MURUGU CONSULTANT
9A/10, 1st Floor, Umapathy Street Ext.
West Mambalam, Chennai – 600 033.

PH: 91 – 9884400273

Date:09-04-2026

To
The Chairperson
Tamil Nadu Real Estate Regulatory Authority (TNRERA)
Plot No 586,587and 588,
1st and 2nd Avenue,
Anna Nagar East,
Chennai – 600 102

STABILITY CERTIFICATE

The detailed engineering and structure design of the Proposed Construction of Stilt floor + 4 floors + 5th floor part (Height – 18.30m) Residential with 15 Dwelling units Availing Premium FSI at Plot No.5 & 6, Beach Road, Lakshmipuram, Mahalakshmi Avenue, Thiruvanmiyur , Chennai-41 comprised in Old S.No.162/10pt and T.S.No.8/1 & 8/2, Block No.49, Ward 1 of Thiruvanmiyur Village within the limits of Greater Chennai Corporation

Soil Test has been done by me based on the report of geotechnical investigation (soil test) done by Nagadi Consultants Pvt. Ltd., Report No. G©9010C Dated 03/05/2017 and considering the functional requirement of the building.

2. It is certified that among other factors, the proposed building has been designed to resist earthquake. I/We have checked various parameters and found that the proposed building would be safe.

3. I/We further certify that:

(i) The minimum grade of concrete is M25

(ii) The design and analysis has been done using the code of practice for plain and reinforced concrete as per IS 456, design loads as per IS Codes No 875 and design of earthquake resistant structure as per IS Code No 1893 (part 1) : 2002

4. The building will be safe and sound when used for the purpose for which it is designed.

Encl.: Structural Design Calculation

M. PUNITHAN B.Sc.,M.I.E.
Registered Structural Engineer Grade-II
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CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
'ThalamuthuNatarajan Building', No.1, Gandhi Irwin Road,
Egmore, Chennai-600 008.

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the **Thiru. M. PUNITHAN** has enrolled as **Registered Structural Engineer Grade-II (SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **A.M.I.E.,(Civil Engg.)** and experience in the relevant field for **26 years**.

He has been given the Registration No.**SE/GR-II/2019/04/044 Renewed** on **10.04.2024.** He shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part-V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(Ms) No.18 MAWS (MA1) Dept. dated 04.02.2019.

This Registration is valid upto **09.04.2029**.

10/4/24.

(A. MEGANATHAN)
Superintendent

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HARMONY RESIDENCES PVT. LTD.

DESIGN CALCULATION

FOR

RESIDENTIAL BUILDING

STILT + 5 FLOORS 15 DWELLING UNITS IN SINGLE BLOCK

AT PLOT NO. 5 & 6, BEACH ROAD, MAHALAKSHMI AVENUE, THIRUVANMIYUR, CHENNAI – 600 041 COMPRISED IN S. NO. 162/10 PART, AS PER PATTA T. S. NO. 8/1 & 8/2, BLOCK 49, THIRUVANMIYUR VILLAGE, VELACHERRY TALUK, WITHIN THE LIMIT OF GREATER CHENNAI CORPORATION, DIVISION 181, ZONE 13, TAMILNADU.

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ARCHITECTS:
M/S Diastyle
N0.65/55, 12th AVENUE
ASHOK NAGAR,
CHENNAI-600 083.
PHONE : 65853326

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

RESIDENTIAL FLATS

COLUMN A3

No. of floors	=	1	+	5	=	6						
Foundation depth	=	1.8	m									
Ground to floor level	=	1	m									
GFloor to floor height	=	3.05	m									
FFloor to floor height	=	3.05	m									
Thickness of slab assumed	=	0.115	m									
Slab loading t/ sqm	=	0.6	t									
Breadth of beams	=	0.23	m									
Depth of beams assumed	=	0.41	m									
Parapet wall height	=	1	m									
Plinth beams assumed	=	0.2	m									
Total height of wall	=	17.2	m									
Total height of column	=	22.1	m									
Size of column	=	0.45	x	0.3	m							

Total load:

Due to slab	=	6	x	1.73	x	2.34	x	0.6			=	14.6 t
Wall	=	2	x	0.23	x	4.08	x	17.2			=	32.2 t
Roof beams	=	2.5	x	0.23	x	0.29	x	0.2	x	6	=	0.21 t
Plinth beam	=	2.5	x	0.23	x	0.2	x	0.2	x	1	=	0.02 t
Self wt	=	2.5	x	0.45	x	0.3	x	22.1			=	7.46 t
												54.4 t
						Total					=	**54.4 t**

Using size of column to be	=	**450**	**X**	**300**	**mm**						
With 8/16 + 0/12 Rods, Ast	=	8	x	113	+	3	x	113	=	1243	sqmm
Capacity of column	=	450	x	300	x	6	+	1243	x	190	
	=	**105 t**		**>**		**68 t**					
Minimum Reinforcement	=	0.008	x	45	x	30	=	10.8	sqcm	<	12.4 sqcm
% of Reinforcement	=	1243	/	45	x	30	=	0.92	<	4	

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COLUMN N4

No. of floors	=	1	+	5	=	6							
Foundation depth	=	1.8	m										
Ground to floor level	=	1	m										
GFloor to floor height	=	3.05	m										
FFloor to floor height	=	3.05	m										
Thickness of slab assumed	=	0.115	m										
Slab loading t/ sqm	=	0.6	t										
Breadth of beams	=	0.23	m										
Depth of beams assumed	=	0.38	m										
Parapet wall height	=	1	m										
Plinth beams assumed	=	0.29	m										
Total height of wall	=	17.3	m										
Total height of column	=	22.1	m										
Size of column	=	0.45	x	0.3	m								

Total load:

Due to slab	=	6	x	3.73	x	3.96	x	0.6			=	53	t
Wall	=	2	x	0.23	x	5.72	x	17.3			=	45.5	t
Roof beams	=	2.5	x	0.23	x	0.27	x	0.29	x	6	=	0.27	t
Plinth beam	=	2.5	x	0.23	x	0.29	x	0.29	x	1	=	0.05	t
Self wt	=	2.5	x	0.45	x	0.3	x	22.1			=	7.46	t
												106	t
						Total					=	**106**	**t**

Using size of column to be	=	**450**	**X**	**300**	**mm**						
With 8/25 Rods, Ast	=	8	x	314	+	4	x	113	=	2964	sqmm
Capacity of column	=	450	x	300	x	6	+	2964	x	190	
	=	**137**	**t**	**>**		**133**	**t**				
Minimum Reinforcement	=	0.008	x	45	x	30	=	10.8	sqcm	<	29.6 sqcm
% of Reinforcement	=	2964	/	45	x	30	=	2.2	<	4	

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COLUMN M4

No. of floors	=	1	+	5	=	6						
Foundation depth	=	1.8	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	=	0.62	t									
Breadth of beams	=	0.23	m									
Depth of beams assumed	=	0.46	m									
Parapet wall height	=	1	m									
Plinth beams assumed	=	0.35	m									
Total height of wall	=	16.5	m									
Total height of column	=	21.8	m									
Size of column	=	0.45	x	0.23	m							

Total load:

Due to slab	=	6	x	4.25	x	4.95	x	0.62			=	78.6	t
Wall	=	2	x	0.23	x	7.08	x	16.5			=	53.7	t
Roof beams	=	2.5	x	0.23	x	0.335	x	7.08	x	6	=	8.18	t
Plinth beam	=	2.5	x	0.23	x	0.35	x	7.08	x	1	=	1.44	t
Self wt	=	2.5	x	0.45	x	0.23	x	21.8			=	5.64	t
												148	t
						Total					=	**148**	**t**

Using size of column to be	=	**450**	**X**	**230**	**mm**						
With 8/32 Rods, Ast	=	8	x	804	+	0	x	113	=	6431	sqmm
Capacity of column	=	450	x	230	x	6	+	6431	x	190	
	=	**184**	**t**	**>**		**184**	**t**				
Minimum Reinforcement	=	0.008	x	45	x	23	=	8.28	sqcm	<	64.3 sqcm
% of Reinforcement	=	6431	/	45	x	23	=	6.21	<	4	

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DESIGN OF PLINTH BEAM

Span considered	=	6.363	m									
Assuming beam size to be		230	x	450	mm							
Load /m :												
Self wt. of beam	=	2.5	x	0.23	x	0.45	=	0.26	t			
Wall	=	2.0	x	0.23	x	3.900	=	1.79	t			
								2.05	t			
Effective Depth of beam	=	450	-	25	-	10	=	415	mm			
Design negative B.M	=	2.05	x	6.363	x	6.363	x	0.100	=	8.31	t-m	
Mu/ fck bdd	=	8.31	x	1.5	x	100000			=	0.126		
		250	x	23	x	41.50	x	41.50				
Ast required	=	0.1825	x	250	x	23.00	x	41.50	=	10.37	sqcm	
				4200								
Use 2/12 + 4/16 dia hsd rods,				**Ast**	**=**	**10.30**	**sqcm**		**>**	**10.37**	**sqcm**	
Design Positive B.M	=	2.05	x	6.363	x	6.363	x	0.08333	=	6.93	t-m	
Mu/ fck bdd	=	6.93	x	1.5	x	100000			=	0.105		
		250	x	23	x	41.50	x	41.50				
Ast required	=	0.1521	x	250	x	23.00	x	41.50	=	8.64	sqcm	
				4200								
Use 2/12 + 4/16 dia hsd rods,				**Ast**	**=**	**10.30**	**sqcm**		**>**	**8.64**	**sqcm**	
Shear force	=	2.05	x	1.000	/	1.00	=	2.05	t			
Shear stress	=	2.05	x	1.00	x	10000	/	230	x	415	=	0.22 N/sqmm
100As/ bd	=	100	x	10.30	/	23.00	x	41.50	=	1.08		
Permissible shear stress	=	0.44	N/sqmm		<	0.22	N/sqmm					
Unbalanced shear stress	=	0.22	-	0.442	=	-0.23	N/sqmm					
Unbalanced shear force	=	-0.23	x	230	x	415	/	10000	=	-2.17	t	
Using 8 dia TMT 2 legged stirrups at				150	crs							
Shear Capacity	=	0.87	x	415	x	100.48	x	415	/	150	x	10000
	=	10.0	t	>	-2	t						

RESULT :

Beam section	=	**230 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		**150 crs**		

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DESIGN OF PLINTH BEAM

Span considered	=	5.890	m								
Assuming beam size to be		230	x	450	mm						
Load /m :											
Self wt. of beam	=	2.5	x	0.23	x	0.45	=	0.26	t		
Wall	=	2.0	x	0.23	x	3.900	=	1.79	t		
								2.05	t		
Effective Depth of beam	=	450	-	25	-	8	=	417	mm		
Design negative B.M	=	2.05	x	5.890	x	5.890	x	0.083	=	5.93	t-m
Mu/ fck bdd	=	5.93	x	1.5	x	100000			=	0.089	
		250	x	23	x	41.70	x	41.70			
Ast required	=	0.1291	x	250	x	23.00	x	41.70	=	7.37	sqcm
				4200							
Use 2/12+3/16 dia hsd rods,				**Ast**	=	**8.29**	**sqcm**		>	**7.37**	**sqcm**
Design Positive B.M	=	2.05	x	5.890	x	5.890	x	0.08333	=	5.93	t-m
Mu/ fck bdd	=	5.93	x	1.5	x	100000			=	0.089	
		250	x	23	x	41.70	x	41.70			
Ast required	=	0.1291	x	250	x	23.00	x	41.70	=	7.37	sqcm
				4200							
Use 2/12+3/16 dia hsd rods,				**Ast**	=	**8.29**	**sqcm**		>	**7.37**	**sqcm**
Shear force	=	2.05	x	5.890	/	2.00	=	6.05	t		
Shear stress	=	6.05	x	1.50	x	10000	/	230	x	417 =	0.95 N/sqmm
100As/ bd	=	100	x	8.29	/	23.00	x	41.70	=	0.86	
Permissible shear stress	=	0.44	N/sqmm		<	0.95	N/sqmm				
Unbalanced shear stress	=	0.95	-	0.442	=	0.50	N/sqmm				
Unbalanced shear force	=	0.50	x	230	x	417	/	10000	=	4.83	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	>	5	t					

RESULT :

Beam section	=	**230 X**	**450**	**mm**
Use 2/12+3/16 dia hsd rods,		**at top**		
Use 2/12+3/16 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	=	4.500	m								
Assuming beam size to be		230	x	450	mm	2.25					
Load /m :						5.0625					
Self wt. of beam	=	2.5	x	0.23	x	0.325	=	0.19	t		
Wall	=	2.0	x	0.23	x	3.150	=	1.45	t		
Slab	=	0.71	x	10.13	/	4.500	=	1.60	t		
								3.24	t		
Effective Depth of beam	=	450	-	25	-	8	=	417	mm		
Breadth of flange	=	3150 / 12	+	230	+	3	x	150			
	=	943	mm								
Design negative B.M	=	3.24	x	4.500	x	4.500	x	0.083	=	5.47	t-m
Mu/ fck bdd	=	5.47	x	1.5	x	100000			=	0.063	
		250	x	30	x	41.70	x	41.70			
Ast required	=	0.0943	x	250	x	30.00	x	41.70	=	7.02	sqcm
				4200							
Use 2/12 + 3/16 dia hsd rods,				**Ast**	**=**	**8.29**	**sqcm**		**>**	**7.02**	**sqcm**
Design Positive B.M	=	3.24	x	4.500	x	4.500	x	0.1	=	6.56	t-m
Mu/ fck bdd	=	6.56	x	1.5	x	100000			=	0.030	
		200	x	94.25	x	41.70	x	41.70			
Ast required	=	0.0435	x	200	x	94.25	x	41.70	=	8.15	sqcm
				4200							
Use 2/12 + 3/16 dia hsd rods,				**Ast**	**=**	**8.29**	**sqcm**		**>**	**8.15**	**sqcm**
Shear force	=	3.24	x	4.500	/	2.00	=	7.29	t		
Shear stress	=	7.29	x	1.50	x	10000	/	230	x	417	= 1.14 N/sqmm
100As/ bd	=	100	x	8.29	/	23.00	x	41.70	=	0.86	
Permissible shear stress	=	0.53	N/sqmm		<	1.14	N/sqmm				
Unbalanced shear stress	=	1.14	-	0.525	=	0.61	N/sqmm				
Unbalanced shear force	=	0.61	x	230	x	417	/	10000	=	5.90	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	>	6	t					

RESULT :

Beam section = **230 X 450 mm**
Use 2/12 + 3/16 dia hsd rods, at top
Use 2/12 + 3/16 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	=	1.56612		<	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	=	5770 mm	5.77					
	=	6900 mm	6.9					
Ly / Lx	=	1.1958 <	1.2	DESIGN AS TWO WAY SLAB				
Slab Thickness Assumed	=	175 mm						
Self weight of slab	=	2.4 x	0.175	=	0.42 t			
LIVE LOAD	=			=	0.2 t			
Floor finish	=	0.05 x	2	=	0.1 t			
			Total	=	0.72 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	5.92 x	5.92 x	0.72 =	1.79 m.t		
positive short span B.M	=	0.053 x	5.92 x	5.92 x	0.72 =	1.34 m.t		
Negative long span B.M	=	0 x	5.92 x	5.92 x	0.72 =	0 m.t		
positive long span B.M	=	0.043 x	5.92 x	5.92 x	0.72 =	1.09 m.t		
Short span								
Mu / bdd	=	1.79 x	1.5 x	100000	=	1.22		
		9.807 x	100 x	15 x	15 =			
Ast Required	=	0.359 x	1 x	100 x	15 =	5.4 sqcm		
				100				
Use 10 dia hsd rods at		150 crs Ast	=	78.5 /	15 =	5.2 Sqcm >	5.4 Sqcm	
Mu / bdd	=	1.34 x	1.5 x	100000	=	0.91		
		9.807 x	100 x	15 x	15 =			
Ast Required	=	0.259 x	1 x	100 x	15 =	3.9 sqcm		
				100				
Use 8 dia hsd rods at		150 crs Ast	=	50.24 /	15 =	3.3 Sqcm >	3.9 Sqcm	
Long span								
Mu / bdd	=	0 x	1.5 x	100000	=	0		
		9.807 x	100 x	14.2 x	14.2 =			
Ast Required	=	0.252 x	1 x	100 x	14.2 =	3.6 sqcm		
				100				
Use 8 dia hsd rods at		150 crs Ast	=	50.24 /	15 =	3.3 Sqcm >	3.6 Sqcm	
Mu / bdd	=	1.09 x	1.5 x	100000	=	0.82		
		9.807 x	100 x	14.2 x	14.2 =			
Ast Required	=	0.195 x	1 x	100 x	14.2 =	2.8 sqcm		
				100				
Use 8 dia hsd rods at		150 crs Ast	=	50.24 /	15 =	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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RESIDENTIAL CUM MEDITATION HALL
Design of foundation using M20 grade concrete,

load	=	**100**	**t**											
FOUNDATION SIZE	=	**9.0**	**X**	**8.0**	Ft									
Column size	=	450	x	300	mm									
Soil pressure	=	16.00	t /sq.m											
Foundation area required	=	6.25	sqm											
Assuming size of fodn. to be		2.74	x	2.44	=	6.69	sqm							
Depth of footing at face	=	500	mm											
Depth of footing at end	=	0	mm			2293.20		1146.60						
Effective depth	=	445	mm			2138.40		1069.20						
Cantilever B.M	=	16.00	x	1.147	x	1.147	x	0.50						
	=	10.52	t - m											
Mu / (bdd fck)	=	10.52	x	1.5		100000	/(	200.00	x	44.50	x	44.5	x	100)
	=	0.040												

Area of steel required = 0.05776 x 44.50 x 200.00 x 100.00 / 5500
= 9.35 sq-cm.

Use 16 tor rods at **150 crs** **Ast = 201.0 / 15.00 = 13.40 sq-cm. > 9.35 sq-cm.**

Shear force on footing

Shear to be checked at distance effective depth from column face

Shear force	=	16	x	0.7016	=	11.23	t			
Shear stress	=	11.23	x	1.50	x	10000	/(	1000.00	x	445)
	=	0.378	N/sq-mm.							
100 As / bd	=	13.40	/	44.50						
	=	0.30								
Permissible shear stress	=	**0.387**	**N/sq-mm.**	**=**	**0.378**	**N/sq-mm.**				

RESULT :

Foundation size	=	**2743**	**x**	**2438**	**m**	**9.00**	**X**	**8.00 Ft**
Overall depth	=	**0**	**+**	**500**	**=**	**500**	**mm**	
Reinforcement	=	**Use 16 tor rods at**				**150**	**crs**	

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load	=	**135**	**t**												
FOUNDATION SIZE	=	**10.0**	**X**	**9.0**	Ft										
Column size	=	450	x	300	mm										
Soil pressure	=	16.00	t /sq.m												
Foundation area required	=	8.44	sqm												
Assuming size of fodn. to be		3.05	x	2.74	=	8.36	sqm								
Depth of footing at face	=	600	mm												
Depth of footing at end	=	0	mm			2598.00		1299.00							
Effective depth	=	545	mm			2443.20		1221.60							
Cantilever B.M	=	16.00	x	1.299	x	1.299	x	0.50							
	=	13.50	t - m												
Mu / (bdd fck)	=	13.50	x	1.5		100000	/(	200.00	x	54.50	x	54.5	x	100	)
	=	0.034													
Area of steel required			=	0.04942	x	54.50	x	200.00	x	100.00	/	5500			
			=	9.80	sq-cm.										
Use 16 tor rods at		**150 crs**		**Ast**	=	**201.0**	/	**15.00**	=	**13.40 sq-cm.**	>	**9.80 sq-cm.**			

Shear force on footing

Shear to be checked at distance effective depth from column face

Shear force	=	16	x	0.754	=	12.06	t				
Shear stress	=	12.06	x	1.50	x	10000	/(	1000.00	x	545)	
	=	0.332	N/sq-mm.								
100 As / bd	=	13.40	/	54.50							
	=	0.25									
Permissible shear stress	=	**0.360**	**N/sq-mm.**	=	**0.332**	**N/sq-mm.**					

RESULT :

Foundation size	=	**3048**	**x**	**2743**	**m**		**10.00**	**X**	**9.00 Ft**
Overall depth	=	**0**	**+**	**600**	**=**	**600 mm**			
Reinforcement	=	**Use 16 tor rods at**				**150 crs**			

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load	=	**160**	**t**												
FOUNDATION SIZE	=	**11.0**	**X**	**10.0**	Ft										
Column size	=	450	x	300	mm										
Soil pressure	=	16.00	t /sq.m												
Foundation area required	=	10.00	sqm												
Assuming size of fodn. to be		3.35	x	3.05	=	10.22	sqm								
Depth of footing at face	=	700	mm												
Depth of footing at end	=	0	mm			3052.80		1526.40							
Effective depth	=	645	mm			2598.00		1299.00							
Cantilever B.M	=	16.00	x	1.526	x	1.526	x	0.50							
	=	18.64	t - m												
Mu / (bdd fck)	=	18.64	x	1.5		100000	/(	200.00	x	64.50	x	64.5	x	100	)
	=	0.034													
Area of steel required			=	0.04872	x	64.50	x	200.00	x	100.00	/	5500			
			=	11.43	sq-cm.										
Use 16 tor rods at	**150 crs**		**Ast**	**=**	**201.0**	**/**	**15.00**	**=**	**13.40 sq-cm.**		**>**	**11.43 sq-cm.**			

Shear force on footing

Shear to be checked at distance effective depth from column face

Shear force	=	16	x	0.8814	=	14.10	t			
Shear stress	=	14.10	x	1.50	x	10000	/(	1000.00	x	645)
	=	0.328	N/sq-mm.							
100 As / bd	=	13.40	/	64.50						
	=	0.20771								
Permissible shear stress	=	**0.360**	**N/sq-mm.**	**=**	**0.328**	**N/sq-mm.**				

RESULT :

Foundation size	=	**3353**	**x**	**3048**	**m**	**11.00**	**X**	**10.00 Ft**
Overall depth	=	**0**	**+**	**700**	**=**	**700**	**mm**	
Reinforcement	=	**Use 16 tor rods at**				**150**	**crs**	

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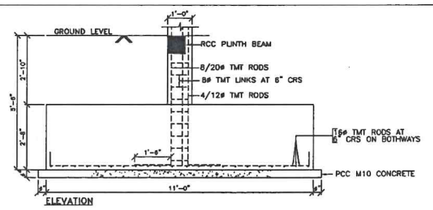
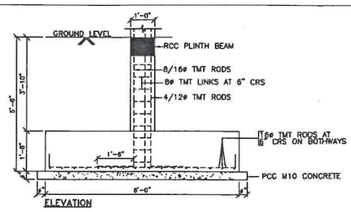
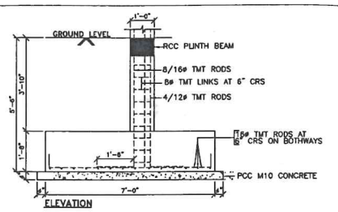


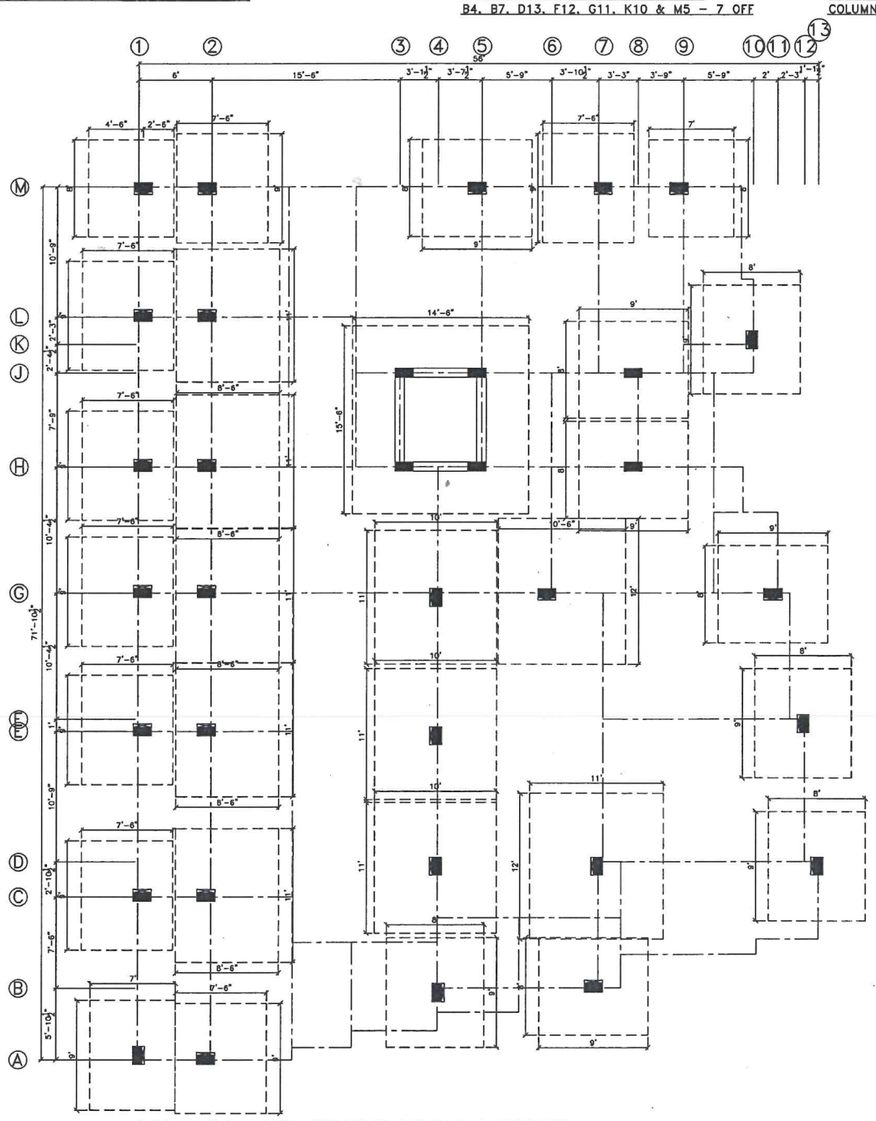
DETAIL OF FOUNDATION FOR COLUMNS
COLUMNS C2, E2, G2, H2 & L2 – 5 OFF



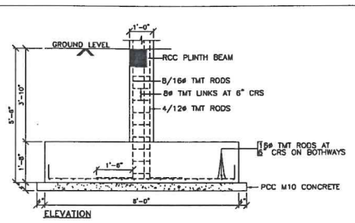
DETAIL OF FOUNDATION FOR COLUMNS
B4, B7, D13, F12, G11, K10 & M5 – 7 OFF



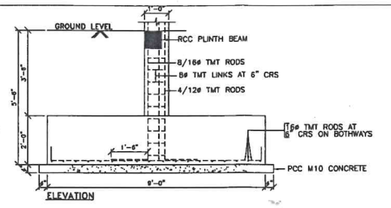
DETAIL OF FOUNDATION FOR
COLUMN A1 –1 OFF



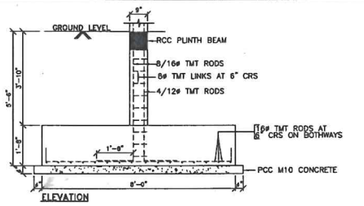
COLUMN AND FOUNDATION LAYOUT



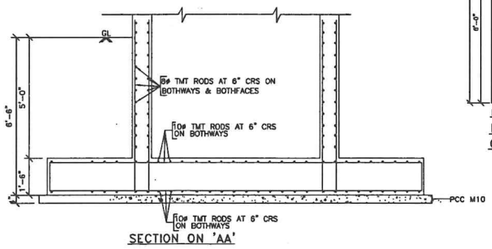
DETAIL OF FOUNDATION FOR COLUMNS
COLUMNS M1 & M9 – 2 OFF



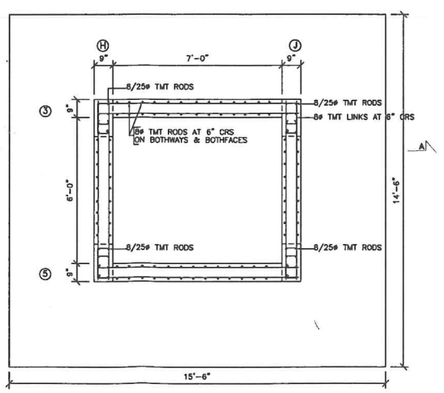
DETAIL OF FOUNDATION FOR COLUMNS
A2, C1, E1, G1, H1, L1, M2 & M7 – 8 OFF



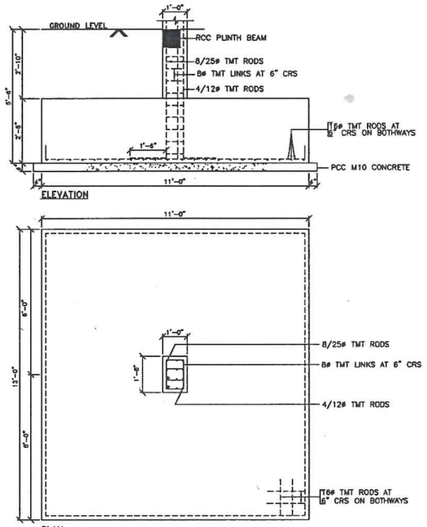
DETAIL OF FOUNDATION FOR
COLUMNS H8 & J8 – 2 OFF



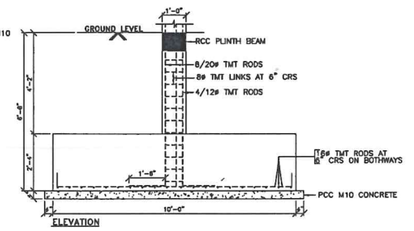
SECTION ON 'AA'



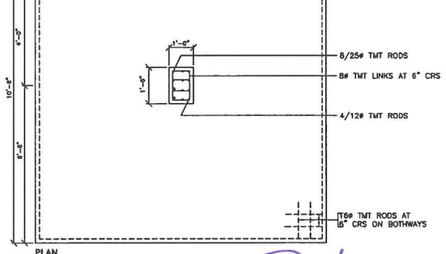
PLAN
DETAILS OF LIFT PIT



DETAIL OF FOUNDATION FOR
COLUMN D7 – 1 OFF



DETAIL OF FOUNDATION FOR COLUMNS
COLUMNS D4, E4 & G4 – 3 OFF



DETAIL OF FOUNDATION FOR
COLUMN G6 – 1 OFF

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Mobile Phone : 9841... Email : punithan@yahoo.com

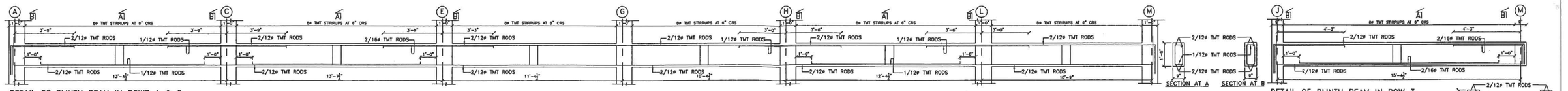
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RCC WORKS TO BE WITH M20 CONCRETE AND TO BE DESIGNED AS PER I.S. 456 : 2000 USING 20mm BROKEN GRANITE METAL, WATER CEMENT RATIO NOT EXCEEDING 0.45. HIGH STRENGTH DEFORMED BARS (TMT SHALL CONFORM TO IS: 1786 – 2008 (Fe 550).
3. LAP LENGTH FOR ALL BARS TO BE 45 TIMES THE DIAMETER.
4. CONCRETE COVER FOR ALL MAIN RODS IN FOUNDATION AND PLINTH BEAMS TO BE 1.6" UNLESS OTHERWISE STATED.
5. FOUNDATIONS ARE DESIGNED FOR S + 5 FLOORS WITH SOIL PRESSURE OF 16 t/sqm.

GOOD FOR CONSTRUCTION

ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	16/12/25	AS DRAWN			

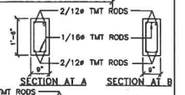
CONSULTANTS	MURUGU CONSULTANT 9A/10, UMAPATHY STREET EXT. W.MAMBALAM, CHENNAI – 33. Ph No.9884400273.
CLIENT	M/S HORMONY HOMES 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083.
	PROPOSED CONSTRUCTION OF RESIDENTIAL FLATS – MAHALAKSHMI.
	LAYOUT & RCC DETAILS OF FOUNDATION
ARCHITECT	diastyle NO. 65/55, 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083. PHONE : 65853326, 65359497.
	SCALE : 1" : 2' & 1" : 4'
	DRG.No: MC–153/2025 SHEET 1



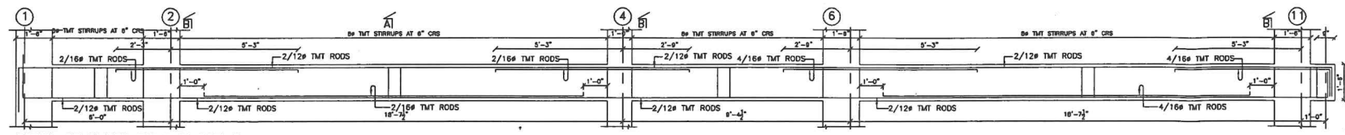
DETAIL OF PLINTH BEAM IN ROWS 1 & 2

SECTION AT A SECTION AT B

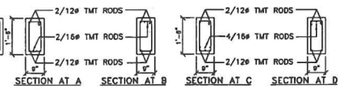
DETAIL OF PLINTH BEAM IN ROW 3



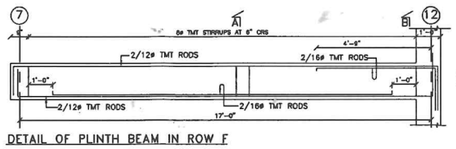
SECTION AT A SECTION AT B



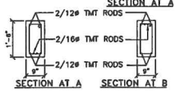
DETAIL OF PLINTH BEAM IN ROW G



SECTION AT A SECTION AT B SECTION AT C SECTION AT D



DETAIL OF PLINTH BEAM IN ROW F



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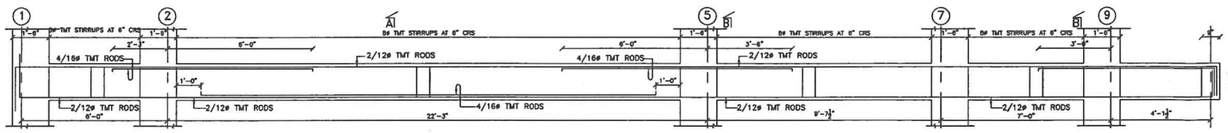
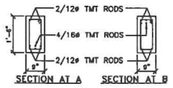
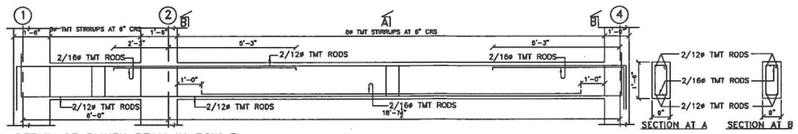


DETAIL OF PLINTH BEAM IN ROW M

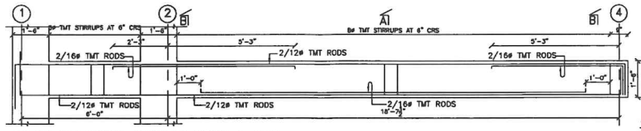


SECTION AT A SECTION AT B



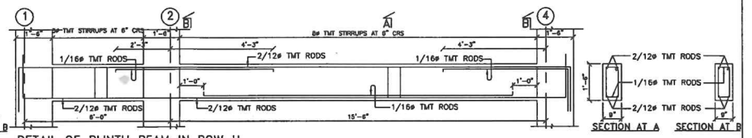
DETAIL OF PLINTH BEAM IN ROW E

SECTION AT A SECTION AT B



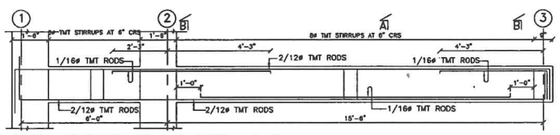
DETAIL OF PLINTH BEAM IN ROWS A & C

SECTION AT A SECTION AT B

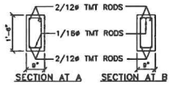


DETAIL OF PLINTH BEAM IN ROW H

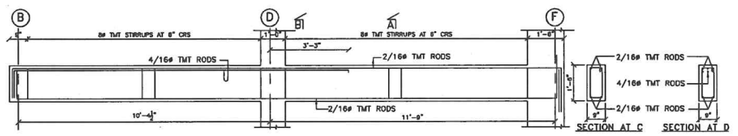
SECTION AT A SECTION AT B



DETAIL OF PLINTH BEAM IN ROWS A & C

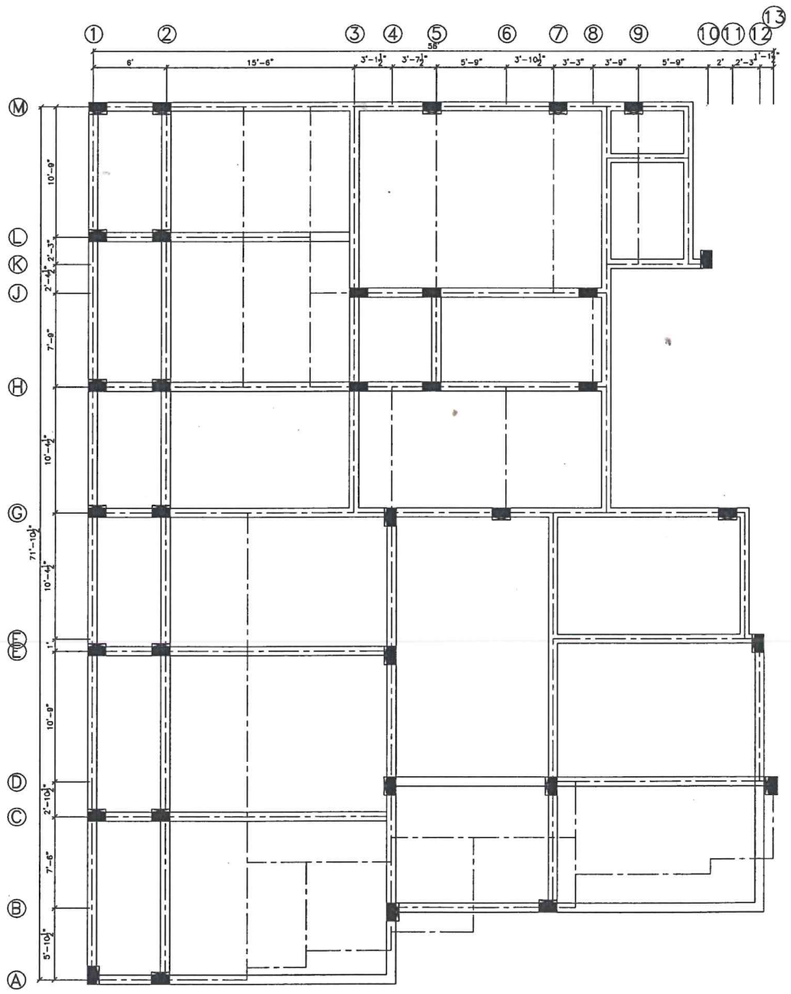


SECTION AT A SECTION AT B

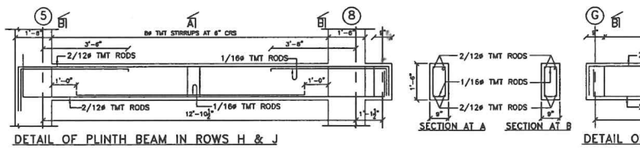


DETAIL OF PLINTH BEAM IN ROW 12

SECTION AT C SECTION AT D

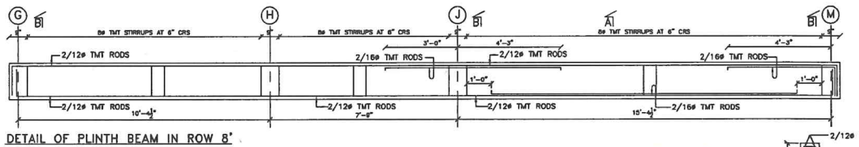


PLINTH BEAM LAYOUT

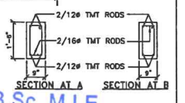


DETAIL OF PLINTH BEAM IN ROWS H & J

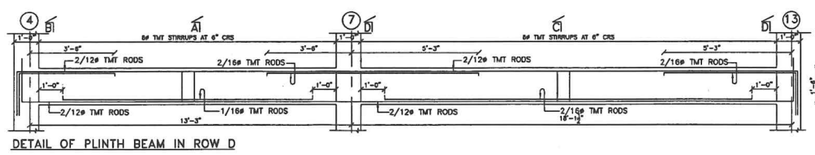
SECTION AT A SECTION AT B



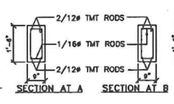
DETAIL OF PLINTH BEAM IN ROW 8'



SECTION AT A SECTION AT B



DETAIL OF PLINTH BEAM IN ROW D



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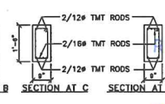
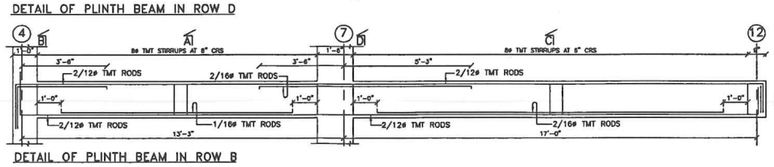
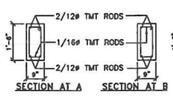


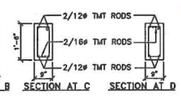
SECTION AT C SECTION AT D



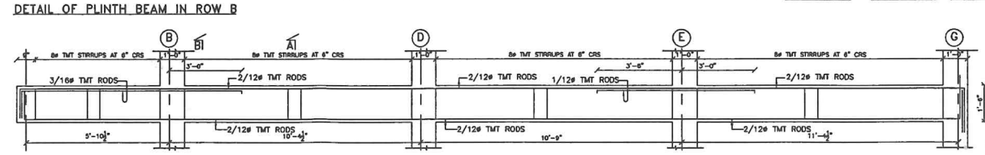
DETAIL OF PLINTH BEAM IN ROW B



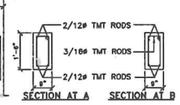
SECTION AT A SECTION AT B



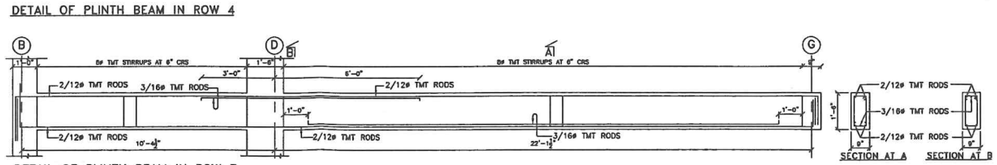
SECTION AT C SECTION AT D



DETAIL OF PLINTH BEAM IN ROW 4



SECTION AT A SECTION AT B



DETAIL OF PLINTH BEAM IN ROW 7

SECTION AT A SECTION AT B

M. PUNITHAN B.Sc.,M.I.E.
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52/141, Flat C2, PJM Apartments, East Vanniar Street,
T.K.K. Nagar, Chennai-600 078.
Mobile: 9884400273 Email: [illegible]

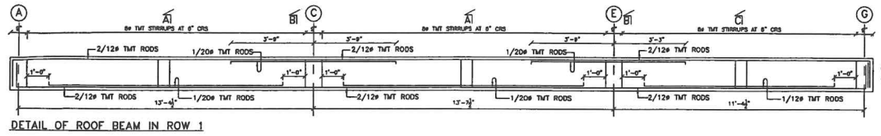
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RCC WORKS TO BE WITH M20 CONCRETE AND TO BE EXECUTED AS PER IS : 456 – 2000, USING 20mm GRADED GRANITE METAL. WATER CEMENT RATIO NOT EXCEEDING 0.45. HIGH STRENGTH DEFORMED BARS (TMT SHALL CONFORM TO IS: 1786 – 2008 (Fe 550).
3. LAP LENGTH FOR ALL BARS TO BE 45 TIMES THE DIAMETER.
4. CONCRETE COVER FOR ALL MAIN RODS IN FOUNDATION AND PLINTH BEAMS TO BE 1.8" UNLESS OTHERWISE STATED.

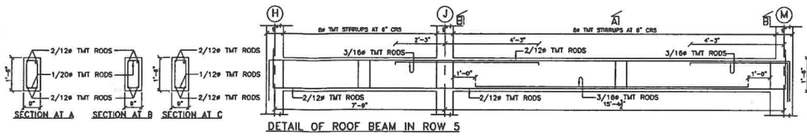
GOOD FOR CONSTRUCTION

ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	16/12/25	AS DRAWN			

CONSULTANTS	MURUGU CONSULTANT 9A/10, UMAPATHY STREET EXT. W.MAMBALAM, CHENNAI – 33. Ph No.9884400273.
CLIENT	M/S HORMONY HOMES 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083.
ARCHITECT	diastyle NO. 65/55, 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083. PHONE : 65853326, 65359407.
	PROPOSED CONSTRUCTION OF RESIDENTIAL FLATS – MAHALAKSHMI.
	LAYOUT & RCC DETAILS OF PLINTH BEAM
	SCALE : 1" : 2' & 1" : 4'
	DRG.No: MC-153/2025 SHEET 2

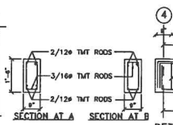


DETAIL OF ROOF BEAM IN ROW 1

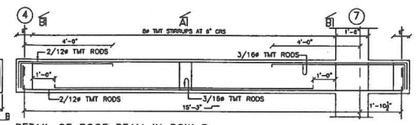


SECTION AT A SECTION AT B SECTION AT C

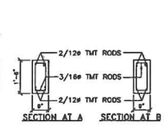
DETAIL OF ROOF BEAM IN ROW 5



SECTION AT A SECTION AT B



DETAIL OF ROOF BEAM IN ROW B



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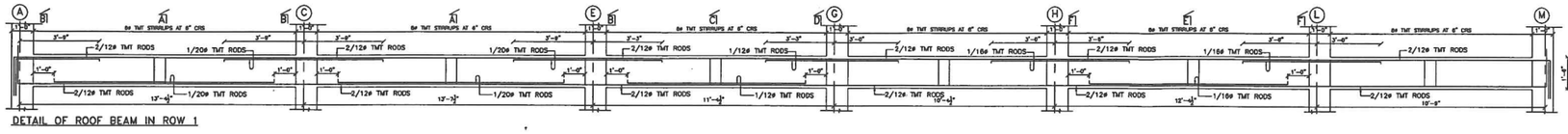
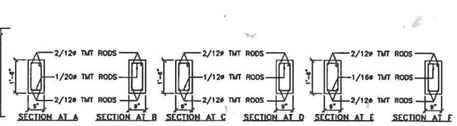
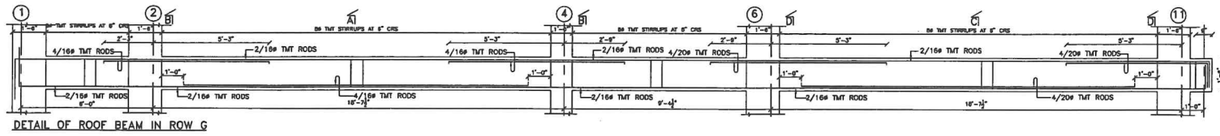


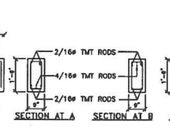
DETAIL OF ROOF BEAM IN ROW 1



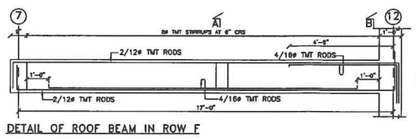
SECTION AT A SECTION AT B SECTION AT C SECTION AT D SECTION AT E SECTION AT F



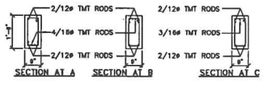
DETAIL OF ROOF BEAM IN ROW G



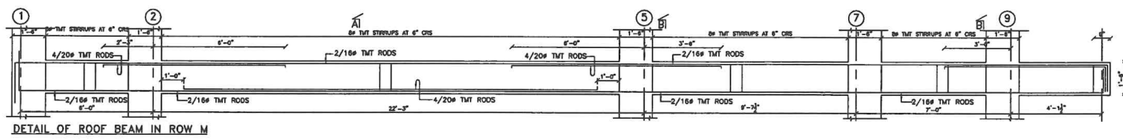
SECTION AT A SECTION AT B SECTION AT C SECTION AT D



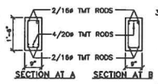
DETAIL OF ROOF BEAM IN ROW F



SECTION AT A SECTION AT B SECTION AT C



DETAIL OF ROOF BEAM IN ROW M



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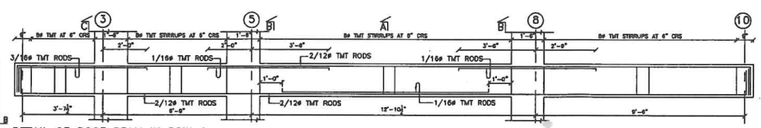
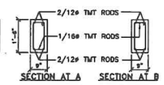
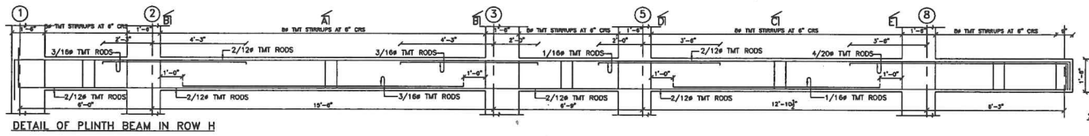


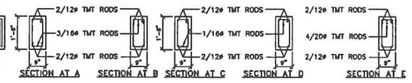
DETAIL OF ROOF BEAM IN ROW J



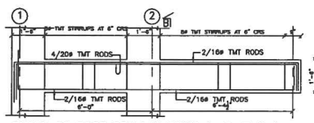
SECTION AT A SECTION AT B



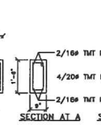
DETAIL OF PLINTH BEAM IN ROW H



SECTION AT A SECTION AT B SECTION AT C SECTION AT D SECTION AT E



DETAIL OF ROOF BEAM IN ROWS A, C, E & L



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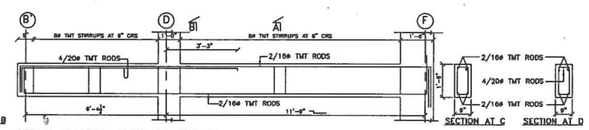
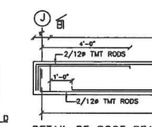
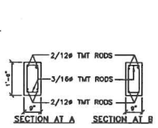


DETAIL OF ROOF BEAM IN ROW 12

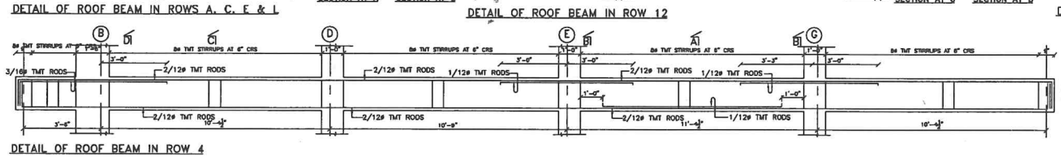


SECTION AT C SECTION AT D

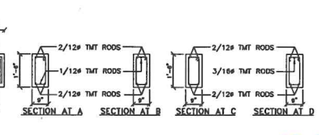
DETAIL OF ROOF BEAM IN ROW B



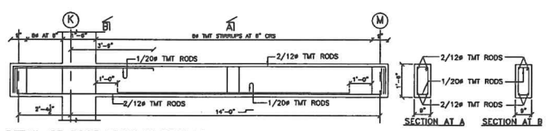
SECTION AT A SECTION AT B



DETAIL OF ROOF BEAM IN ROW 4

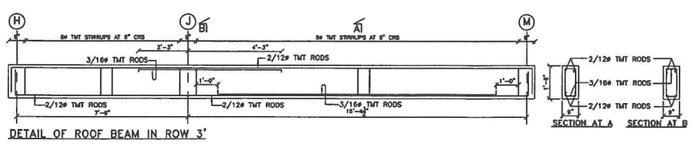


SECTION AT A SECTION AT B SECTION AT C SECTION AT D



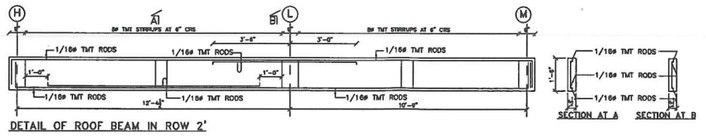
DETAIL OF ROOF BEAM IN ROW 10

SECTION AT A SECTION AT B



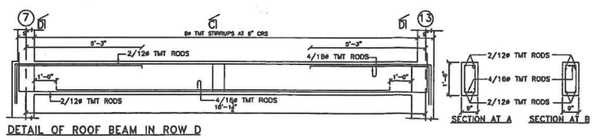
DETAIL OF ROOF BEAM IN ROW 3'

SECTION AT A SECTION AT B



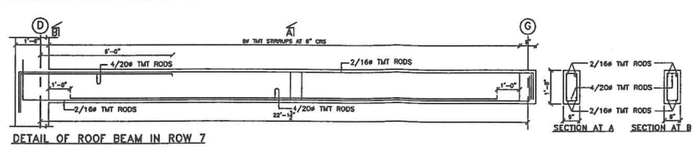
DETAIL OF ROOF BEAM IN ROW 2'

SECTION AT A SECTION AT B



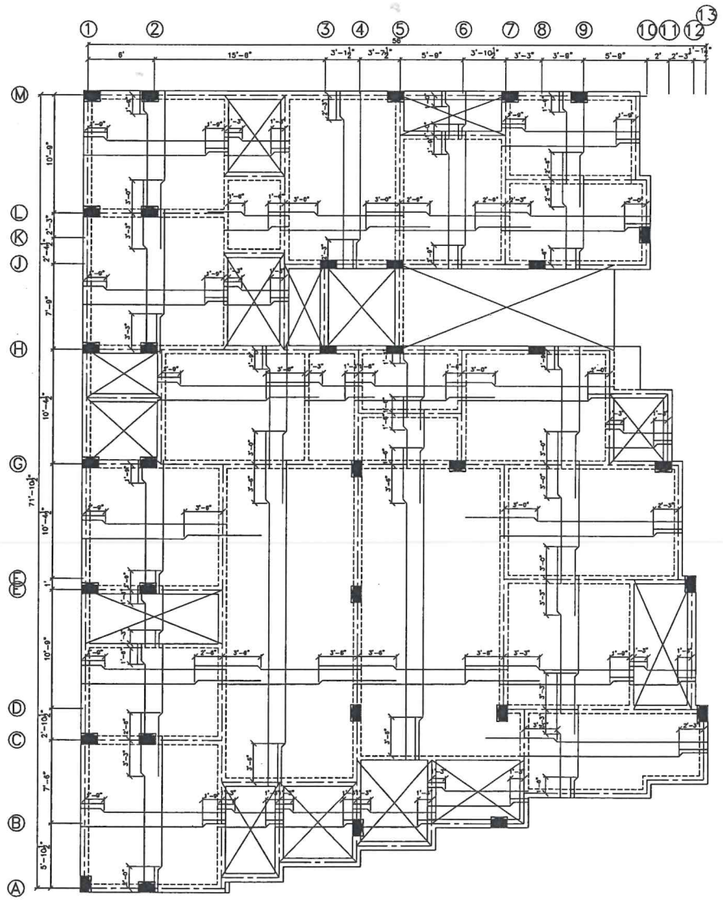
DETAIL OF ROOF BEAM IN ROW D

SECTION AT A SECTION AT B



DETAIL OF ROOF BEAM IN ROW 7

SECTION AT A SECTION AT B



G. F. ROOF SLAB DETAILS – 4.5" THICK

M. PUNITHAN B.Sc.,M.I.E.
Registered Structural Engineer Grade-I
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 Vannlar Street
West K.K. Nagar, Chennai-600 078.
Mobile: 9884400273, Email: mpunithan@yahoo.co

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL RCC WORKS TO BE WITH M20 CONCRETE AND TO BE EXECUTED AS PER IS : 456 – 2000, USING 20mm GRADED GRANITE METAL. WATER CEMENT RATIO NOT EXCEEDING 0.45. HIGH STRENGTH DEFORMED BARS (TMT SHALL CONFORM TO IS: 1786 – 2008 (Fe 550).
3. LAP LENGTH FOR ALL BARS TO BE 45 TIMES THE DIAMETER.
4. CONCRETE COVER FOR ALL MAIN RODS IN FOUNDATION AND PLINTH BEAMS TO BE 1.6" UNLESS OTHERWISE STATED.

GOOD FOR CONSTRUCTION

ALT	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
0	16/12/25	AS DRAWN			

CONSULTANTS	MURUGU CONSULTANT 9A/10, UMAPATHY STREET EXT. W.MAMBALAM, CHENNAI – 33. Ph No.9884400273.
CLIENT	M/S HORMONY HOMES 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083.
ARCHITECT	diastyle NO. 65/35, 12TH AVENUE, ASHOK NAGAR CHENNAI – 600 083. PHONE : 65853328, 65359407.
	PROPOSED CONSTRUCTION OF RESIDENTIAL FLATS – MAHALAKSHMI.
	LAYOUT & RCC DETAILS OF PLINTH BEAM
	SCALE : 1" : 2' & 1" : 4'
	DRG.No: MC–153/2025 SHEET 2