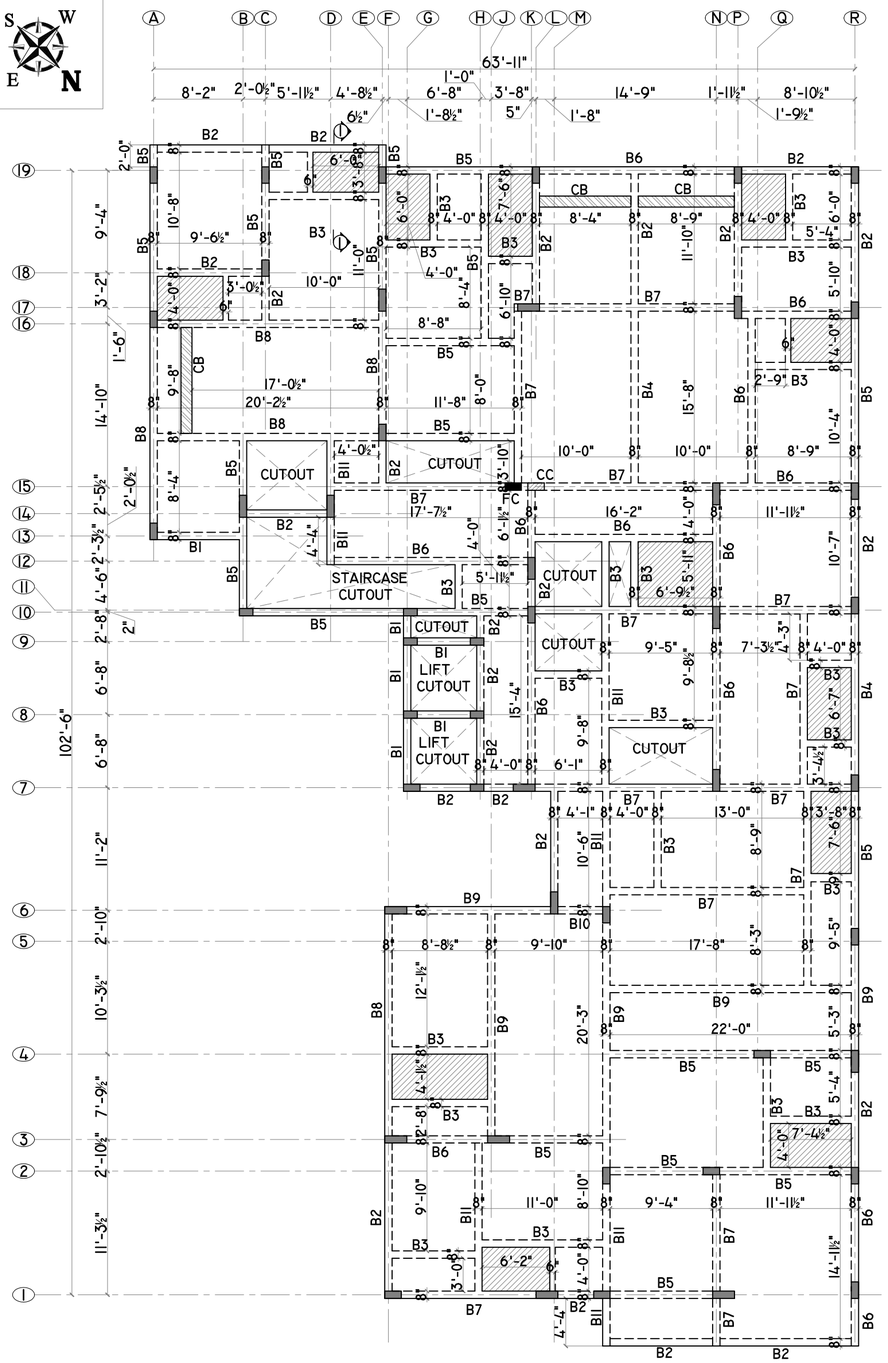
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/

aura ENGINEEERING CONSULTANTS

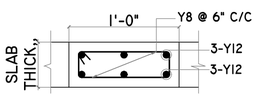
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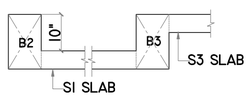


LAYOUT OF SECOND FLOOR ROOF BEAM & SLAB

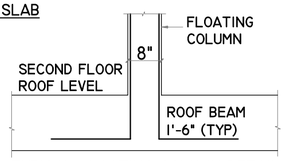
R.C LAYOUT OF SECOND FLOOR ROOF BEAM & SLAB



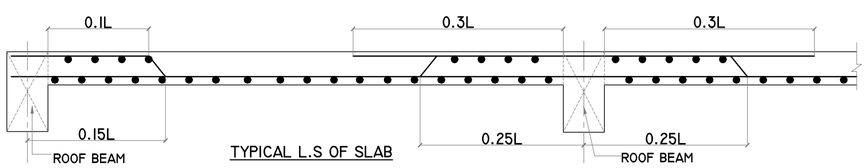
C.S OF CONCEALED BEAM-"CB"
(1'-0" X "SLAB THICKNESS")



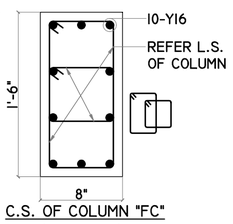
SECTION "1-1"



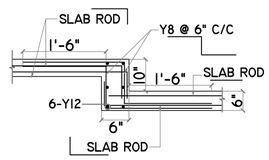
TYPICAL FLOATING COLUMN DETAIL



TYPICAL L.S OF SLAB



C.S. OF COLUMN "FC"
(0'-8" x 1'-6")



TYPICAL DETAIL FOR SLAB FOLDING

NOTE:

SLAB SUNK BY 0'-10"

PROVIDE Y8 @ 8" C/C AS DISTRIBUTORS WHERE EVER REQUIRED

FOR BEAM REINFORCEMENT DETAILS REFER DWG.NO : 009

SLAB SCHEDULE

SL.NO	NAME	THICK
01	SI	5" THK.
02	S2	5" THK.
03	S3	5" THK.
04	S4	5" THK.

BEAM SCHEDULE

SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 1'-6"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 1'-3"
11	B11	0'-8" x 1'-6"

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OFI.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (Ld) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF SECOND FLOOR ROOF SLAB & BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	008

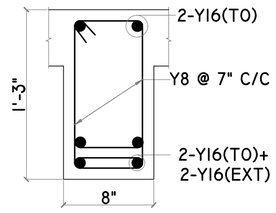
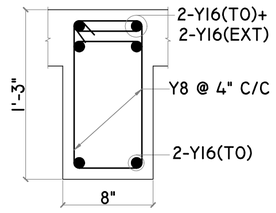
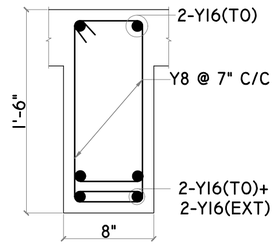
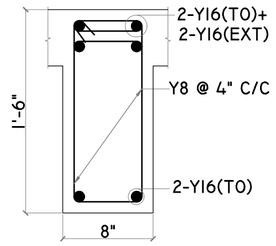
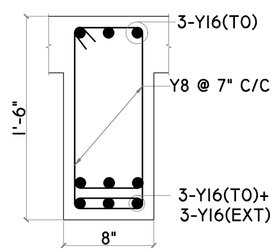
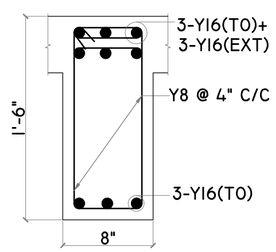
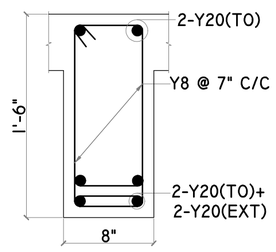
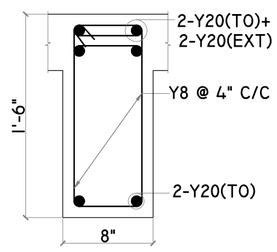
ARCHITECT / CONSULTANTS :-

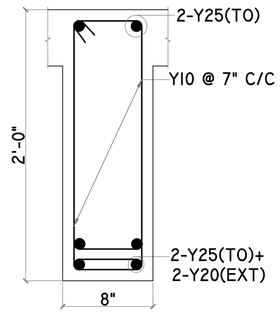
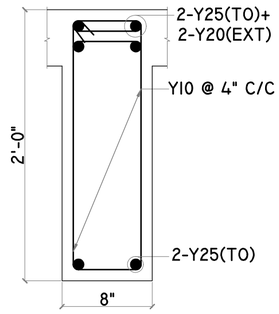
F3 DESIGNS
ARCHITECTURE I INTERIOR DESIGNS I MASTER PLANNING
F3 DESIGNS
FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

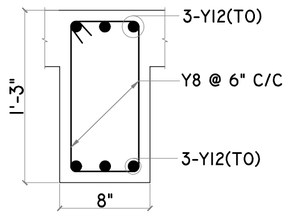
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE,
ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
ENGINEEERING CONSULTANTS

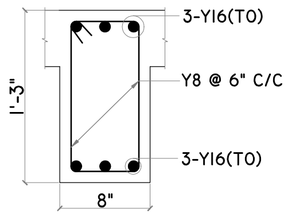
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NAME	MID SPAN	END SUPPORT
B5 (0'-8" X 1'-3")		
B6 (0'-8" X 1'-6")		
B7 (0'-8" X 1'-6")		
B8 (0'-8" X 1'-6")		

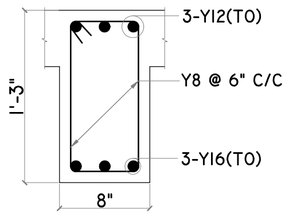
NAME	MID SPAN	END SUPPORT
B9 (0'-8" X 2'-0")		



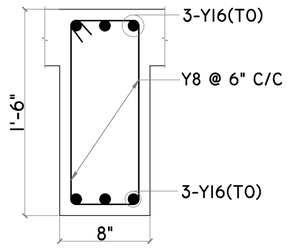
C.S. OF BEAM "B1"
(0'-8" X 1'-3")



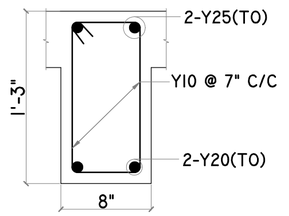
C.S. OF BEAM "B2"
(0'-8" X 1'-3")



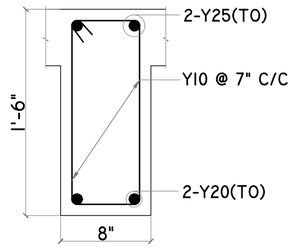
C.S. OF BEAM "B3"
(0'-8" X 1'-3")



C.S. OF BEAM "B4"
(0'-8" X 1'-6")

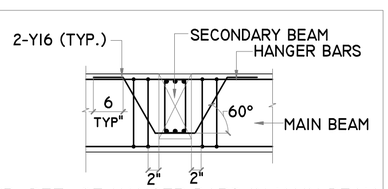


C.S. OF BEAM "B10"
(0'-8" X 1'-3")

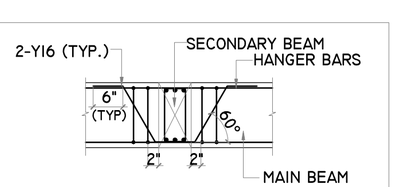


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(0'-8" X 1'-6")

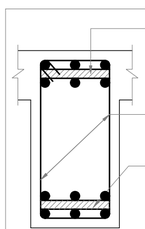
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SL.NO	NAME	SIZE
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09	B9	0'-8" X 2'-0"
10	B10	0'-8" X 1'-3"
11	B11	0'-8" X 1'-6"



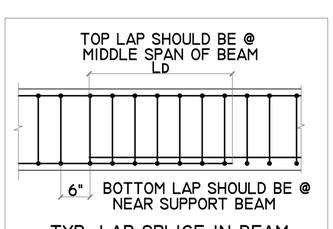
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



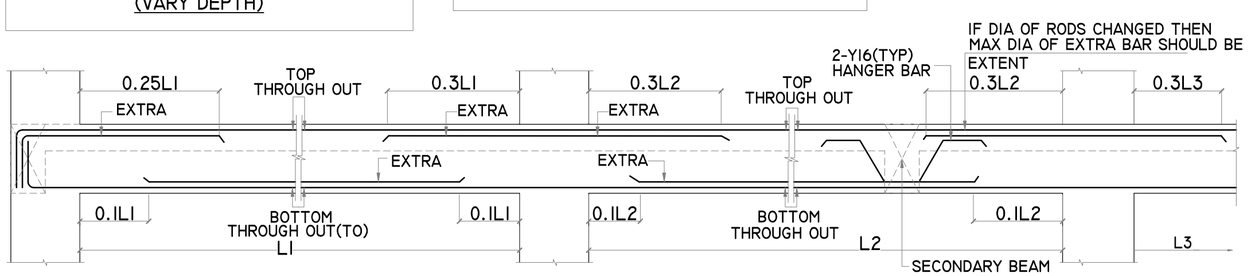
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION



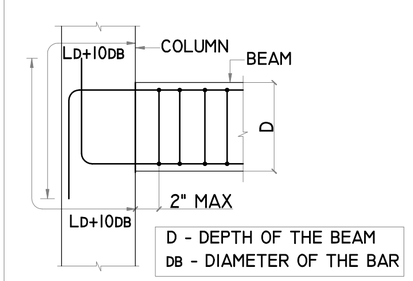
TYP. DETAIL



TYP. LAP SPLICE IN BEAM



TYPICAL L.S OF ROOF BEAM



TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
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REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF SECOND FLOOR ROOF BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 8'	------	009

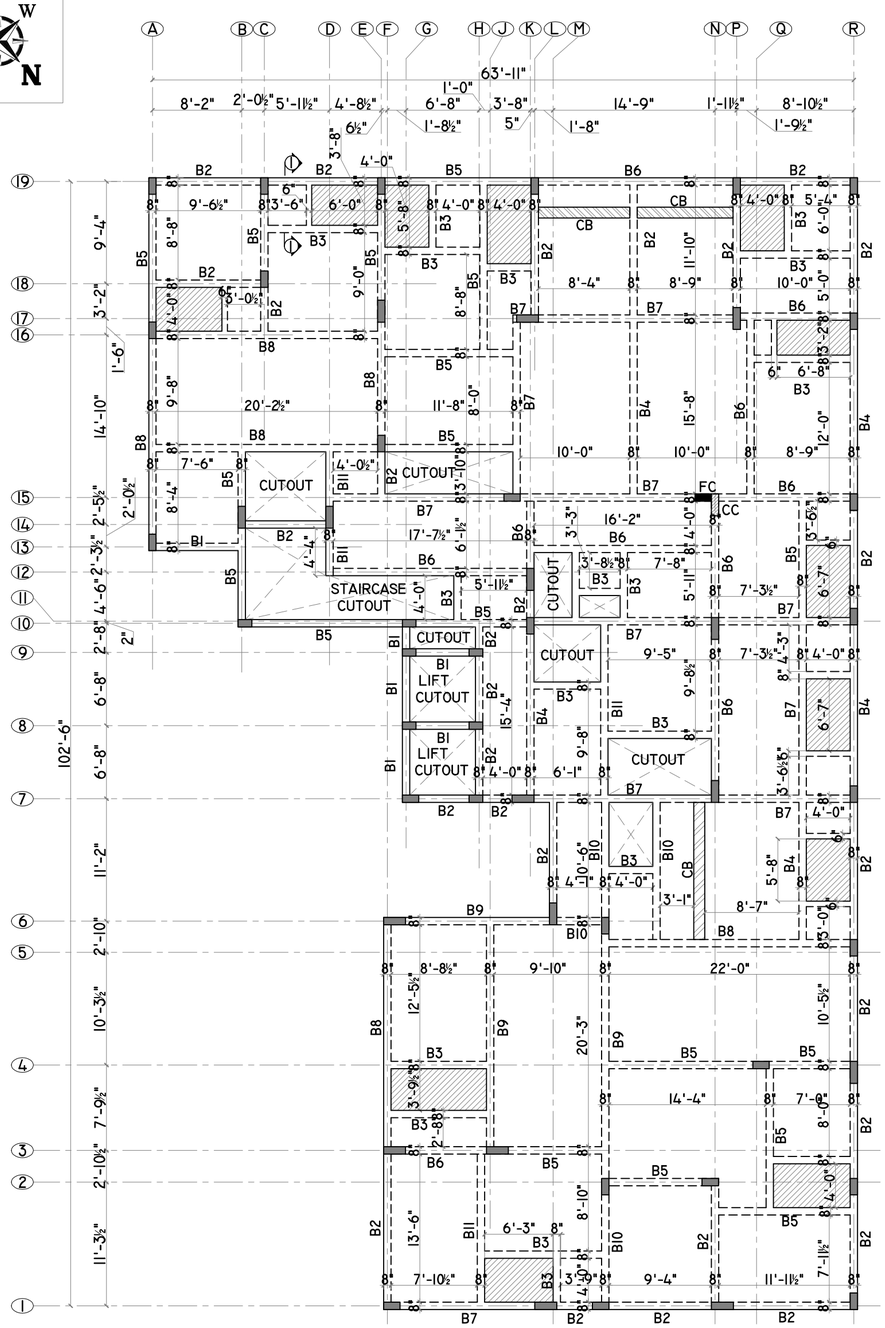
ARCHITECT / CONSULTANTS :-

F3 DESIGNS
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FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

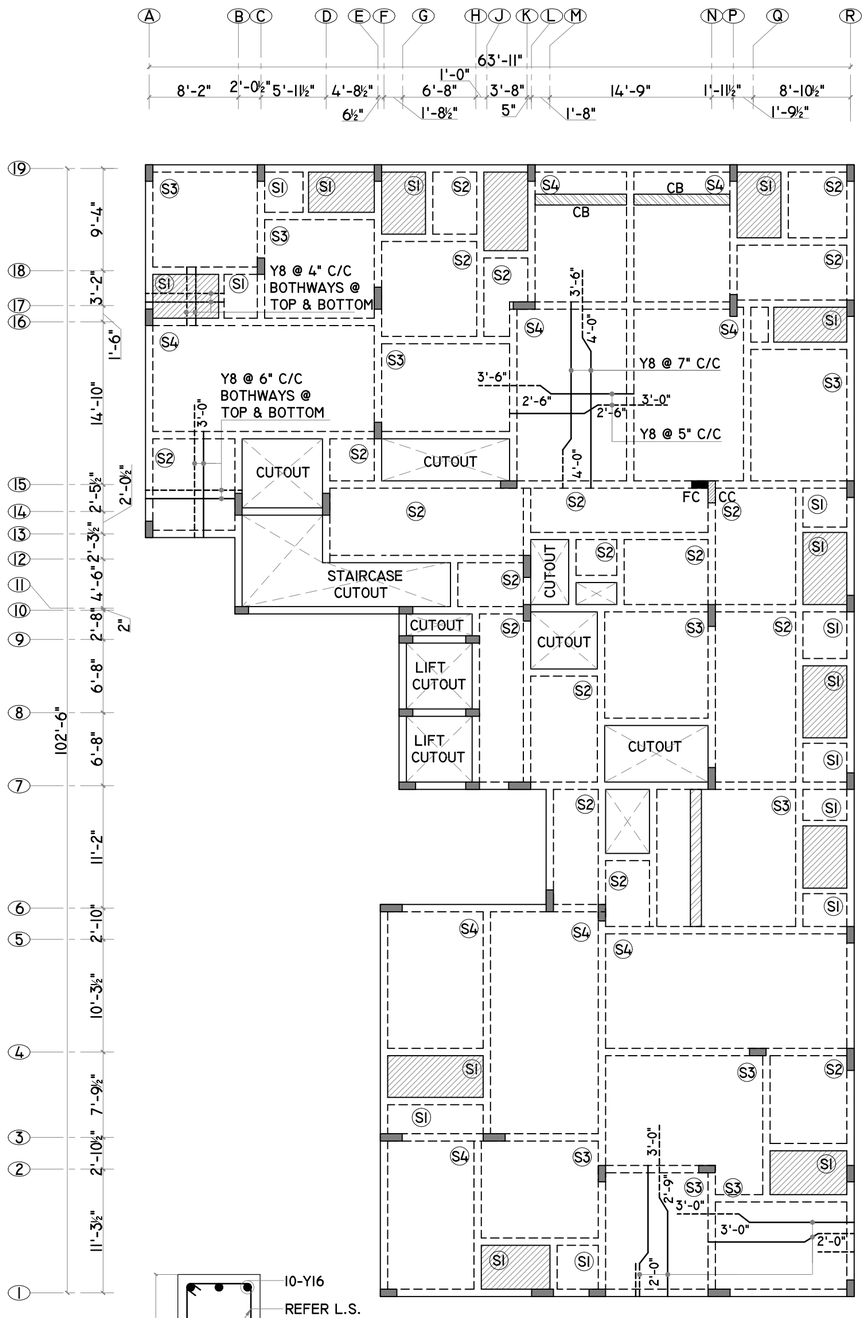
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
aura ENGINEEERING CONSULTANTS

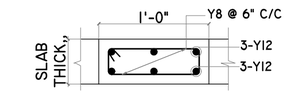
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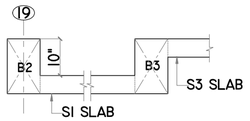
LAYOUT OF THIRD FLOOR ROOF BEAM & SLAB



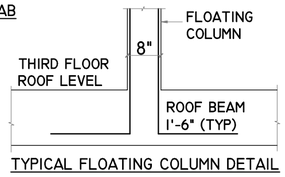
R.C LAYOUT OF THIRD FLOOR ROOF BEAM & SLAB



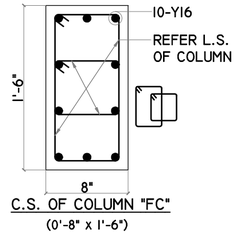
C.S OF CONCEALED BEAM-"CB"
(1'-0" X "SLAB THICKNESS")



SECTION "I-I"



TYPICAL FLOATING COLUMN DETAIL



C.S. OF COLUMN "FC"
(0'-8" x 1'-6")

NOTE:

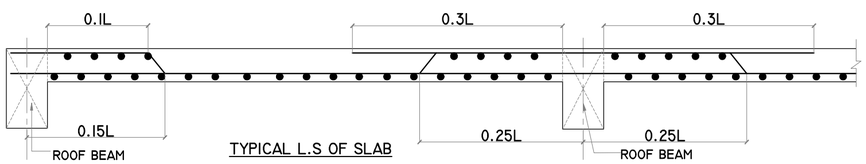
- SLAB SUNK BY 0'-10"
- PROVIDE Y8 @ 8" C/C AS DISTRIBUTORS WHERE EVER REQUIRED
- FOR BEAM REINFORCEMENT DETAILS REFER DWG.NO : 011

SLAB SCHEDULE

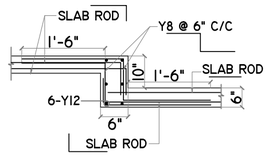
SL.NO	NAME	THICK
01	SI	5" THK.
02	S2	5" THK.
03	S3	5" THK.
04	S4	5" THK.

BEAM SCHEDULE

SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 1'-6"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 1'-3"
11	B11	0'-8" x 1'-6"



TYPICAL L.S OF SLAB



TYPICAL DETAIL FOR SLAB FOLDING

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OFI.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (Ld) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF THIRD FLOOR ROOF SLAB & BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	010

ARCHITECT / CONSULTANTS :-

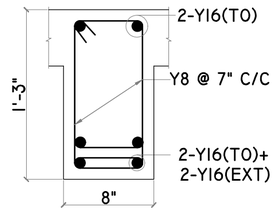
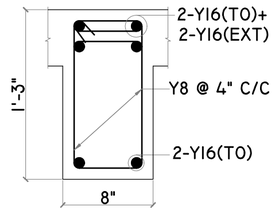
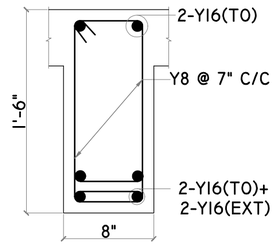
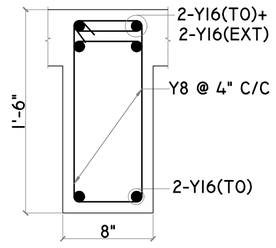
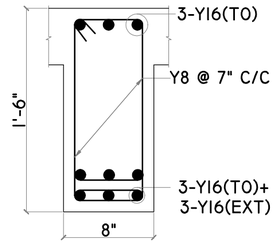
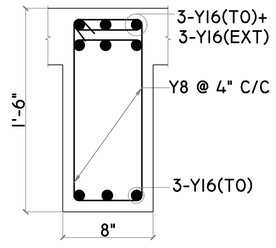
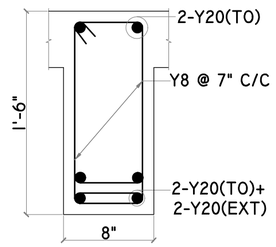
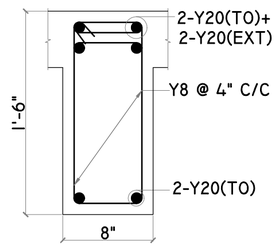
F3 DESIGNS
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FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

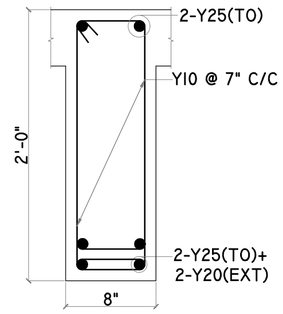
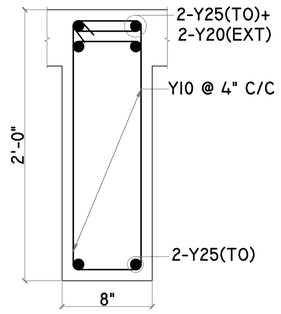
STRUCTURAL CONSULTANTS :-

AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
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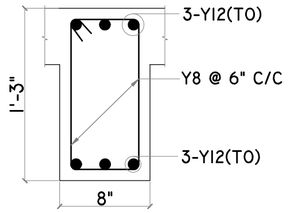
A2

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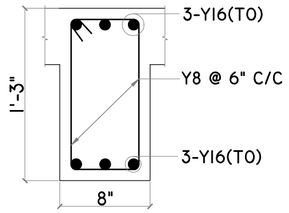
NAME	MID SPAN	END SUPPORT
B5 (0'-8" X 1'-3")		
B6 (0'-8" X 1'-6")		
B7 (0'-8" X 1'-6")		
B8 (0'-8" X 1'-6")		

NAME	MID SPAN	END SUPPORT
B9 (0'-8" X 2'-0")		

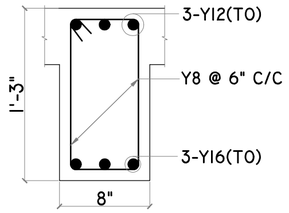
BEAM SCHEDULE		
SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
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07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 1'-6"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 1'-3"
11	B11	0'-8" x 1'-6"



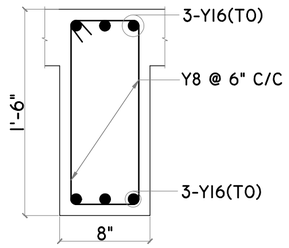
C.S. OF BEAM "B1"
(0'-8" X 1'-3")



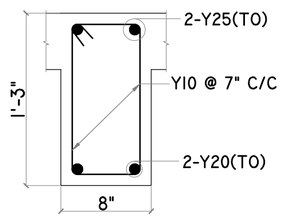
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(0'-8" X 1'-3")



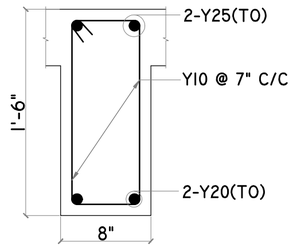
C.S. OF BEAM "B3"
(0'-8" X 1'-3")



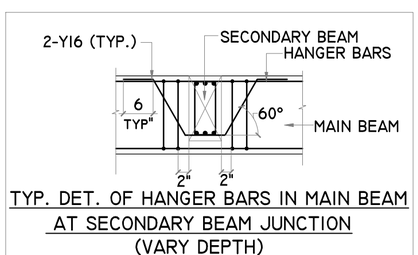
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(0'-8" X 1'-6")



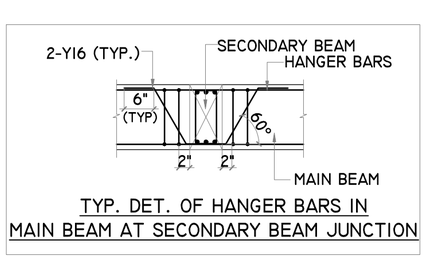
C.S. OF BEAM "B10"
(0'-8" X 1'-3")



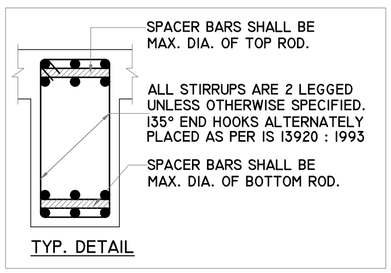
C.S. OF BEAM "B11"
(0'-8" X 1'-6")



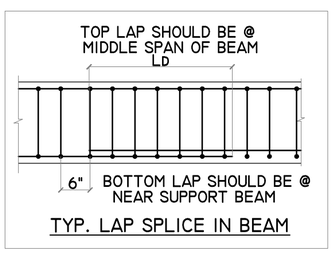
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



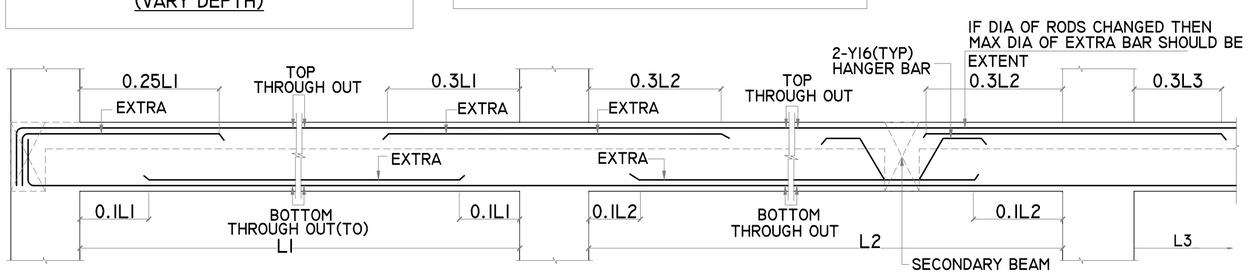
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION



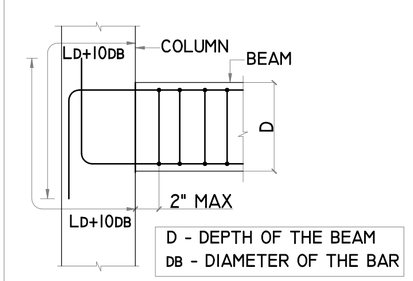
TYP. DETAIL



TYP. LAP SPLICE IN BEAM



TYPICAL L.S OF ROOF BEAM



TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
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7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF THIRD FLOOR ROOF BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 8'	------	011

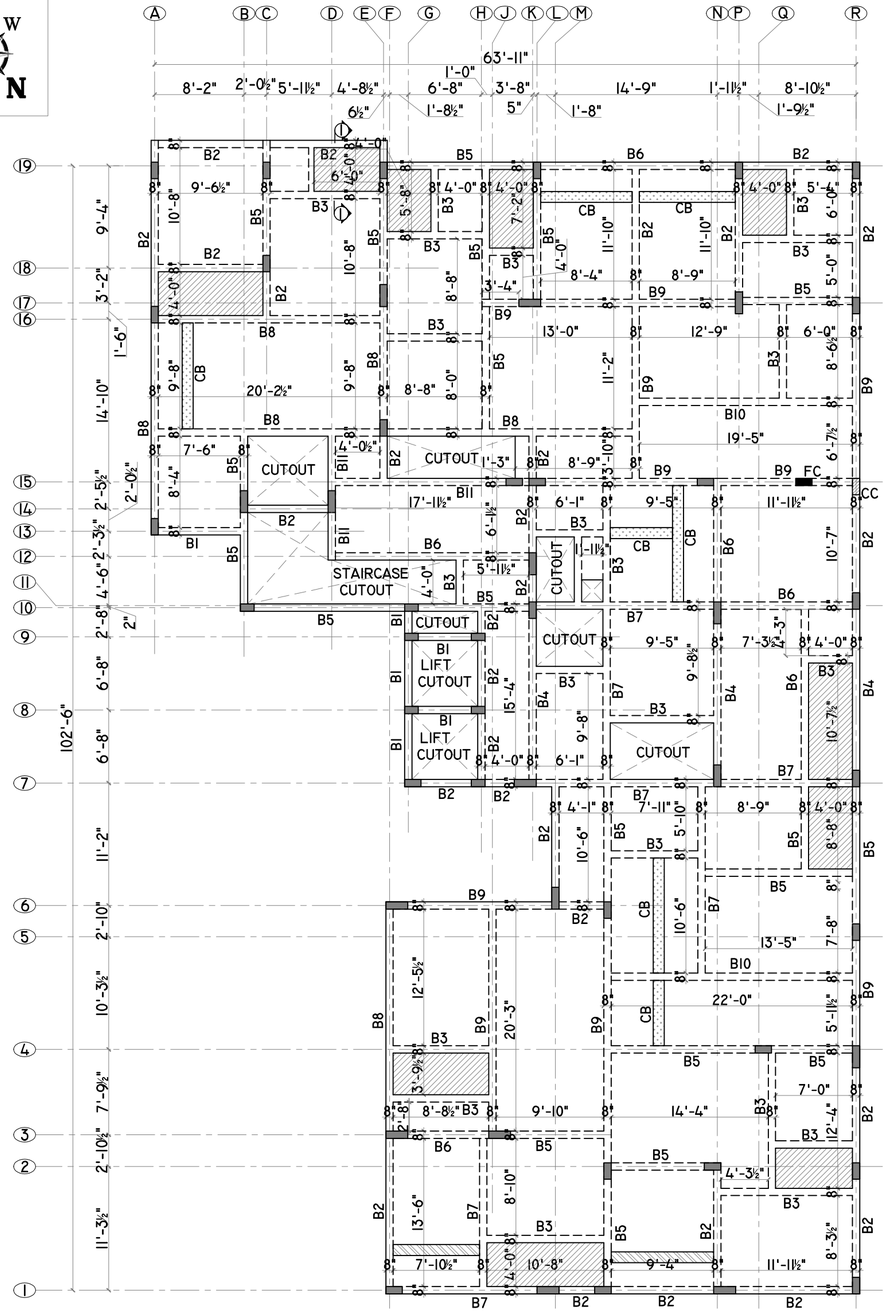
ARCHITECT / CONSULTANTS :-

F3 DESIGNS
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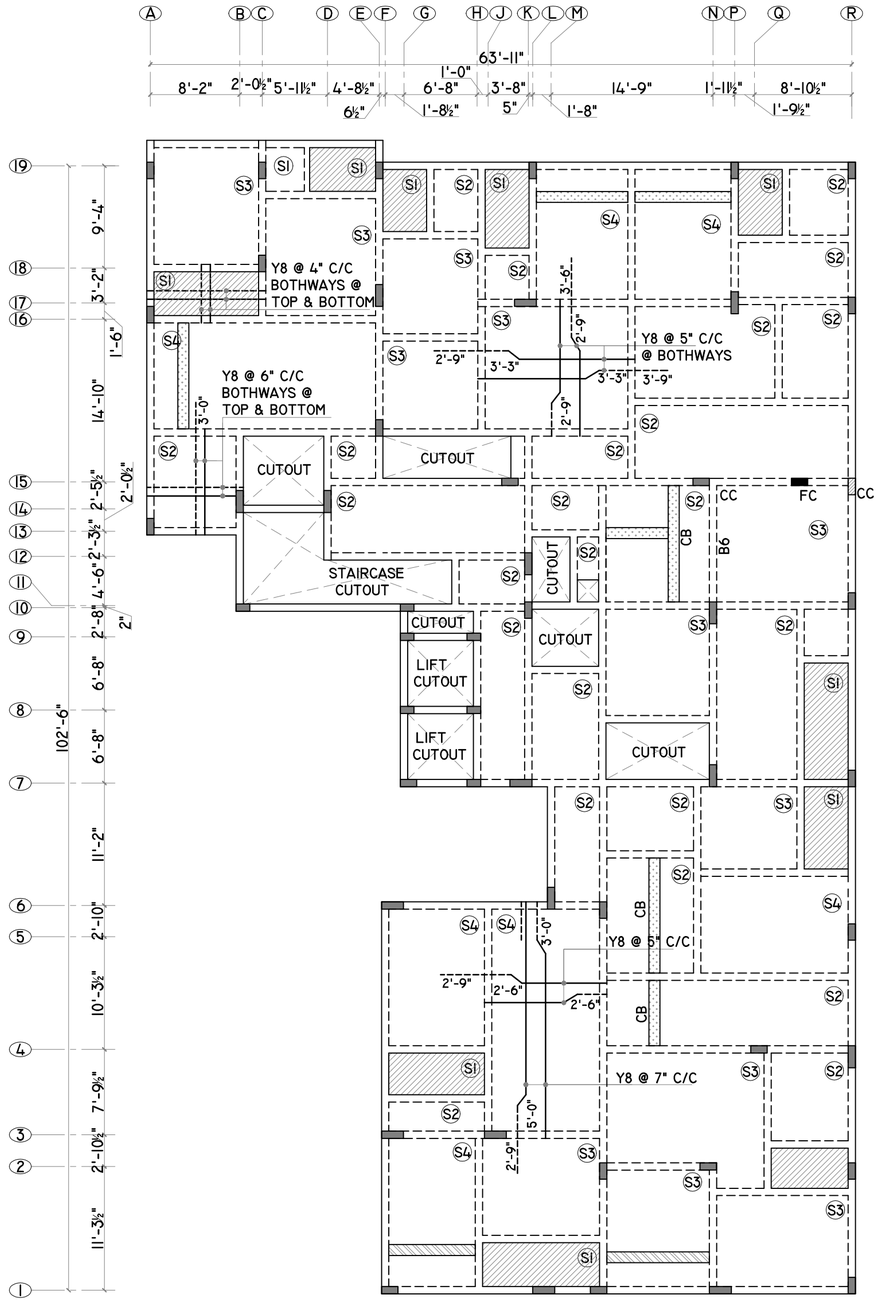
STRUCTURAL CONSULTANTS :-

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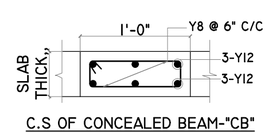
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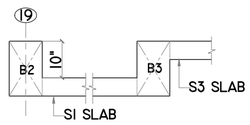
LAYOUT OF FOURTH FLOOR ROOF BEAM & SLAB



R.C LAYOUT OF FOURTH FLOOR ROOF BEAM & SLAB



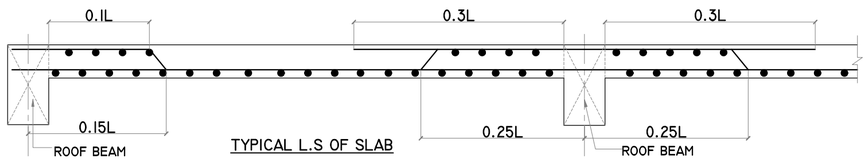
C.S OF CONCEALED BEAM-"CB"
(1'-0" X "SLAB THICKNESS")



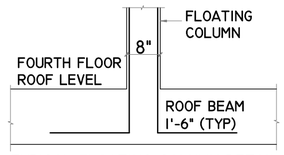
SECTION "I-I"

NOTE:

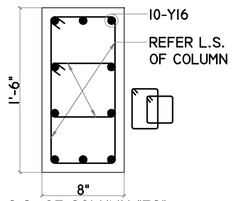
- SLAB SUNK BY 0'-10"
- PROVIDE Y8 @ 8" C/C AS DISTRIBUTORS WHERE EVER REQUIRED
- FC- FLOATING COLUMN TAKEN FROM FIRST FLOOR ROOF
- FOR BEAM REINFORCEMENT DETAILS REFER DWG.NO : 013
- CC - COLUMN CURTAILED & RODS TO BE BEND IN TO TOP OF THE SLAB



TYPICAL L.S OF SLAB



TYPICAL FLOATING COLUMN DETAIL



C.S. OF COLUMN "FC"
(0'-8" x 1'-6")

SLAB SCHEDULE		
SL.NO	NAME	THICK
01	SI	5" THK.
02	S2	5" THK.
03	S3	5" THK.
04	S4	5" THK.

BEAM SCHEDULE		
SL.NO	NAME	SIZE
01	BI	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 1'-6"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 2'-0"
11	BII	0'-8" x 1'-6"

GENERAL NOTES:

REMOVAL OF FORMWORK(SHUTTERING) :

SHUTTERING OF ANY PART OF THE STRUCTURE SHALL NOT BE REMOVED UNTIL THE CONCRETE ATTAINS 70% THE SPECIFIED STRENGTH OF CONCRETE. HOWEVER THE FOLLOWING MINIMUM PERIOD (AFTER FINAL POUR) SHALL BE ALLOWED BEFORE REMOVAL OF SHUTTERING AS PER CLAUSE 11.3.1, IS 456:2000

A) VERTICAL SIDE OF SHUTTERING OF COLUMNS,WALLS

LAP JOINTS FOR REINFORCEMENT BARS :

I) AT ANY CROSS SECTION OF THE MEMBER,NOT MORE THAN 50% THE BARS SHALL BE LAPPED.

II) LAPS SHALL BE STAGGERED WITH A MINIMUM CENTRE TO CENTRE DISTANCE OFI.3 TIMES LAP LENGTH OF THE BAR FOR TENSION & COMPRESSION MEMBERS.

III) DEVELOPMENT LENGTH (Ld) SHALL BE AS PER (SP:34-1999) TABLE BELOW:

A) DEVELOPMENT LENGTH FOR COLUMN BARS -40D
B) DEVELOPMENT LENGTH FOR BEAM BARS -50D

IV) LAPS IN COLUMNS SHALL BE PROVIDED AT MID HEIGHT OF FLOOR AND NOT AT SLAB LEVEL .

VII) DETAILING OF REBARS SHALL CONFIRM TO SP-34 & IS 13920

EXCAVATION AND BACKFILL

I) BACKFILL FOR FOUNDATIONS AND PITS SHALL BE PLACED EVENLY LAYERS OF 300 MM THICKNESS AND SHALL BE WELL COMPACTED. THE FILL SHALL CONTAIN NO STONES WITH A DIAMETER GREATER THAN 100 MM. THE DEGREE OF COMPACTION OF BACKFILL SHALL BE 95% OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OBTAINED BY THE MODIFIED PROCTOR COMPACTION TEST.

II) UNSUITABLE MATERIALS LIKE ROCKS/ EXISTING FOOTINGS ARE DETECTED BELOW FOUNDATION LEVEL IN AREAS OF CUT SHALL BE EXCAVATED TO FIRM GROUND. THE RESULTANT EXCAVATION SHALL BE FILLED TO THE REQUIRED LEVELS WITH MASS CONCRETE GRADE M10. ALSO WHEREVER EXCAVATION OCCURS BELOW THE FOUNDATION LEVEL STATED ON THE DESIGN DRAWING THE RESULTING VOID SHALL BE BACK FILLED WITH MASS CONCRETE GRADE-10.

III) BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10

IV) A LAYER OF BLINDING CONCRETE 100 MM THICK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/MM AT 28 DAYS.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN FOOT UNITS.
2. CONCRETE GRADE SHALL BE M25 CONFIRMING TO IS 456:2000
3. GRADE OF REINFORCEMENT MARKED THUS (Y) SHALL BE Fe 500 CONFIRMING TO IS 1786-2008
4. CLEAR COVER FOR REINFORCEMENT
   A) BEAM = 1" B) SLAB = 3/4"
5. THIS DRG. READ IN CONJECTION WITH ARCH.DRGS.
6. STRUCTURAL ENGINEER RESPONSIBILITY IS LIMITED TO DESIGN & ISSUAL OF STRUCTURAL DRAWING ONLY
7. ONUS OF CONSTRUCTION LIES WITH CONTRACTOR/OWNER

REV.	DESCRIPTIONS	DRN	CHK	DATE
00	FOR QUANTITY PURPOSE	M.R	R.M	19.05.25

PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

LAYOUT & R.C DETAILS OF FOURTH FLOOR ROOF SLAB & BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 10'	------	012

ARCHITECT / CONSULTANTS :-

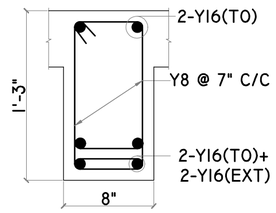
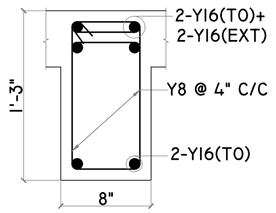
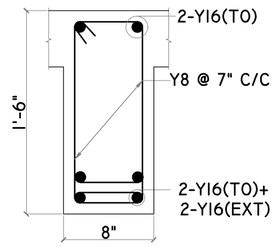
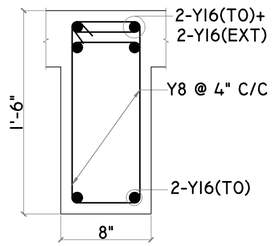
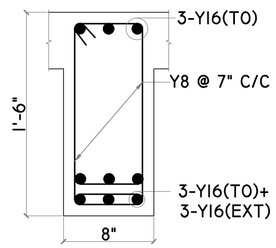
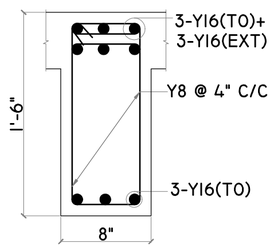
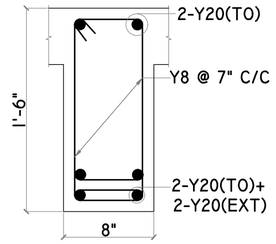
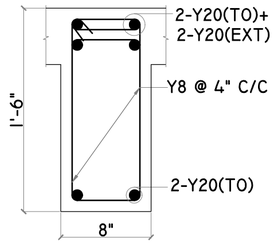
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FORM FOLLOWS FUNCTION
119, 2nd Main Road, AGS Colony, Velachery, Chennai, India
Telephone: (044) 4356 4000 E-mail: office@f3designs.in

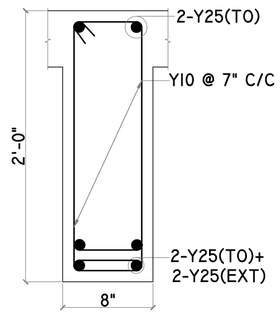
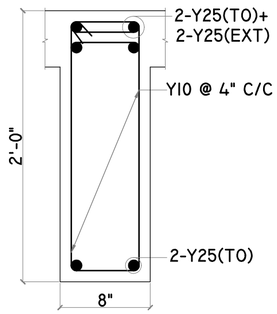
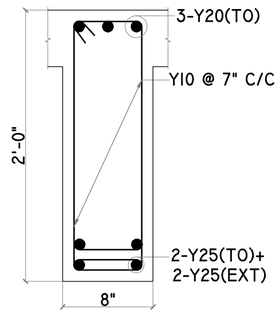
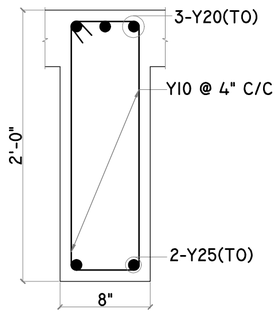
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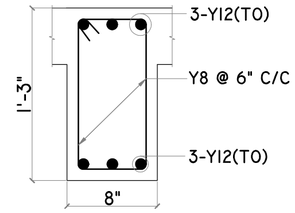
AURA ENGINEERING CONSULTANTS
#8, 50TH ST, SARVAMANGALA COLONY, 7TH AVENUE, ASHOK NAGAR, CHENNAI- 600 083.
FIXED LINE :- 044 4859 7100
PROJECTS.AURAENGG@GMAIL.COM
PROJECTS@AURAENGINEERS.CO.IN
HTTP://AURAENGINEERS.CO.IN/
ENGINEEERING CONSULTANTS

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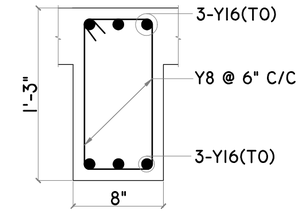
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NAME	MID SPAN	END SUPPORT
B5 (0'-8" X 1'-3")		
B6 (0'-8" X 1'-6")		
B7 (0'-8" X 1'-6")		
B8 (0'-8" X 1'-6")		

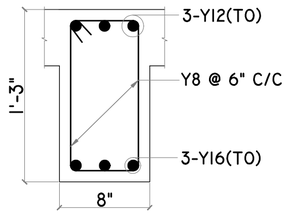
NAME	MID SPAN	END SUPPORT
B9 (0'-8" X 2'-0")		
B10 (0'-8" X 2'-0")		



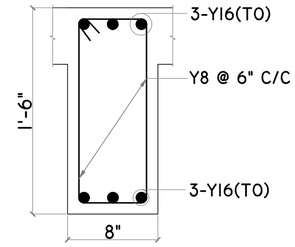
C.S. OF BEAM "B1"
(0'-8" X 1'-3")



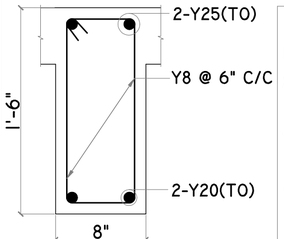
C.S. OF BEAM "B2"
(0'-8" X 1'-3")



C.S. OF BEAM "B3"
(0'-8" X 1'-3")



C.S. OF BEAM "B4"
(0'-8" X 1'-6")



C.S. OF BEAM "B11"
(0'-8" X 1'-6")

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BEAM SCHEDULE

SL.NO	NAME	SIZE
01	B1	0'-8" x 1'-3"
02	B2	0'-8" x 1'-3"
03	B3	0'-8" x 1'-3"
04	B4	0'-8" x 1'-6"
05	B5	0'-8" x 1'-3"
06	B6	0'-8" x 1'-6"
07	B7	0'-8" x 1'-6"
08	B8	0'-8" x 1'-6"
09	B9	0'-8" x 2'-0"
10	B10	0'-8" x 2'-0"
11	B11	0'-8" x 1'-6"

REV.	DESCRIPTIONS	DRN	CHK	DATE
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PROJECT :-

THE PROPOSED CONSTRUCTION OF A (STILT+5) FLOORS APARTMENT BUILDING AT NO:82, PADAVATTAMMAN KOIL STREET, RAJPARIS FLATS, KOSAPET, CHENNAI-600 012.

DRAWING TITLE :-

R.C DETAILS OF FOURTH FLOOR ROOF BEAMS

CLIENT :-

RAJ PARIS DEVELOPERS

DATE	SCALE	JOB.NO	DRG.NO
19.05.25	1" : 8'	------	013

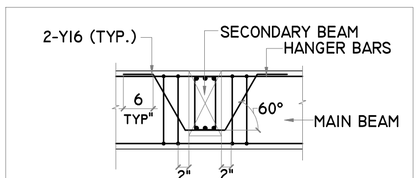
ARCHITECT / CONSULTANTS :-

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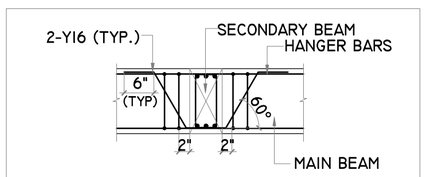
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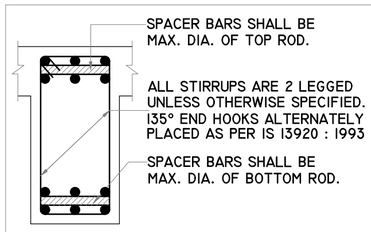
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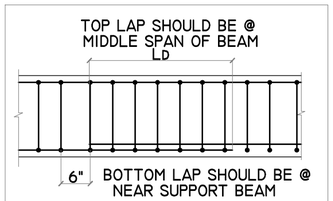
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION (VARY DEPTH)



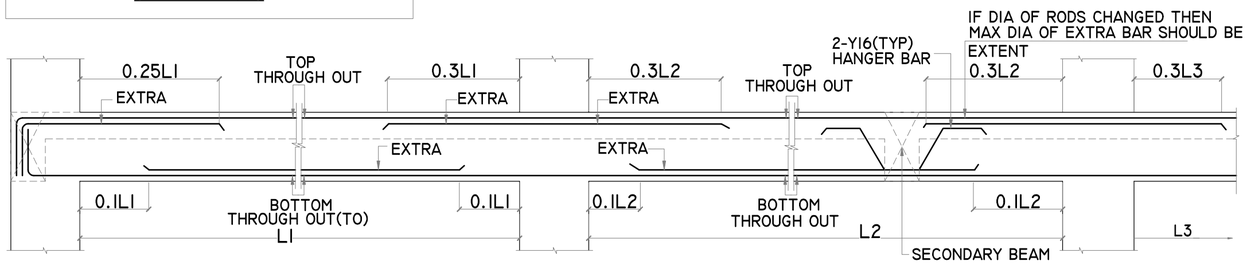
TYP. DET. OF HANGER BARS IN MAIN BEAM AT SECONDARY BEAM JUNCTION



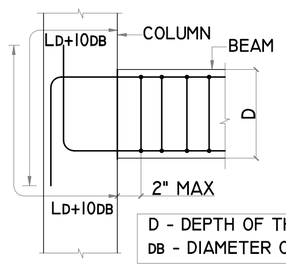
TYP. DETAIL



TYP. LAP SPLICE IN BEAM



TYPICAL L.S OF ROOF BEAM



D - DEPTH OF THE BEAM
DB - DIAMETER OF THE BAR

TYP. EXTERNAL JOINT DETAIL AT BEAM-COLUMN JUNCTION

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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hello@verified.realestate
+91 9996 12 9996

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.