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Verified RealEstate™
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DIGITALLY VERIFIED RECORD

BLUMOON PROPERTIES.

DESIGN CALCULATION

FOR

RESIDENTIAL BUILDING

HEIGHT (18.25M) 10 DWELLING UNITS IN STILT + 5 FLOORS AVAILLING PRIMIUM FSI AT REGULARISED PLOT

AT OLD DOOR NO 9 PART, NEW DOOR NO. 11 PART, ASHTALAKSHMI NAGAR, 19TH STREET, ALAPAKKAM, CHENNAI, COMPRISED IN OLD S NO. 341/1D1 PART AND NEW S NO. 341/1D1B OF MADURAVOYAL VILLAGE, MADURAVOYAL TALUK WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

M. PUNITHAN B.Sc.,M.I.E.
Registered Structural Engineer Grade-II
CMDA Reg. No. SE/GR-II/19/04/044
Renewed 10-04-2024. Valid upto 09-04-2029
52/141, Flat C2, PJM Apartments, East Vanniar Street,
West K.K. Nagar, Chennai-600 078.
Mobile: 9884400273, Email: mpunithan@yahoo.com

ARCHITECTS:
M/S MADRAS DESIGN WORKS

CHENNAI

ENGINEERS:
M/S MURUGU CONSULTANT
NO.9A/10, UMAPATHI STREET EXT,
WEST MAMBALAM,
CHENNAI – 600 033.
PHONE : 9884400273.

RESIDENTIAL FLATS

COLUMN A7

No. of floors	=	1	+	5	=	6						
Foundation depth	=	2	m									
Ground to floor level	=	1	m									
GFloor to floor height	=	3.00	m									
FFloor to floor height	=	3.00	m									
Thickness of slab assumed	=	0.115	m									
Slab loading t/ sqm	=	0.598	t									
Breadth of beams	=	0.23	m									
Depth of beams assumed	=	0.374	m									
Parapet wall height	=	1	m									
Plinth beams assumed	=	0.187	m									
Total height of wall	=	17.07	m									
Total height of column	=	22	m									
Size of column	=	0.45	x	0.3	m							

Total load:

Due to slab	=	6	x	1.75	x	1.99	x	0.598			=	12.48	t
Wall	=	0.8	x	0.2	x	3.74	x	17.07			=	10.21	t
Roof beams	=	2.5	x	0.2	x	0.259	x	0.187	x	6	=	0.145	t
Plinth beam	=	2.5	x	0.2	x	0.187	x	0.187	x	1	=	0.017	t
Self wt	=	2.5	x	0.45	x	0.3	x	22			=	7.425	t
												30.28	t
						Total					=	**30.28**	**t**

Using size of column to be	=	**450**	**X**	**300**	**mm**						
With 6/16 Rods, Ast	=	6	x	201	+	3	x	113	=	1545	sqmm
Capacity of column	=	450	x	300	x	6	+	1545	x	190	
	=	**110.4 t**		>		**45 t**					
Minimum Reinforcement	=	0.008	x	45	x	30	=	10.8	sqcm	<	15.45 sqcm
% of Reinforcement	=	1545	/	45	x	30	=	1.144	<	4	

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COLUMN C1

No. of floors	=	1	+	5	=	6						
Foundation depth	=	2	m									
Ground to floor level	=	1	m									
GFloor to floor height	=	3.00	m									
FFloor to floor height	=	3.00	m									
Thickness of slab assumed	=	0.115	m									
Slab loading t/ sqm	=	0.598	t									
Breadth of beams	=	0.23	m									
Depth of beams assumed	=	0.331	m									
Parapet wall height	=	1	m									
Plinth beams assumed	=	0.331	m									
Total height of wall	=	17.32	m									
Total height of column	=	22	m									
Size of column	=	0.45	x	0.3	m							

Total load:

Due to slab	=	6	x	1.75	x	4.875	x	0.598			=	30.58	t	
Wall	=	0.8	x	0.2	x	6.625	x	17.32			=	18.36	t	
Roof beams	=	2.5	x	0.2	x	0.216	x	0.331	x	6	=	0.215	t	
Plinth beam	=	2.5	x	0.2	x	0.331	x	0.331	x	1	=	0.055	t	
Self wt	=	2.5	x	0.45	x	0.3	x	22			=	7.425	t	
												56.64	t	
						Total					=	**56.64**	**t**	

Using size of column to be	=	**450**	**X**	**300**	**mm**						
With 6/20 Rods, Ast	=	6	x	314	+	3	x	113	=	2223	sqmm
Capacity of column	=	450	x	300	x	6	+	2223	x	190	
	=	**123.2 t**		>		**85 t**					
Minimum Reinforcement	=	0.008	x	45	x	30	=	10.8	sqcm	<	22.23 sqcm
% of Reinforcement	=	2223	/	45	x	30	=	1.647	<	4	

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COLUMN E4

No. of floors	=	1	+	5	=	6						
Foundation depth	=	2	m									
Ground to floor level	=	1	m									
GFloor to floor height	=	3.00	m									
FFloor to floor height	=	3.00	m									
Thickness of slab assumed	=	0.125	m									
Slab loading t/ sqm	=	0.623	t									
Breadth of beams	=	0.2	m									
Depth of beams assumed	=	0.44	m									
Parapet wall height	=	1	m									
Plinth beams assumed	=	0.44	m									
Total height of wall	=	16.61	m									
Total height of column	=	22	m									
Size of column	=	0.45	x	0.3	m							

Total load:

Due to slab	=	6	x	3.925	x	4.875	x	0.623			=	71.47	t
Wall	=	0.8	x	0.2	x	8.8	x	16.61			=	23.39	t
Roof beams	=	2.5	x	0.2	x	0.315	x	8.8	x	6	=	8.316	t
Plinth beam	=	2.5	x	0.2	x	0.44	x	8.8	x	1	=	1.936	t
Self wt	=	2.5	x	0.45	x	0.3	x	22			=	7.425	t
												112.5	t
						Total					=	**112.5**	**t**

Using size of column to be	=	**450**	**X**	**300**	**mm**						
With 6/25 Rods, Ast	=	6	x	490.6	+	3	x	113	=	3283	sqmm
Capacity of column	=	450	x	300	x	6	+	3283	x	190	
	=	**143.4 t**		>		**141 t**					
Minimum Reinforcement	=	0.008	x	45	x	30	=	10.8	sqcm	<	32.83 sqcm
% of Reinforcement	=	3283	/	45	x	30	=	2.432	<	4	

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Design of sections

Piles

Using M30 concrete and TMT bars 550 grade

σ ac in concrete	=	81.6	kg/sq-cm
σ bc in concrete	=	102	kg/sq-cm
σ ac in steel	=	1938	kg/sq-cm

Vertical load, V (t) 220 / 2 = 110

I. For 600 dia. pile with end bearing

a) Safe bearing capacity of pile (t) = 3.142 x 0.6 x 0.6 x 750 / 4 = 212.1

b) Bearing load / sq-m. 110 / 0.785

140 < 212.1 o.k

c) V / bc d d = 110 x 1500 / 360000 x 30

= 0.015

d) Ve / bc d d d = 0 x 1500 / 1.25E+08 x 30

= 0.000

Using 25 dia TMT rods d'/D = 87.5 / 600 = 0.146

Using chart 57 & 58 of SP:16-1980

e) As required (sq-cm.) 0 x 3.142 x 600 x 600 x 30 / 400

0.0

Min area of reinforcement = 0.004 x 3.142 x 60 x 60 / 4

= 11.31 sq-cm

Use 8/25 dia. TMT rods = 8 x 4.909

= 39.27 sq-cm > 11.31 sq-cm

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Pile cap

Column size			300 x	600			
Pedestal size			900 x	2400			
Area of pedestal	=	90 x	240 =	21600	sq-cm		
Actual stress	=	110 x	1500 /	21600			
	=	7.639 kg/sq-cm					
Permissible stress	=	0.45 x	300 / (	21600 /	1800		
	=	135 x	3.464 =	468 kg/sq-cm			

So use plain concrete pedestal of 30cm all around

Coinciding the critical section for shear with outerface of the pile in each direction

			0.6	/ 2	+ 0.3	+ d/2	= 0.63	+ 0.3	
			0.6	+ d/2	= 0.875				
	d/2	=	0.875	- 0.6	= 0.275				
	d	=	0.55						
Provide	d	=	0.963						
	D	=	1.05						
BM		=	1 x	110 (	0.75 -	0.3)			
		=	49.5 m-t						
Mu/bd2		=	49.5 x	1.5 x	100000 /(	225.0 x	96.3 x	96 x 300)	
		=	0.012 x	30 =	0.36				
Area of steel required		=	0.09 x	225.0 x	96.25 /	100			
		=	19.92 sq-cm						
Min steel required		=	0.0012 x	90 x	225				
		=	24.3 sq-cm						
Use 25dia. TMT bars At 100 c		=	10 x	4.91 =	49.06				

Shear

Critical section for shear	=	225 +	300 +	481.25 =	1006 mm		
The pile outer edge	=	625 +	225 =	850 <	1006		

So shear reinforcement is not provided

For top of pile cap and pedestal use nominal Reinforcement
Use 16 dia. At 200 crs

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DESIGN OF PLINTH BEAM

Span considered	=	6.150 m								
Assuming beam size to be		200 x	450	mm						
Load /m :										
Self wt. of beam	=	2.5 x	0.2	x	0.45	=	0.23 t			
Wall	=	2.0 x	0.23	x	3.900	=	1.79 t			
							2.02 t			
Effective Depth of beam	=	450 -	25	-	10	=	415 mm			
Design negative B.M	=	2.02 x	6.150	x	6.150	x	0.100 =	7.64 t-m		
Mu/ fck bdd	=	7.64 x	1.5	x	100000		=	0.133		
		250 x	20	x	41.50	x	41.50			
Ast required	=	0.1929 x	250	x	20.00	x	41.50 =	9.53 sqcm		
			4200							
Use 2/12 + 4/16 dia hsd rods,			**Ast**	=	**10.30 sqcm**		>	**9.53 sqcm**		
Design Positive B.M	=	2.02 x	6.150	x	6.150	x	0.08333 =	6.36 t-m		
Mu/ fck bdd	=	6.36 x	1.5	x	100000		=	0.111		
		250 x	20	x	41.50	x	41.50			
Ast required	=	0.1607 x	250	x	20.00	x	41.50 =	7.94 sqcm		
			4200							
Use 2/12 + 4/16 dia hsd rods,			**Ast**	=	**10.30 sqcm**		>	**7.94 sqcm**		
Shear force	=	2.02 x	1.000	/	1.00	=	2.02 t			
Shear stress	=	2.02 x	1.00	x	10000	/	200 x	415 =	0.24 N/sqmm	
100As/ bd	=	100 x	10.30	/	20.00	x	41.50 =	1.24		
Permissible shear stress	=	0.44 N/sqmm		<	0.24 N/sqmm					
Unbalanced shear stress	=	0.24 -	0.442	=	-0.20 N/sqmm					
Unbalanced shear force	=	-0.20 x	200	x	415	/	10000 =	-1.65 t		
Using 8 dia TMT 2 legged stirrups at			100	crs						
Shear Capacity	=	0.87 x	415	x	100.48	x	415 /	100 x	10000	
	=	15.1 t	>	-2 t						

RESULT :

Beam section = **200 X 450 mm**

Use 2/12 + 4/16 dia hsd rods, at top

Use 2/12 + 4/16 dia hsd rods, at bottom

Using 8 dia TMT 2 legged stirrups at **100 crs**

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DESIGN OF PLINTH BEAM

Span considered	=	5.700 m								
Assuming beam size to be		200 x	450	mm						
Load /m :										
Self wt. of beam	=	2.5 x	0.2	x	0.45	=	0.23 t			
Wall	=	2.0 x	0.23	x	3.900	=	1.79 t			
							2.02 t			
Effective Depth of beam	=	450 -	25	-	8	=	417 mm			
Design negative B.M	=	2.02 x	5.700	x	5.700	x	0.100 =	6.56 t-m		
	=	6.56 x	1.5	x	100000		=	0.113		
		250 x	20	x	41.70	x	41.70			
Ast required	=	0.1641 x	250	x	20.00	x	41.70 =	8.15 sqcm		
			4200							
Use 2/12+4/16 dia hsd rods,			**Ast**	**=**	**10.30 sqcm**		**>**	**8.15 sqcm**		
Design Positive B.M	=	2.02 x	5.700	x	5.700	x	0.08333 =	5.47 t-m		
Mu/ fck bdd	=	5.47 x	1.5	x	100000		=	0.094		
		250 x	20	x	41.70	x	41.70			
Ast required	=	0.1367 x	250	x	20.00	x	41.70 =	6.79 sqcm		
			4200							
Use 2/12+4/16 dia hsd rods,			**Ast**	**=**	**10.30 sqcm**		**>**	**6.79 sqcm**		
Shear force	=	2.02 x	5.700	/	2.00	=	5.75 t			
Shear stress	=	5.75 x	1.50	x	10000	/	200 x	417 =	1.03 N/sqmm	
100As/ bd	=	100 x	10.30	/	20.00	x	41.70 =	1.23		
Permissible shear stress	=	0.44 N/sqmm		<	1.03 N/sqmm					
Unbalanced shear stress	=	1.03 -	0.442	=	0.59 N/sqmm					
Unbalanced shear force	=	0.59 x	200	x	417	/	10000 =	4.94 t		
Using 8 dia TMT 2 legged stirrups at			100	crs						
Shear Capacity	=	0.87 x	415	x	100.48	x	417 /	100 x	10000	
	=	15.1 t	>	5	t					

RESULT :

Beam section = 200 X 450 mm
Use 2/12+4/16 dia hsd rods, at top
Use 2/12+4/16 dia hsd rods, at bottom
Using 8 dia TMT 2 legged stirrups at **100 crs**

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DESIGN OF PLINTH BEAM

Span considered	=	3.850 m								
Assuming beam size to be		200 x	450	mm						
Load /m :										
Self wt. of beam	=	2.5 x	0.2	x	0.45	=	0.23 t			
Wall	=	2.0 x	0.23	x	3.900	=	1.79 t			
							2.02 t			
Effective Depth of beam	=	450 -	25	-	8	=	417 mm			
Design negative B.M	=	2.02 x	3.850	x	3.850	x	0.083 =	2.49 t-m		
Mu/ fck bdd	=	2.49 x	1.5	x	100000		=	0.043		
		250 x	20	x	41.70	x	41.70			
Ast required	=	0.0624 x	250	x	20.00	x	41.70 =	3.10 sqcm		
			4200							
Use 2/12+1/16 dia hsd rods,			**Ast**	=	**4.27 sqcm**		>	**3.10 sqcm**		
Design Positive B.M	=	2.02 x	3.850	x	3.850	x	0.08333 =	2.49 t-m		
Mu/ fck bdd	=	2.49 x	1.5	x	100000		=	0.043		
		250 x	20	x	41.70	x	41.70			
Ast required	=	0.0624 x	250	x	20.00	x	41.70 =	3.10 sqcm		
			4200							
Use 2/12+1/16 dia hsd rods,			**Ast**	=	**4.27 sqcm**		>	**3.10 sqcm**		
Shear force	=	2.02 x	3.850	/	2.00	=	3.89 t			
Shear stress	=	3.89 x	1.50	x	10000	/	200 x	417 =	0.70 N/sqmm	
100As/ bd	=	100 x	4.27	/	20.00	x	41.70 =	0.51		
Permissible shear stress	=	0.44 N/sqmm		<	0.70 N/sqmm					
Unbalanced shear stress	=	0.70 -	0.442	=	0.26 N/sqmm					
Unbalanced shear force	=	0.26 x	200	x	417	/	10000 =	2.14 t		
Using 8 dia TMT 2 legged stirrups at			150	crs						
Shear Capacity	=	0.87 x	415	x	100.48	x	417 /	150 x	10000	
	=	10.1 t	>	2	t					

RESULT :

Beam section = **200 X 450 mm**

Use 2/12+1/16 dia hsd rods, at top

Use 2/12+1/16 dia hsd rods, at bottom

Using 8 dia TMT 2 legged stirrups at **150 crs**

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DESIGN OF ROOF BEAM

Span considered	=	4.700 m								
Assuming beam size to be		200 x	600	mm	2.35					
Load /m :					5.5225					
Self wt. of beam	=	2.5 x	0.2	x	0.475	=	0.24 t			
Wall	=	2.0 x	0.2	x	3.150	=	1.26 t			
Slab	=	0.78 x	11.05	/	4.700	=	1.82 t			
							3.32 t			
Effective Depth of beam	=	600 -	25	-	8	=	567 mm			
Breadth of flange	=	3290 / 12 +	200	+	3	x	150			
	=	924 mm								
Design negative B.M	=	3.32 x	4.700	x	4.700	x	0.100 =	7.33 t-m		
Mu/ fck bdd	=	7.33 x	1.5	x	100000		=	0.046		
		250 x	30	x	56.70	x	56.70			
Ast required	=	0.0684 x	250 / 5500	x	30.00	x	56.70 =	5.29 sqcm		
~~**Use 2/25 dia hsd rods,**~~			~~**Ast**~~	~~=~~	~~**9.81 sqcm**~~		~~>~~	~~**5.29 sqcm**~~		
Design Positive B.M	=	3.32 x	4.700	x	4.700	x	0.1 =	7.33 t-m		
Mu/ fck bdd	=	7.33 x	1.5	x	100000		=	0.015		
		250 x	92.41667	x	56.70	x	56.70			
Ast required	=	0.0215 x	250 / 5500	x	92.42	x	56.70 =	5.11 sqcm		
Use 2/25 dia hsd rods,			**Ast**	=	**9.81 sqcm**		>	**5.11 sqcm**		
Shear force	=	3.32 x	4.700	/	2.00	=	7.80 t			
Shear stress	=	7.80 x	1.50	x	10000	/	200 x	567 =	1.03 N/sqmm	
100As/ bd	=	100 x	9.81	/	20.00	x	56.70 =	0.87		
Permissible shear stress	=	0.53 N/sqmm		<	1.03 N/sqmm					
Unbalanced shear stress	=	1.03 -	0.525	=	0.51 N/sqmm					
~~Unbalanced shear force~~	~~=~~	~~0.51 x~~	~~200~~	~~x~~	~~567~~	~~/~~	~~10000 =~~	~~5.75 t~~		
Using 8 dia TMT 2 legged stirrups at			100	crs						
Shear Capacity	=	0.87 x	415	x	100.48	x	567 /	100 x	10000	
	=	20.6 t	>	6	t					

RESULT :

Beam section = **200 X 600 mm**

Use 2/25 dia hsd rods, at top

~~**Use 2/25 dia hsd rods, at bottom**~~

Using 8 dia TMT 2 legged stirrups at **100 crs**

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DESIGN OF ROOF BEAM

Span considered	=	5.200	m								
Assuming beam size to be		200	x	600	mm	2.6					
Load /m :						6.76					
Self wt. of beam	=	2.5	x	0.2	x	0.475	=	0.24	t		
Wall	=	2.0	x	0.2	x	3.150	=	1.26	t		
Slab	=	0.71	x	13.52	/	5.200	=	1.85	t		
								3.35	t		
Effective Depth of beam	=	600	-	25	-	8	=	567	mm		
Breadth of flange	=	3640 / 12	+	200	+	3	x	150			
	=	953	mm								
Design negative B.M	=	3.35	x	5.200	x	5.200	x	0.100	=	9.06	t-m
Mu/ fck bdd	=	9.06	x	1.5	x	100000			=	0.085	
		250	x	20	x	56.70	x	56.70			
Ast required	=	0.1268	x	250 / 5500	x	20.00	x	56.70	=	6.54	sqcm
~~Use 2/25 dia hsd rods,~~				**~~Ast~~**	=	**~~8.29 sqcm~~**			>	**~~6.54 sqcm~~**	
Design Positive B.M	=	3.35	x	5.200	x	5.200	x	0.1	=	9.06	t-m
Mu/ fck bdd	=	9.06	x	1.5	x	100000			=	0.018	
		250	x	95.33333	x	56.70	x	56.70			
Ast required	=	0.0257	x	250 / 5500	x	95.33	x	56.70	=	6.32	sqcm
Use 2/25 dia hsd rods,				**Ast**	=	**8.29 sqcm**			>	**6.32 sqcm**	
Shear force	=	3.35	x	5.200	/	2.00	=	8.71	t		
Shear stress	=	8.71	x	1.50	x	10000	/	200	x	567 =	1.15 N/sqmm
100As/ bd	=	100	x	8.29	/	20.00	x	56.70	=	0.73	
Permissible shear stress	=	0.53	N/sqmm		<	1.15	N/sqmm				
Unbalanced shear stress	=	1.15	-	0.525	=	0.63	N/sqmm				
~~Unbalanced shear force~~	=	~~0.63~~	~~x~~	~~200~~	~~x~~	~~567~~	~~/~~	~~10000~~	=	~~7.11~~	~~t~~
Using 8 dia TMT 2 legged stirrups at				100	crs						
Shear Capacity	=	0.87	x	415	x	100.48	x	567 /		100 x	10000
	=	20.6	t	>	7	t					

RESULT :

Beam section = 200 X 600 mm

Use 2/25 dia hsd rods, at top

~~Use 2/25 dia hsd rods,~~ ~~at bottom~~

Using 8 dia TMT 2 legged stirrups at **100 crs**

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DESIGN OF ROOF BEAM

Span considered	=	6.500 m								
Assuming beam size to be		200 x	600	mm	3.25					
					10.5625					
Load /m :										
Self wt. of beam	=	2.5 x	0.2	x	0.475	=	0.24 t			
Wall	=	2.0 x	0.23	x	3.150	=	1.45 t			
Slab	=	0.78 x	10.56	/	6.500	=	1.26 t			
							2.95 t			
Effective Depth of beam	=	600 -	25	-	8	=	567 mm			
Breadth of flange	=	4550 / 12 +	200	+	3	x	150			
	=	1029 mm								
Design negative B.M	=	2.95 x	6.500	x	6.500	x	0.100 =	12.45 t-m		
Mu/ fck bdd	=	12.45 x	1.5	x	100000		=	0.116		
		250 x	20	x	56.70	x	56.70			
Ast required	=	0.1742 x	250 / 5500	x	20.00	x	56.70 =	8.98 sqcm		
Use 2/25 dia hsd rods,			**Ast**	=	**12.06 sqcm**		>	**8.98 sqcm**		
Design Positive B.M	=	2.95 x	6.500	x	6.500	x	0.1 =	12.45 t-m		
Mu/ fck bdd	=	12.45 x	1.5	x	100000		=	0.023		
		250 x	102.9167	x	56.70	x	56.70			
Ast required	=	0.0327 x	250 / 5500	x	102.92	x	56.70 =	8.68 sqcm		
Use 2/25 dia hsd rods,			**Ast**	=	**12.06 sqcm**		>	**8.68 sqcm**		
Shear force	=	2.95 x	6.500	/	2.00	=	9.57 t			
Shear stress	=	9.57 x	1.50	x	10000	/	200 x	567 =	1.27	N/sqmm
100As/ bd	=	100 x	12.06	/	20.00	x	56.70 =	1.06		
Permissible shear stress	=	0.53 N/sqmm		<	1.27 N/sqmm					
Unbalanced shear stress	=	1.27 -	0.525	=	0.74 N/sqmm					
Unbalanced shear force	=	0.74 x	200	x	567	/	10000 =	8.41 t		
Using 8 dia TMT 2 legged stirrups at			150	crs						
Shear Capacity	=	0.87 x	415	x	100.48	x	567 /	150 x	10000	
	=	13.7 t	>	8	t					

RESULT :

Beam section = 200 X 600 mm

Use 2/25 dia hsd rods, at top

Use 2/25 dia hsd rods, at bottom

Using 8 dia TMT 2 legged stirrups at **150 crs**

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ROOF SLAB DESIGN

LOAD/ m2

Clear short span	=	3040 mm		3.04						
	=	4761 mm		4.76						
Ly / Lx	=	1.5661	<	1.50	**DESIGN AS TWO WAY SLAB**					
Slab Thickness Assumed	=	125 mm								
Self weight of slab	=	2.4	x	0.125	=	0.3	t			
LIVE LOAD	=				=	0.50	t			
Floor finish	=	0.1	x	2.00	=	0.20	t			
				Total	=	1.000	or	**1.00**	t	
Effective Depth of slab	=	125	-	25	-	4	=	96	mm	
Effective short span	=	3040	+	96	=	3136 mm				
Effective long span	=	4761	+	96	=	4857 mm				

Three edges discontinuous, one short edge continuous

B.M. due to UDL

Negative short span B.M	=	0.000	x	3.136	x	3.136	x	1.00	=	0 m.t
positive short span B.M	=	0.076	x	3.136	x	3.136	x	1.00	=	0.747 m.t
Negative long span B.M	=	0.057	x	3.136	x	3.136	x	1.00	=	0.561 m.t
positive long span B.M	=	0.043	x	3.136	x	3.136	x	1.00	=	0.423 m.t

Short span

~~Mu / bdd~~	=	~~0.00~~	x	~~1.00~~	x	~~100000~~			=	~~0.00~~
		9.807	x	100	x	9.60	x	9.6	=	
Ast Required	=	0.0000	x	1.00	x	100.00	x	9.60	=	0.0 sqcm
					100					
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3 Sqcm > 0.0 Sqcm**
Mu / bdd	=	0.75	x	1.00	x	100000			=	0.83
		9.807	x	100	x	9.60	x	9.6	=	
Ast Required	=	0.2400	x	1.00	x	100.00	x	9.60	=	2.3 sqcm
					100					
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3 Sqcm > 2.3 Sqcm**

Long span

Mu / bdd	=	0.56	x	1.50	x	100000			=	1.11
		9.807	x	100.00	x	8.80	x	8.8	=	
~~Ast Required~~	=	~~0.3250~~	x	~~1.00~~	x	~~100.00~~	x	~~8.80~~	=	~~2.9 sqcm~~
					100					
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3 Sqcm > 2.9 Sqcm**
Mu / bdd	=	0.42	x	1.50	x	100000			=	0.84
		9.807	x	100.00	x	8.80	x	8.8	=	
Ast Required	=	0.2430	x	1.00	x	100.00	x	8.80	=	2.1 sqcm
					100					
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3 Sqcm > 2.1 Sqcm**

RESULT :

Use Thickness of Slab	=	**125 mm**
Main rods	=	**Use 8 dia hsd rods at 150 crs**
Distributors	=	**Use 8 dia hsd rods at 150 crs**

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LOAD/ m2

Clear short span	=	3040	mm		3.04							
	=	3040	mm		3.04							
Ly / Lx	=	1	<		1.00	**DESIGN AS TWO WAY SLAB**						
Slab Thickness Assumed	=	125	mm									
Self weight of slab	=	2.4	x	0.115	=	0.276	t					
LIVE LOAD	=				=	0.75	t					
~~Floor finish~~	=	~~0.1~~	~~x~~	~~2.00~~	=	~~0.20~~	~~t~~					
				Total	=	1.226	or	**1.25**	t			
Effective Depth of slab	=	115	-	20	-	5	=	90	mm			
Effective short span	=	3040	+	90	=	3130	mm					
Effective long span	=	3040	+	90	=	3130	mm					

Two long edges discontinuous

B.M. due to UDL

Negative short span B.M	=	0.000	x	3.130	x	3.13	x	1.25	=	0	m.t	
positive short span B.M	=	0.056	x	3.130	x	3.13	x	1.25	=	0.686	m.t	
Negative long span B.M	=	0.000	x	3.130	x	3.13	x	1.25	=	0	m.t	
positive long span B.M	=	0.056	x	3.130	x	3.13	x	1.25	=	0.686	m.t	

Short span

Mu / bdd	=	0.00	x	1.00	x	100000			=	0.00				
		9.807	x	100	x	9.00	x	9.0	=					
Ast Required	=	0.0000	x	1.00	x	100.00	x	9.00	=	0.0	sqcm			
					100									
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**0.0**	**Sqcm**
Mu / bdd	=	0.69	x	1.00	x	100000			=	0.86				
		9.807	x	100	x	9.00	x	9.0	=					
Ast Required	=	0.2590	x	1.00	x	100.00	x	9.00	=	2.3	sqcm			
					100									
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**2.3**	**Sqcm**

Long span

Mu / bdd	=	0.00	x	1.50	x	100000			=	0.00				
		9.807	x	100.00	x	8.20	x	8.2	=					
Ast Required	=	0.2520	x	1.00	x	100.00	x	8.20	=	2.1	sqcm			
					100									
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**2.1**	**Sqcm**
Mu / bdd	=	0.69	x	1.50	x	100000			=	1.56				
		9.807	x	100.00	x	8.20	x	8.2	=					
Ast Required	=	0.1950	x	1.00	x	100.00	x	8.20	=	1.6	sqcm			
					100									
Use 8 dia hsd rods at	**150**	**crs**	**Ast**		**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**1.6**	**Sqcm**

RESULT :

~~**Use Thickness of Slab**~~	=	~~**125 mm**~~		
Main rods	=	**Use 8 dia hsd rods at**	**150**	**crs**
Distributors	=	**Use 8 dia hsd rods at**	**150**	**crs**

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LOAD/ m2

Clear short span	=	5770	mm		5.77							
	=	6900	mm		6.90							
Ly / Lx	=	1.1958		<	1.20	**DESIGN AS TWO WAY SLAB**						
Slab Thickness Assumed	=	175	mm									
Self weight of slab	=	2.4		x	0.175	=	0.42	t				
LIVE LOAD	=					=	0.20	t				
~~Floor finish~~	=	~~0.05~~		~~x~~	~~2.00~~	=	~~0.10~~	~~t~~				
					Total	=	0.720	or	**0.72**	t		
Effective Depth of slab	=	175		-	20	-	5	=	150	mm		
Effective short span	=	5770		+	150	=	5920	mm				
Effective long span	=	6900		+	150	=	7050	mm				

one long edges continuous

B.M. due to UDL

Negative short span B.M	=	0.071	x		5.920	x	5.92	x	0.72	=	1.792	m.t
positive short span B.M	=	0.053	x		5.920	x	5.92	x	0.72	=	1.337	m.t
Negative long span B.M	=	0.000	x		5.920	x	5.92	x	0.72	=	0	m.t
positive long span B.M	=	0.043	x		5.920	x	5.92	x	0.72	=	1.085	m.t

Short span

Mu / bdd	=	1.79	x		1.50	x	100000			=	1.22			
		9.807	x		100	x	15.00	x	15.0	=				
Ast Required	=	0.3590	x		1.00	x	100.00	x	15.00	=	5.4	sqcm		
						100								
Use 10 dia hsd rods at	**150**	**crs**	**Ast**			**=**	**78.50**	**/**	**15.00**	**=**	**5.2**	**Sqcm**	**>**	**5.4 Sqcm**
Mu / bdd	=	1.34	x		1.50	x	100000			=	0.91			
		9.807	x		100	x	15.00	x	15.0	=				
Ast Required	=	0.2590	x		1.00	x	100.00	x	15.00	=	3.9	sqcm		
						~~100~~								
Use 8 dia hsd rods at	**150**	**crs**	**Ast**			**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**3.9 Sqcm**

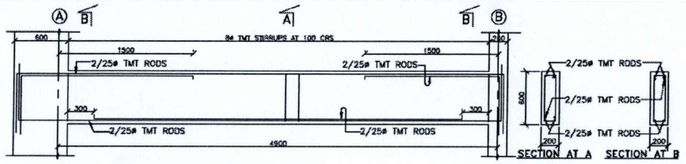
Long span

Mu / bdd	=	0.00	x		1.50	x	100000			=	0.00			
		9.807	x		100.00	x	14.20	x	14.2	=				
Ast Required	=	0.2520	x		1.00	x	100.00	x	14.20	=	3.6	sqcm		
						100								
Use 8 dia hsd rods at	**150**	**crs**	**Ast**			**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**3.6 Sqcm**
Mu / bdd	=	1.09	x		1.50	x	100000			=	0.82			
		9.807	x		100.00	x	14.20	x	14.2	=				
Ast Required	=	0.1950	x		1.00	x	100.00	x	14.20	=	2.8	sqcm		
						100								
Use 8 dia hsd rods at	**150**	**crs**	**Ast**			**=**	**50.24**	**/**	**15.00**	**=**	**3.3**	**Sqcm**	**>**	**2.8 Sqcm**

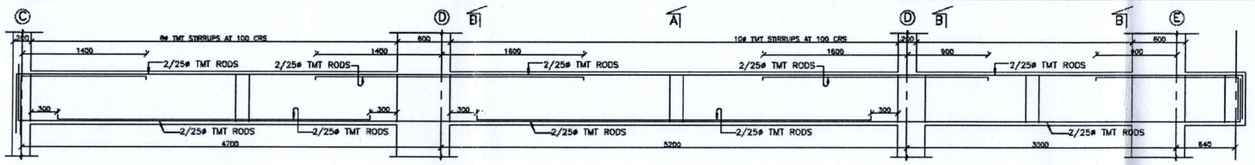
RESULT :

~~**Use Thickness of Slab**~~	=	~~**175 mm**~~		
Main rods	=	**Use 10 dia hsd rods at**	**150**	**crs**
Distributors	=	**Use 8 dia hsd rods at**	**150**	**crs**

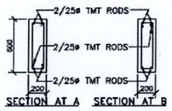
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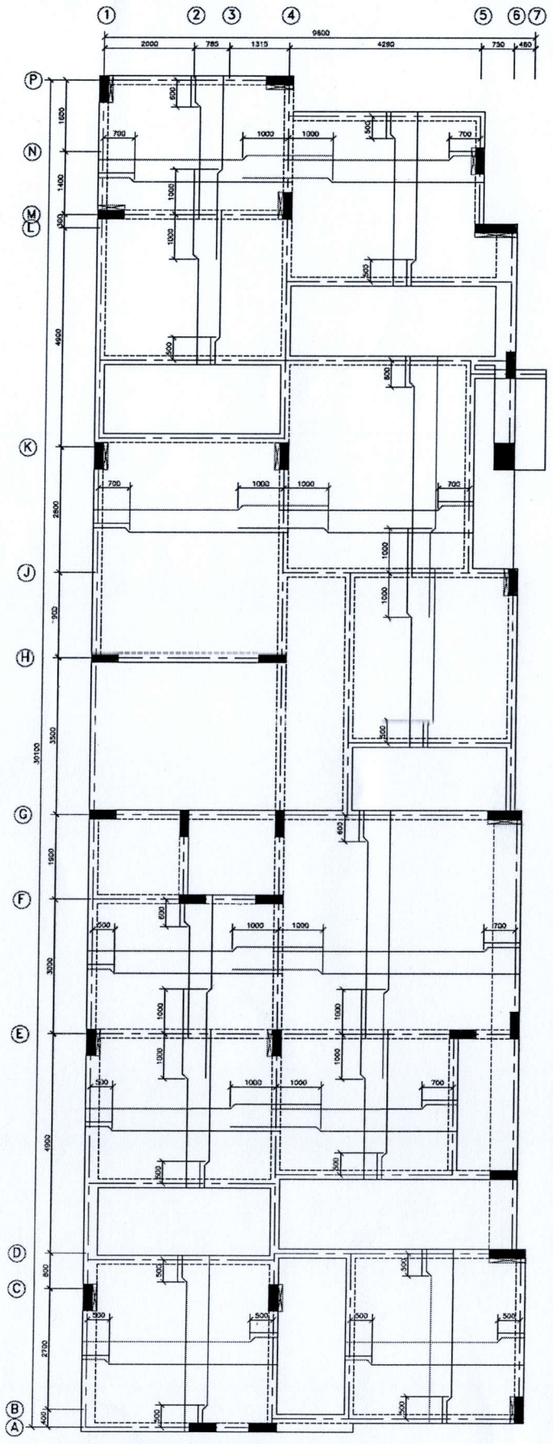


DETAILS OF ROOF BEAM IN ROW 1

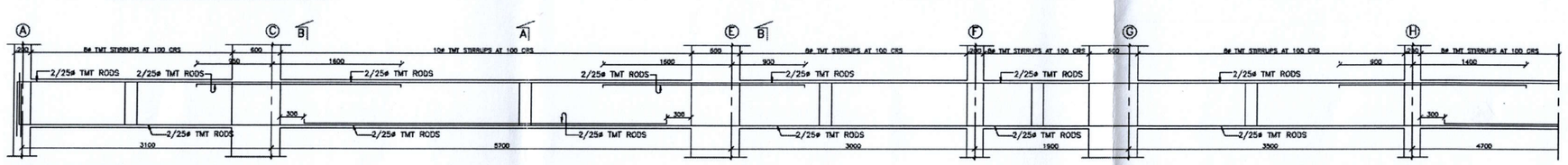


DETAILS OF ROOF BEAM IN ROW 1

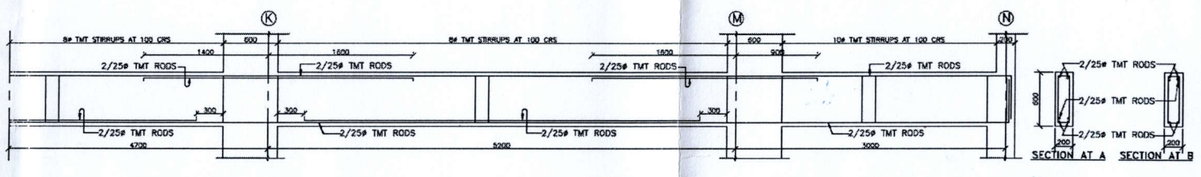


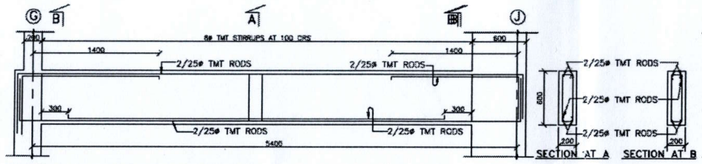


G. F. ROOF SLAB DETAILS – 150 THICK
(10ø TMT RODS 125 CRS BOTHWAYS)

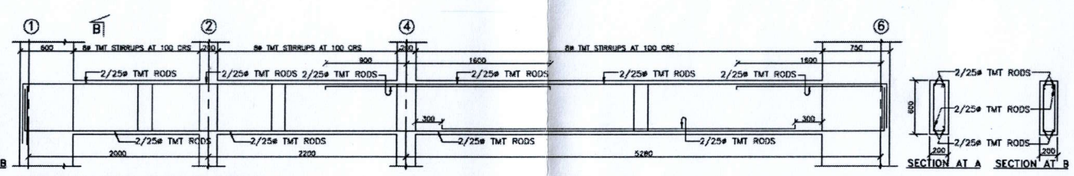


DETAILS OF ROOF BEAM IN ROW 4

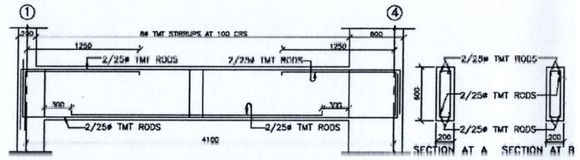




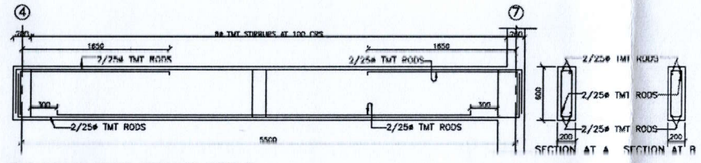
DETAILS OF ROOF BEAM IN ROW 1



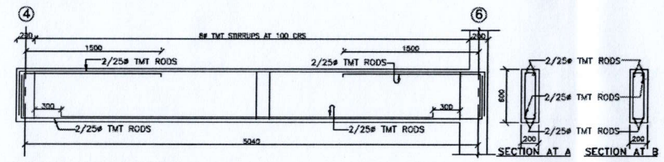
DETAILS OF ROOF BEAM IN ROW G



DETAILS OF ROOF BEAM IN ROW P



DETAILS OF ROOF BEAM IN ROW P



DETAILS OF ROOF BEAM IN ROW J

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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RCC WORKS TO BE WITH M30 CONCRETE AND TO BE EXECUTED AS PER IS : 456 – 2000, USING 20mm GRADED GRANITE METAL. WATER CEMENT RATIO NOT EXCEEDING 0.45. HIGH YIELD STRENGTH DEFORMED BARS (TOR SHALL CONFORM TO IS: 1786 – 2008 (Fe 550D).
3. LAP LENGTH FOR ALL BARS TO BE 45 TIMES THE DIAMETER.
4. CONCRETE COVER FOR ALL MAIN RODS IN ROOF SLAB TO BE 20 AND ROOF BEAMS TO BE 25 UNLESS OTHERWISE STATED.

ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	26/12/25	AS DRAWN			

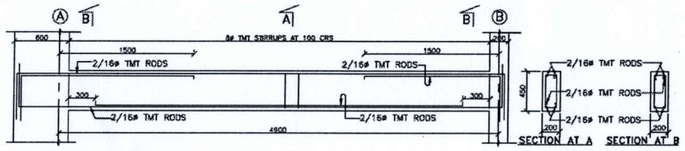
CONSULTANTS	MURUGU CONSULTANT 9A/10, UMAPATHY STREET EXT. W.MAMBALAM, CHENNAI – 33. Ph No. 24730973.
CLIENT	M/S BLUEMOON PROPERTIES CHENNAI.
ARCHITECTS	THE MADRAS DESIGN WORKS CHENNAI.

PROPOSED CONSTRUCTION OF RESIDENTIAL BUILDING AT VALASARAVAKKAM.

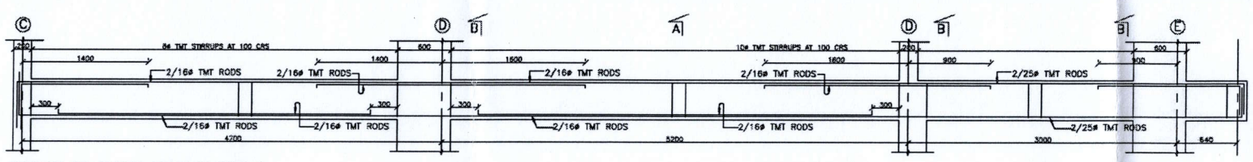
LAYOUT & RCC DETAILS OF G. F. ROOF SLAB & BEAMS

SCALE : 1 : 50, 1 : 25

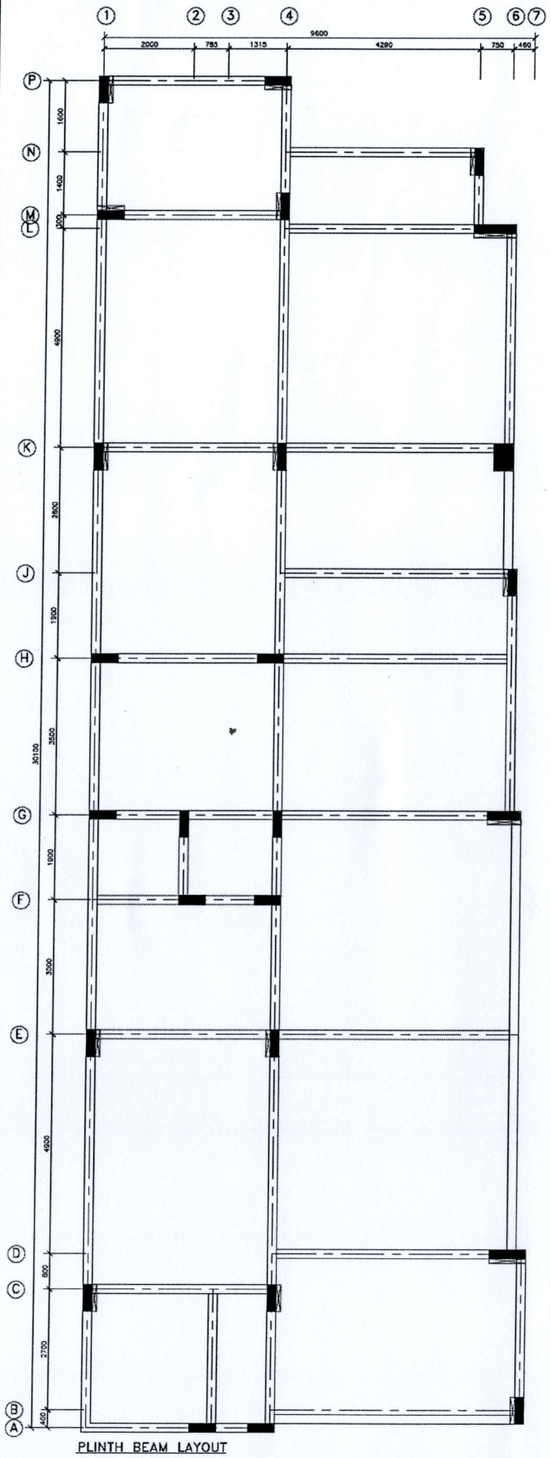
SHEET 3



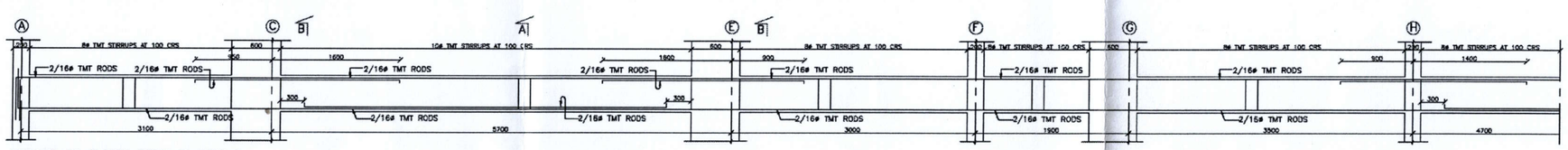
DETAILS OF PLINTH BEAM IN ROW 1



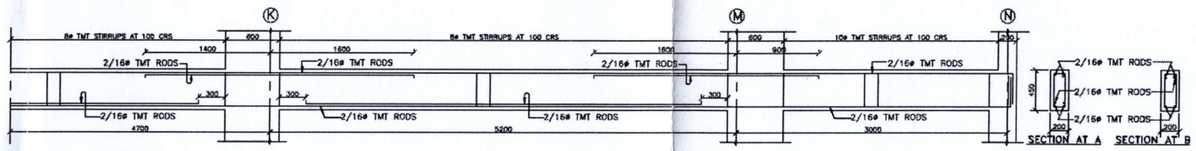
DETAILS OF PLINTH BEAM IN ROW 1

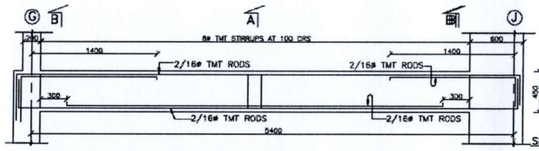


PLINTH BEAM LAYOUT

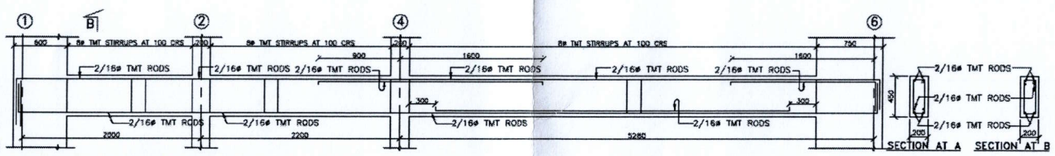


DETAILS OF PLINTH BEAM IN ROW 4

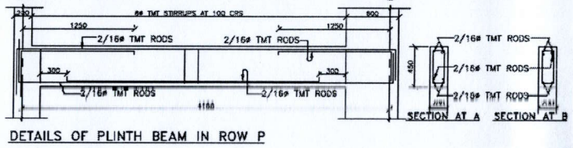




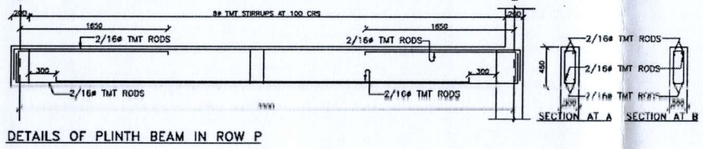
DETAILS OF PLINTH BEAM IN ROW 1



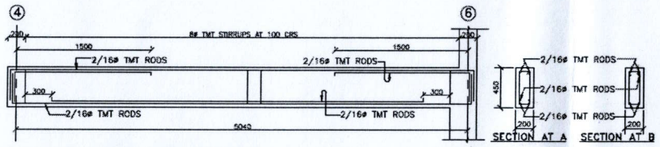
DETAILS OF PLINTH BEAM IN ROW G



DETAILS OF PLINTH BEAM IN ROW P



DETAILS OF PLINTH BEAM IN ROW P



DETAILS OF PLINTH BEAM IN ROW J

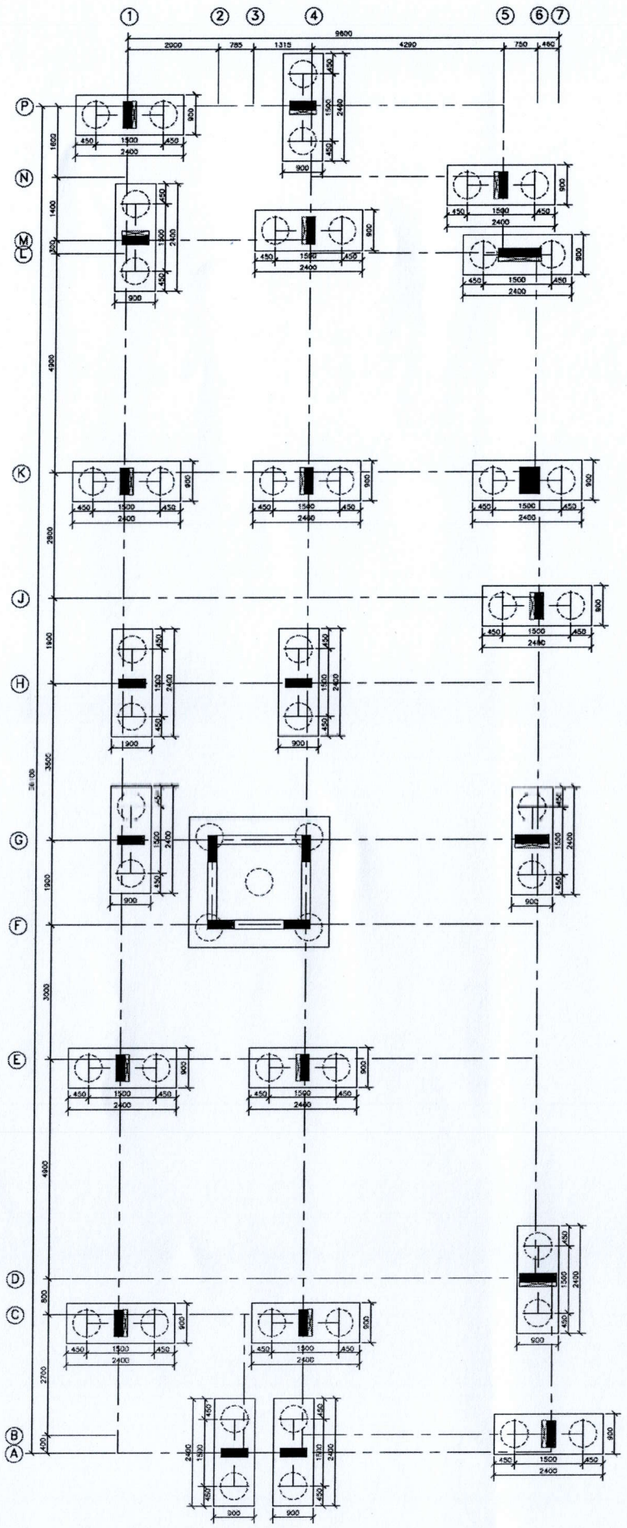
M. PUNITHAN B.Sc.,M.I.E.
Registered Structural Engineer Grade-II
CMDA Reg. No. SE/GR-II/19/04/044
Renewed 10-04-2024. Valid upto 09-04-2029
52/141, Flat C2, PJM Apartments, East Vanniar Street,
West K.K. Nagar, Chennai-600 078.
Mobile: 9884400273, Email: mpunithan@yahoo.com

NOTES:

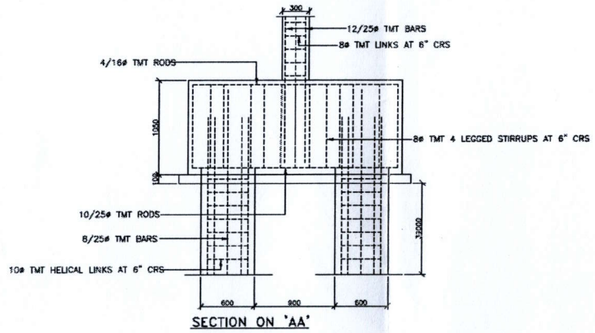
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RCC WORKS TO BE WITH M30 CONCRETE AND TO BE EXECUTED AS PER IS : 456 – 2000, USING 20mm GRADED GRANITE METAL. WATER CEMENT RATIO NOT EXCEEDING 0.45. HIGH YIELD STRENGTH DEFORMED BARS (TOR SHALL CONFORM TO IS: 1786 – 2008 (Fe 550D).
3. LAP LENGTH FOR ALL BARS TO BE 45 TIMES THE DIAMETER.
4. CONCRETE COVER FOR ALL MAIN RODS IN PILE FOUNDATION TO BE 75 & PLINTH BEAMS TO BE 40 UNLESS OTHERWISE STATED.
5. FOUNDATIONS ARE DESIGNED FOR S + 5 FLOORS.

ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	26/12/25	AS DRAWN			

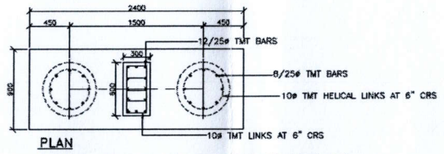
CONSULTANTS	MURUGU CONSULTANT 9A/10, UMAPATHY STREET EXT. W.MAMBALAM, CHENNAI – 33. Ph No. 24730973.
CLIENT	M/S BLUEMOON PROPERTIES CHENNAI.
ARCHITECTS	THE MADRAS DESIGN WORKS CHENNAI.
	PROPOSED CONSTRUCTION OF RESIDENTIAL BUILDING AT VALASARAVAKKAM.
	LAYOUT & RCC DETAILS OF PLINTH BEAM
	SCALE : 1 : 50, 1 : 25
	DRG.No: MC-199/2025 SHEET 2



COLUMN & FOUNDATION LAYOUT

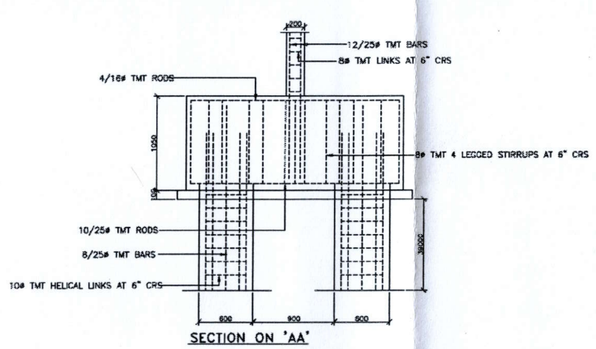


SECTION ON 'AA'

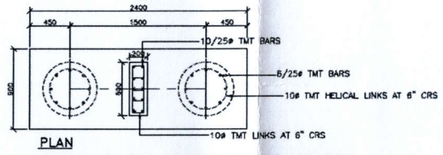


PLAN

DETAILS OF PILE FOUNDATION FOR COLUMNS
A1, A2, A5, B5, D5, E4, F1, F3 & F4 – 9 OFF



SECTION ON 'AA'



PLAN

DETAILS OF PILE FOUNDATION FOR COLUMNS
A1, A2, A5, B5, D5, E4, F1, F3 & F4 – 9 OFF

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ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
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	PROPOSED CONSTRUCTION OF RESIDENTIAL BUILDING AT VALASARAVAKKAM.
	LAYOUT AND DETAILS OF PILE FOUNDATION
	SCALE : 1 : 50, 1 : 25
	SHEET 1

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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+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.