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hello@verified.realestate
+91 9996 12 9996
verified.realestate

DIGITALLY VERIFIED RECORD

ARCHITECTS PLUS

P. RAVICHANDRAN, M.E., A.I.I.A.,, F.I.V.
Regn. No. CA 23109

Date: 03.08.2026

STABILITY CERTIFICATE

(To be furnished while filing application for registration of building)

1. The detailed engineering and structural design of the proposed building comprising of Basement + Ground floor+ 2 floors with 25 Residential Units **"ADHITHYAA AARNA"** in T.S.No: 1350/114, Block: 41 & Ward A, Thimmrayasamudram village, Srirangam Zone, Tiruchirappalli Corporation, Tamilnadu, has been done by me/us based on the report of geotechnical investigation (soil test) done by Time Institute for Materials Testing, Tiruchirappalli, vide Report No: **TIME /59/ SOIL TEST / MAY 2025** dated 28.05.2025 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. IS.875-1987 and design of earthquake resistant structure as per IS Code No.IS.1893-2002 and IS.4236-1993.

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

Enclosure:

i) Structural Design Calculation

P.RAVICHANDRAN,M.E.,A.I.I.A.,A.I.V.
Regd. Architect / Structural Engineer
CA/98/23109 AM 77839/5
SE/Gr.I/DTCP/TRICHY/JULY-2024/27
"ARCHITECTS PLUS", D-27, 2nd Floor
J.P. Tower, 7th Cross (East)
Thillainagar, Trichy-620 018.

For ADHITHYAA CONSTRUCTIONS

Proprietor

Registered Architects,
Approved Valuers & Structural Consultants
D-27, 2nd Floor, J.P. Tower,
7th Cross East, Thillai Nagar,

STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

19.06.2026	Design Basis Report	OK	KALARANI	PARIMALA	RAVICHANDRAN
DATE	**DESCRIPTION**	**STATUS**	**PREPARED BY**	**REVIEWED BY**	**APPRVD. BY**

STRUCTURAL CONSULTANT

ARCHITECTS PLUS

 # D-27, 2ND FLOOR, JP TOWER,
7TH CROSS EAST, THILLAINAGAR – 600 018.
PHONE: 0431-2742466

CLIENT

M/s. AADHITHYA CONCTRUCTIONS

TIRUCHIRAPPALLI.

P.RAVICHANDRAN,M.E.,A.I.I.A.,A.I.V.,
Regd. Architect / Structural Engineer
CA/98/23109 AM 77839/5
SE/GRJ/DTCP/TRICHY/JULY-2024/27
"ARCHITECTS PLUS", D-27, 2nd Floor
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For ADHITHYAA CONSTRUCTIONS

Proprietor

STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

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STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

1. FOREWORD

The intent of this document is to identify and record all the pertinent input requirements, analysis & design criteria for structural design of the building. It is aimed at formulating the basis of the structural analysis, design & detailing work that the Structural Engineer is planning in delivering the structural scheme of the building. The scheme will be compatible with the architectural theme, satisfy the functional needs, at the same time conforming to the Indian Standards and other applicable building norms to achieve safe, stable, strong and yet optimally economical structures.

The parameters adopted in this report are going to be the basis of the structural design calculations. This report covers the minimum design requirement to establish the unified design basis that will form the overall design philosophy to be adopted in the structural design of the proposed building.

The design will aim to achieve

- Structural & functional integrity.
- Desirable Structural performance under characteristic service design loads.
- Structural durability & maintainability.

2. PROJECT DESCRIPTION

The Proposed Construction of Residential Apartment in in T.S.No: 1350/114, Block: 41 & Ward: A, Thimmarayasamuthiram Village, Srirangam Zone, Tiruchirapalli City Corporation.

2.1. Agencies

Client: M/s. ADHITHYAA CONSTRUCTIONS

Architect: P. Ravichandran.

Structural Consultant: P. Ravichandran ,
Structural Engineer,
SE/Gr.I/TLPA/MAY 2019/053
Architects Plus,
D-27, 2nd Floor, JP Tower,
7th cross east, Thillainagar
Trichy.– 600 018.
Phone: 0431-2742466

Services Consultants:
Electrical: -
Plumbing: -
HVAC: -
Project Consultant: -
Landscape consultants: -

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2.2. The Building

The proposed construction of a Residential development is situated at T.S.No: 1350/114, Block: 41 & Ward: A, Thimmarayasamuthiram Village, Srirangam Zone, Tiruchirapalli City Corporation. It has only one Block consisting of Basement+GF+2 upper stories + Terrace. Basement Floor accommodate car parks Ground floor accommodate Residential and Gym, whereas the 2nd Floor and 3rd Floor are designed to accommodate Residential units which are configured with 2 & 3BHK.

Architecturally, The Block 26.82m x 50.14m (88'0"x164'6") is Rectangularl shape designed in line with shape of land parcel. the block is designed to accommodate 2BHK & 3BHK units. It has been designed adequately with lift, together with Staircase with a common lobby enables easy & smooth vertical transportation between the floors. The vertical access positioned close to the centre of the building which ensures easy circulation of occupants. Toilets are designed with the conventional sunk of 125mm(5") with the floor concealed trap concept and the balcony is designed with 2" sunk to accommodate the floor trap to drain the water. Terrace is designed as RCC roof with the loadings to cater the 75mm thickness of weathering course and equipment like A/C outdoor units; solar panel etc. Above Terrace, staircase head rooms and Over Head Tanks are provided.

Structurally, the building is a R.C.C. framed structure with columns and the floor framing system is conceptualized with a conventional system of Beams with slabs. The columns are connected to each other with a network of R.C.C beams and RC slabs with the slabs acting as in-plane rigid diaphragms for each of the floors & Roof. The Beams are assigned as frame elements in the 3D model and it is designed as non-ductile Frames. The structural elements are designed with adequate sizes proportion to its span &loads with the Column sizes 300/230x375mm, 300/230x450mm, 300/230x525&300/230x600 and the Beam sizes of width 230mm and 300mm and depth varies from 300mm to 600mm etc .The slab thickness varies from 125mm to150mm.

2.3. Architectural/Structural Configuration

Table: Architectural Floor heights/Structural& Details:

BUILDING CONFIGURATION	
Building Dimension in Plan	26.82m x 50.14m (88'0"x164'6")
No. Of Floors	Basement+GF+2 floors
Basement floor height	3.2m
Ground Floor height to 3rd Floor	2.95m each floor
LMR Slab height	4.34m
Head Room Slab height	2.45m
Grade of concrete for RC beams / RC slabs	M25
Non-Structural Grade Slab	M20

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(9)

Foundation System	Isolated Footing
Grade of concrete for Foundation	M30
Grade of concrete for Columns	M30
Grade of concrete for RC beams / RC slabs	M25
Non-Structural Grade Slab	M20
Grade of Steel	Fe500

3. LIST OF CODES

In the analysis, design and detailing of the building, the following Indian Standard codes will be used.

3.1 Design Loads (Other Than Earthquake Loads)

ISCode	Description
IS875 (Part 1): 1987	Dead Loads (Unit Weight of Building Material and Stored Material)
IS875 (Part 2): 1987	Imposed Load
IS875 (Part 3):2015	Wind Load

3.2 Design of Steel Structural Elements

IS Code	Description
IS 800: 2007	Code of Practice for General Construction in Steel
IS 2062	Steel for General structural purposes

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3.3 Design of Concrete Elements

IS Code	Description
IS 456: 2000	Plain and Reinforced Concrete - Code of practice
IS 1904	Indian Standard Code of practice for design & construction foundations in Soil: General Requirements
SP 16	Structural use of concrete. Design charts for singly reinforced beams, doubly reinforced beams and columns.
SP 34	Handbook on Concrete Reinforcement & Detailing
SP 7(Part IV)	National Building code of India
IS 1786-2008	Specification for high strength deformed bars and wires for concrete Reinforcement.
IS 3370 (part I)	Code of practice for concrete structure for the storage of liquids

4. DESIGN PARAMETERS

4.1 Materials of Construction

The building is predominantly RCC frame structure with columns connected by beams & floor slabs being used as diaphragms in redistribution of lateral forces.

4.1.1 Concrete Grade

Concrete grade shall be M30 & M25 with minimum 28 day strength of 30 & 25 N/mm^2 respectively. Grade M30 concrete is used for design of Footings & vertical elements like RC columns whereas M25 grade is used for RC beam & RC Slab. Concrete Mix M10 has been used in filling, plum concrete, leveling courses (PCC) and other non-structural items. Density of reinforced concrete is assumed as 25.00 kN/cu.m.

Minimum cement content, water cement ratio etc. shall conform to IS 456:2000 code provisions for durability and strength criteria. The cementitious content shall be in the range of 400 kg/m^3 for M30 grade concrete and 325 kg/m^3 for M25 grade concrete. However trial mix shall be carried out and the cube tests are to be conducted in order to establish its design compressive strength. The design mix shall be approved by the Structural Engineer based on the trial mix results before adopt in to the construction. The slump shall not be less than 100 and it shall be in the range of 120 for pumbable concrete.

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4.1.2 Cement

Ordinary Portland Cement of grade 43 or higher confirming to IS 8112 and IS 12269 is specified for concrete M30 & M25 with cement content appropriate to the grade.

4.1.3 Aggregates

The sizes of coarse aggregates confirm to IS 383. Nominal maximum size of coarse aggregate to be 20 mm, suitably graded as per the requirement of mix design. The fine aggregates confirm to the specifications of IS 383.

4.1.4 Water

Water used for construction shall complied with stipulations given in IS 456: 2000.

4.1.5 Reinforcement

High yield strength deformed bars conforming to IS 1786-2008 with f_y = 500 N/ sq.mm has been used.

4.1.6 Structural Steel

MS steel with yield strength f_y = 250 N/ sq.mm has been used for Structural steel work shall conform to IS 226 and IS 2062 for Indian steel sections.

4.1.7 Concrete Cover

Following clear cover to all reinforcement is used in the design

a. Isolated Footing = 50mm
b. Column = 40mm
c. Beam = 30mm (Bottom and sides)
d. Slab = 25mm (Top and Bottom)
e. Water tanks / Sump tank
   On water face = 50mm
   On other face = 30mm

4.1.8 Development Length

Unless otherwise specified in the construction drawing, the Development length of 50 times diameter of bar is to be considered in the BBS & Facbrication.

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4.1.9 Soil Parameters

The Soil Investigation Report No. **TIME /59/ SOIL TEST / MAY 2025** dated 28.05.2025 carried out by Time Institute for Materials Testing, Tiruchirappalli. Based on the soil report made available to us, there are four (4) bore holes are drilled for carry out field testing and to collect the soil samples. Standard penetration tests were conducted at change of soil layers and at specified intervals, commencing the test at 0.3m below the existing ground level. The relative density of different soil layers obtained from the N-Values. Disturbed and un-disturbed soil samples were collected from all the layers for visual observation, classification tests and strength characteristics of the soil layers. The sub-soil stratigraphy is relatively uniform i.e. difference between depth of occurrence and thickness of different layers are within normal range. The bore holes are drilled from the said EGL for soil investigation. From the bore log data at the bore hole 1 the top layer upto -1.00m is Sand. From -2.00m to -4.00m it is Clay mixed with sand. From 4.0m to 6m Sand mixed with clay exist. The Ground water table report is 0.60m during the investigation period. The site being situated close to the Cauvery river, hence the ground structure will be designed considering the ground water table.

4.2 LoadingStandards

Table: Unit Weight of Materials:

Material	Unit Weight
Plain Cement Concrete	25.00 kN/Cu.m
Solid Concrete Block Work	20.0 kN/Cu.m
Mortar Finishing	20.00 kN/Cu.m
Drysoil	18.00 kN/Cu.m
Saturated soil	10.00 kN/Cu.m
Glass	33.00 kN/Cu.m
water	09.81 kN/Cu.m

4.2.1a Table: Gravity Load Calculations:

Floor Slab:	
Self weight of 125 mm thick Slab	0.125x25 =3.125 kN/Sq.mt.
Self weight of 150 mm thick Slab	0.150x25 =3.750 kN/Sq.mt.
Self weight of 175mm thick slab	0.175x25 =4.375 kN/Sq.mt.
External /Internal Wall Load:	
For 230mm Thick. Wall	
Basement Floor	= (0.23x2.57x20) = 11.82kN/m
Ground Floor to 3rd Floor	= (0.23x2.57x20)=11.82kN/m
Head Room	= (0.23x2.40x20)= 11.00kN/m
Parapet wall	= (0.23x1.20x20)= 5.52kN/m
For 115 mm thick wall	
Basement Floor	= (0.115x2.57x20) = 5.91kN/m
Ground Floor to 3rd Floor	= (0.115x2.57x20) =5.91/m

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4.2.1 Imposed Loads on Slab

The following are the imposed loads in the structural slabs, in addition to the self-weight and the floor finishes. *(Self-weight of slab will be as per the thickness mentioned in the respective drawings and the Floor finishes of 50 mm thickness have been considered on all floors).*

Structural steel work shall conform to IS 226 and IS 2062 for Indian steel sections.

Table 4.2.1.1 CarParks

LoadComponent	Thickness (mm)	Load	Units
Floor Finishes		1.5	kN/m2
LiveLoad		5.0	kN/m2

Table 4. 2.1.2 Rooms

LoadComponent	Thickness (mm)	Load	Units
Floor Finishes		1.5	kN/m2
LiveLoad		2.0	kN/m2

Table 4. 2.1.3 Toilets

LoadComponent	Thickness (mm)	Load	Units
Finishes		1.50	kN/m2
Sunk &Filled	100 mm	2.50	kN/m2
LiveLoad		2.00	kN/m2

Table 4. 2.1.4 Terrace

LoadComponent	Thickness (mm)	Load	Units
Weathering course with Water-Proofing		2.5	kN/m2
LiveLoad		1.5	kN/m2

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Table 4. 2.1.5 Corridors, Passage, Lobbies, balcony

LoadComponent	Thickness (mm)	Load	Units
Finishes		1.5	kN/m2
LiveLoad		2.0	kN/m2

Table 4. 2.1.6 Staircases

LoadComponent	Thickness (mm)	Load	Units
Steps	150 (Riser) Assuming 75mm Avg thickness	1.8	kN/m2
Finishes	-	1.2	kN/m2
LiveLoad	-	3.0	kN/m2

5. PROPOSED APPROACH OF STRUCTURAL ANALYSIS

The building is a R.C.C columns connected by beams as frame structure. Slabs acting as rigid in- plane diaphragms have been considered. After preliminary sizing of various structural members, a computer model of the structural frame of the building is generated for carrying out computer analysis for the effects of vertical and lateral loads that are likely to be imposed on the structure.

The building structure has been analyzed using the STAAD-Pro software for the following computer models of the building floor analysis of all floors - for vertical loads with the entire building space frame. STAAD-Pro have been thoroughly tested, validated and recognized internationally by several organizations and are well suited for the analysis of building systems.

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STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

Geometrical dimensions, member properties and member-node connectivity, including eccentricities will be modeled in the analysis problem. Variation in material grades, if present, will also be considered.

The permissible values of the load factors and stresses will be utilized within the purview of the Indian Standards.

The computer analysis will produce accurate individual member forces, reactions at foundation level and deflection pattern of the entire structure as well as individual members. This data will then be used to confirm/review the member sizes and arrive at the most appropriate design of the structural members. Some re-runs of the analysis program might be required for arriving at the optimum structural space frame characteristics that satisfy the strength and stability criteria in all respects.

Design of different structural elements will be carried out using In-house developed spreadsheets and packages.

The STAAD-Pro analysis model summary report and views are presented in **Annexure B.**

The following methods of modeling are adopted in creating STAAD-Pro 3D model,

- The STAAD-Pro model generated based on the shuttering drawing prepared using preliminary sizes.
- Sectional properties are assigned to all the structural elements as per the preliminary shuttering drawing.
- External & Internal filler wall loads are assigned as uniformly distributed line load on beams and as area load if the wall is intend to distribute on slab directly. These loads are assigned under SIDL type load case.
- Live Load reduction is considered in the design of Foundation and Column as per the Code: IS 875-1987 (Part-II), clause.3.2.1.
- Area design load i.e. Live load/SIDL or any other load is applied at floor relevant to its usage.
- All lateral loads & parameters are assigned as per Codes IS 1893-2016 & IS 875-2015.
- Temperature loads are applied on to the terraces which are directly exposed to sun includes podium, Roof etc.
- Beams under Torsion is required to maintain Equilibrium will be designed for Torsion in accordance with IS 456-2000, clause 41.1 to 41.4 and for all other beams torsional stiffness is neglected in the analysis by applying stiffness modifier as 0.01 to torsional constant "J". Hence no specific design for Torsion is required for these beams.
- Trichy falls in seismic zone-II. Hence ductile detailing is not followed in the design and detailing of structural elements.
- Concrete cover to reinforcement complied accordance with IS 456-2000, Tabl.16 & 16A.

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Area Load & Application: Applied as area load with intensity proportionate to its usage as mentioned in the Loading clause in the DBR.

Line (Wall) Load & Application: Filler wall loads are calculated appropriately and Applied as uniformly distributed load are calculated as follows,

6. LOAD COMBINATION

The various loads shall be combined in accordance with the stipulations in IS 875 (Part 5) 1987 and IS 456: 2000. The structural elements shall be designed for the combination that produces most unfavorable effect out of the following combinations.

The results obtained from the computer analysis in the form of member forces and reactions will be used for design the structural members. Following load combinations of the member forces will be considered for arriving at the design forces. The analysis considered load factor is as follows,

Combination of Load : (D.L x1.5) + (L.L x 1.5)

7. DESIGN OF STRUCTURAL ELEMENTS

For the design of R.C.C. elements, the Limit State Method will be used as per IS 456-2000.

Materials of construction will be predominantly concrete with consideration for strength and durability. The grade of concrete is suggested as M30 for Foundation (Isolated Footing) & columns, whereas for RC Beam & RC Slab grade of concrete has to be M25 and for other structural elements considering the level of stresses to be borne by the members both in compression as well as flexure. High Yield Strength Deformed bars conforming to IS: 1786 with F_y = 500 MPa will be used as reinforcement. Structural steel, if any with Fy = 250 Grade shall be used.

Covers to reinforcement shall be in accordance with IS: 456:2000 corresponding to **moderate exposure conditions** for the super-structure or severe exposure conditions for the sub-structure and to satisfy a fire rating of 2 hrs as per National building code of India- SP7 (part IV).

8. FOUNDATION FOR THE BUILDING

The proposed Residential development comprises single Basement+GF+2 Storey + Roof structure. The vertical elements like Columns are moderately loaded. The structure is provided with columns are adequately spreaded across in order to satisfy the structural requirements for both gravity and lateral loads.

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Based on the sub soil condition presented in the Soil Investigation Report No. **TIME /59/ SOIL TEST / MAY 2025** dated 28.05.2025 carried out by Time Institute for Materials Testing, Tiruchirappalli, Isolated Footings are adopted for Foundation system. As per the soil test report recommandation, isolated footing are designed as foundation system using the recommended SBC of 150 kN/m^2 at a depth of 6.0m below the NGL. The Footings are rest over the Hard strata with « N » value 20 at **6.0m depth** from measured from NGL

9. STABILITY OF STRUCTURES

1. For the purpose of stability of the structure as a whole against overturning, the restoring moment shall not be less than 1.2 times the maximum overturning moments due to dead load plus 1.4 times the maximum overturning moments due to imposed loads. In case where dead load provides the restoring moments only 0.9 times in dead load shall be considered. The restoring moments due to imposed loads shall be ignored.

2. The factor of safety against sliding shall not be less than 1.40.
3. Factor of safety against buoyancy shall be not less than 1.20 ignoring the superimposed loading.

4. Structural Stability certificate with design calculations with words structurally is safe and sound.

10. OTHER DATA

Specific requirements of floor and wall cutouts for services, sinking (extent & depth) of floors in services, kitchen, utility and toilet areas, external architectural features, and entrance canopies are provided as required by Architects and Service Consultants. The relevant information is obtained from them in the form of drawings.

Lift loads and lift machine room equipment and cut out layouts will be obtained from the lift manufacturers. An impact factor of 100% will be considered in the lift supporting structures.

11.1 Design of Foundation

Based on the sub soil condition presented in the Soil Investigation Report No. **TIME /59/ SOIL TEST / MAY 2025** dated 28.05.2025 carried out by Time Institute for Materials Testing, Tiruchirappalli, Isolated Footings are adopted for Foundation system. As per the soil test report recommandation, isolated footing are designed as foundation system using the recommended SBC of 150kN/m^2 at a depth of 6.0m below the NGL. The Footings are rest over the Hard strata with « N » value is 20 at **6.0m depth** from measured from NGL`. The Isolated Foundation Layout drawing is given in **Annexure A.**

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11.2 Design of Columns

R.C Columns will be designed for uni-axial/bi-axial bending for the forces of critical load combination depends upon the nature of behavior. The designs are made using STAAD-Pro /in-house spread sheet as per the guide lines of IS: 456-2000 adopting limit state method. The RC design of Column design is given in **Annexure B.**

11.3 Design of Beams

Beams will be designed for the results of critical load combination as per IS: 456-2000 using STAAD-Pro /in-house spread sheet. The design procedure takes in to account all the member forces like axial, shear, torsion and bending and lists out the area of the reinforcement required for all the members. The RC design of Beam design is given in **Annexure C.**

11.4 Design of Suspended floor/Roof Slabs

Slab elements will be designed Manually. Wall load on slab is taken as uniformly distributed over entire area. Based on yield line theory, slab loads are transferred on to supporting beams. The RC design of Slab design is given in **Annexure D.**

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ANNEXURE-A

RC DESIGN OF FOUNDATION

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Adhithya Constructions

Footing Design

Footing data:

Axial Load	=	1083 kN
SBC	=	250 kN/m^2
Grade of conc.	=	M25
Grade of Steel	=	Fe500
Column size	=	380mm x 230mm

Design of footing:

Area of Footing	=	108/250 = 4.32 m^2
Size of Footing	=	2.08m x 2.08m
Net pressure	=	1083*1.5*2.08*2.08 = ----kN/m^2
Bending Moment Mu	=	434*1.025^2/2 = 228 kN m
Effective depth req.	=	228*10^6 / 3.33*1000 = 262mm
Provide Overall Depth	=	800mm
Effective depth	=	744mm

Tension Reinforcement:

Mu	=	228kN m
Mu/bd^2	=	0.412
Pt	=	0.10%
Ast	=	720mm^2
Provide	=	T12 @ 150mm c/c
Pro.Pt	=	0.11%

Check one way shear

Vu_1	=	434*(1.025-0.744)	= 122N
tv	=	122*10^3/1000*744	= 0.164N/mm^2
tc	=	0.290 N/mm^2	

tc = 0.290 > tv = 0.164 Hence safe

For ADHITHYAA CONSTRUCTIONS

ARCHITECTS PLUS TRICHY

Check two way shear

Vu_2	=	$434*(2.575^2 - 1.269^2)$	=	2178 N	
tvz	=	$2178*10^3/2.575*1269*744$	=	0.895 N/mm^2	
ks	=	1 N/mm^2			
ks = 1 > tvz	=	0.895 Hence safe			

Result

Footing size	=	2575mm x 2350 mm
Footing depth	=	800mm
Reinforcement	=	T12@150mm c/c

For ADHITHYAA CONSTRUCTIONS

Proprietor

ARCHITECTS PLUS TRICHY

STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

ANNEXURE-B

RC DESIGN OF COLUMN

For ADHITHYAA CONSTRUCTIONS

Proprietor

ARCHITECTS PLUS * TRICHY *

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 604 Puz : 1755.38 Muz : 108.29 Muy : 48.23 IR: 0.30

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 2 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 230.0 mm X 380.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 605 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 772.14

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	15.44	15.44
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	15.44	15.44

REQD. STEEL AREA : 461.67 Sq.mm.
REQD. CONCRETE AREA: 86938.34 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 16 dia. (0.92%, 804.25 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 230 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1346.79 Muz1 : 63.54 Muy1 : 36.32

INTERACTION RATIO: 0.35 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

IS 456 - 2000 COLUMN DESIGN RESULTS

IS-456 LIMIT STATE DESIGN
COLUMN NO. 1 DESIGN RESULTS

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 230.0 mm X 460.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 604 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu)	:	986.63	
		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	19.73	19.73
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	19.73	19.73

REQD. STEEL AREA : 589.91 Sq.mm.
REQD. CONCRETE AREA: 105210.10 Sq.mm.
MAIN REINFORCEMENT : Provide 8 - 12 dia. (0.86%, 904.78 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1641.55 Muz1 : 92.12 Muy1 : 42.86

INTERACTION RATIO: 0.35 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 606 Puz : 1755.38 Muz : 112.60 Muy : 49.85 IR: 0.28

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 4 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 230.0 mm X 380.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 607 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 616.28

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	12.33	12.33
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	12.33	12.33

REQD. STEEL AREA : 368.48 Sq.mm.
REQD. CONCRETE AREA: 46059.71 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 12 dia. (0.52%, 452.39 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1313.10 Muz1 : 66.39 Muy1 : 37.94

INTERACTION RATIO: 0.28 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 605 Puz : 1470.64 Muz : 83.64 Muy : 44.65 IR: 0.27

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 3 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 230.0 mm X 460.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 606 SHORT COLUMN

DESIGN FORCES (KNS-MET)

		About Z	About Y
DESIGN AXIAL FORCE (Pu)	:	927.75	
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	18.55	18.55
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	18.55	18.55

REQD. STEEL AREA : 554.71 Sq.mm.
REQD. CONCRETE AREA: 105245.31 Sq.mm.
MAIN REINFORCEMENT : Provide 8 - 12 dia. (0.86%, 904.78 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1628.83 Muz1 : 94.77 Muy1 : 44.06

INTERACTION RATIO: 0.32 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

TRICHY ARCHITECTS PLUS

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 608 Puz : 1343.44 Muz : 78.29 Muy : 42.54 IR: 0.23

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 6 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 460.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 609 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 1344.65

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	26.89	26.89
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	26.89	26.89

REQD. STEEL AREA : 803.97 Sq.mm.
REQD. CONCRETE AREA: 100496.72 Sq.mm.
MAIN REINFORCEMENT : Provide 8 - 12 dia. (0.66%, 904.78 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2153.64 Muz1 : 73.33 Muy1 : 116.94

INTERACTION RATIO: 0.26 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 607 Puz : 1343.44 Muz : 75.39 Muy : 41.56 IR: 0.25

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 5 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 230.0 mm X 380.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 608 SHORT COLUMN

DESIGN FORCES (KNS-MET)

		About Z	About Y
DESIGN AXIAL FORCE (Pu)	:	533.40	
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	10.67	10.67
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	10.67	10.67

REQD. STEEL AREA : 318.92 Sq.mm.
REQD. CONCRETE AREA: 39865.45 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 12 dia. (0.52%, 452.39 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1295.19 Muz1 : 66.07 Muy1 : 37.71

INTERACTION RATIO: 0.27 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

TRICHY ARCHITECTS PLUS

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 610 Puz : 1702.54 Muz : 92.98 Muy : 71.00 IR: 0.19

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 8 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 300.0 mm X 460.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 611 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 1033.81

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	20.68	20.68
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	20.68	20.68

REQD. STEEL AREA : 618.12 Sq.mm.
REQD. CONCRETE AREA: 77265.39 Sq.mm.
MAIN REINFORCEMENT : Provide 8 - 12 dia. (0.66%, 904.78 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 2086.45 Muz1 : 128.27 Muy1 : 80.34

INTERACTION RATIO: 0.20 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

TRICHY * ARCHITECTS PLUS *

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 609 Puz : 2190.08 Muz : 76.48 Muy : 123.04 IR: 0.25

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 7 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 300.0 mm X 380.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 610 SHORT COLUMN

DESIGN FORCES (KNS-MET)

		About Z	About Y
DESIGN AXIAL FORCE (Pu)	:	753.98	
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	15.08	15.08
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	15.08	15.08

REQD. STEEL AREA : 450.81 Sq.mm.
REQD. CONCRETE AREA: 56351.23 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 12 dia. (0.40%, 452.39 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1701.97 Muz1 : 86.53 Muy1 : 66.69

INTERACTION RATIO: 0.21 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 611 Puz : 2190.08 Muz : 143.69 Muy : 88.29 IR: 0.18

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 9 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 300.0 mm X 380.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 612 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 547.43

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	10.95	10.95
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	10.95	10.95

REQD. STEEL AREA : 327.31 Sq.mm.
REQD. CONCRETE AREA: 40913.91 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 12 dia. (0.40%, 452.39 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1657.32 Muz1 : 80.03 Muy1 : 62.10

INTERACTION RATIO: 0.21 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

SECTION CAPACITY BASED ON REINFORCEMENT PROVIDED (KNS-MET)

WORST LOAD CASE: 8
END JOINT: 284 Puz : 1702.54 Muz : 92.50 Muy : 70.92 IR: 0.18

IS-456 L I M I T S T A T E D E S I G N
C O L U M N N O. 10 D E S I G N R E S U L T S

M30 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1000.0 mm CROSS SECTION: 380.0 mm X 300.0 mm COVER: 40.0 mm

** GUIDING LOAD CASE: 8 END JOINT: 613 SHORT COLUMN

DESIGN FORCES (KNS-MET)

DESIGN AXIAL FORCE (Pu) : 574.74

		About Z	About Y
INITIAL MOMENTS	:	0.00	0.00
MOMENTS DUE TO MINIMUM ECC.	:	11.49	11.49
SLENDERNESS RATIOS	:	-	-
MOMENTS DUE TO SLENDERNESS EFFECT	:	-	-
MOMENT REDUCTION FACTORS	:	-	-
ADDITION MOMENTS (Maz and May)	:	-	-
TOTAL DESIGN MOMENTS	:	11.49	11.49

REQD. STEEL AREA : 343.64 Sq.mm.
REQD. CONCRETE AREA: 42954.98 Sq.mm.
MAIN REINFORCEMENT : Provide 4 - 12 dia. (0.40%, 452.39 Sq.mm.)
(Equally distributed)
TIE REINFORCEMENT : Provide 8 mm dia. rectangular ties @ 190 mm c/c

SECTION CAPACITY BASED ON REINFORCEMENT REQUIRED (KNS-MET)

Puz : 1663.23 Muz1 : 63.28 Muy1 : 81.63

INTERACTION RATIO: 0.21 (as per Cl. 39.6, IS456:2000)

For ADHITHYAA CONSTRUCTIONS

Proprietor

STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

ANNEXURE-C

RC DESIGN OF BEAM

For ADHITHYAA CONSTRUCTIONS

Proprietor

ARCHITECTS PLUS TRICHY

IS 456 - 2000 B E A M D E S I G N R E S U L T S

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2001 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1180.0 mm SIZE: 230.0 mm X 680.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	0.00	0.00	0.00	8	-49.90	-8.30	107.60	8
	0.00	-3.20	-8.30	-22.51	8				
98.3	0.00	0.00	0.00	0.00	8	-53.36	-8.30	111.07	8
	0.00	-8.28	-8.30	-27.59	8				
196.7	0.00	0.00	0.00	0.00	8	-56.83	-8.30	114.53	8
	0.00	-13.70	-8.30	-33.00	8				
295.0	0.00	0.00	0.00	0.00	8	-60.29	-8.30	118.00	8
	0.00	-19.46	-8.30	-38.76	8				
393.3	0.00	0.00	0.00	0.00	8	-63.76	-8.30	121.46	8
	0.00	-25.55	-8.30	-44.86	8				
491.7	0.00	0.00	0.00	0.00	8	-67.22	-8.30	124.93	8
	0.00	-31.99	-8.30	-51.30	8				
590.0	0.00	0.00	0.00	0.00	8	-70.69	-8.30	128.39	8
	0.00	-38.78	-8.30	-58.08	8				
688.3	0.00	0.00	0.00	0.00	8	-74.15	-8.30	131.86	8
	0.00	-45.90	-8.30	-65.20	8				
786.7	0.00	0.00	0.00	0.00	8	-77.62	-8.30	135.32	8
	0.00	-53.36	-8.30	-72.66	8				
885.0	0.00	0.00	0.00	0.00	8	-81.08	-8.30	138.79	8
	0.00	-61.16	-8.30	-80.47	8				
983.3	0.00	0.00	0.00	0.00	8	-84.55	-8.30	142.25	8
	0.00	-69.30	-8.30	-88.61	8				
1081.7	0.00	0.00	0.00	0.00	8	-88.01	-8.30	145.72	8
	0.00	-77.79	-8.30	-97.09	8				
1180.0	0.00	0.00	0.00	0.00	8	-91.48	-8.30	149.18	8
	0.00	-86.61	-8.30	-105.92	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	253.76/ 402.12(2-16i)	253.76/ 339.29(3-12i)	8i @ 185 mm
98.3	253.76/ 402.12(2-16i)	253.76/ 339.29(3-12i)	8i @ 185 mm
196.7	253.76/ 402.12(2-16i)	253.76/ 339.29(3-12i)	8i @ 185 mm
295.0	265.88/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
393.3	265.88/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
491.7	265.88/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
590.0	265.88/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
688.3	265.88/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
786.7	268.02/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
885.0	298.05/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
983.3	329.68/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
1081.7	362.96/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm
1180.0	397.92/ 402.12(2-16i)	0.00/ 339.29(3-12i)	8i @ 185 mm

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 877.0 mm AWAY FROM END SUPPORT
VY = -60.65 MX = -8.30 LD= 8
Provide 2 Legged 8i @ 185 mm c/c

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2002 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1300.0 mm SIZE: 230.0 mm X 530.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	15.35	-1.60	18.46	8	-48.95	-1.60	60.07	8
	0.00	0.00	0.00	0.00	8				
108.3	0.00	9.93	-1.60	13.04	8	-51.11	-1.60	62.23	8
	0.00	0.00	0.00	0.00	8				
216.7	0.00	4.28	-1.60	7.39	8	-53.26	-1.60	64.39	8
	0.00	0.00	0.00	0.00	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2003 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 7820.0 mm SIZE: 230.0 mm X 530.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	0.00	0.00	0.00	8	86.90	0.89	93.06	8
	0.00	-109.07	0.89	-110.79	8				
651.7	0.00	0.00	0.00	0.00	8	73.69	0.89	79.86	8
	0.00	-56.72	0.89	-58.44	8				
1303.3	0.00	0.00	0.00	0.00	8	60.03	0.89	66.20	8
	0.00	-13.12	0.89	-14.84	8				
1955.0	0.00	21.43	0.89	23.15	8	45.92	0.89	52.08	8
	0.00	0.00	0.00	0.00	8				
2606.7	0.00	46.63	0.89	48.35	8	31.34	0.89	37.51	8
	0.00	0.00	0.00	0.00	8				
3258.3	0.00	62.18	0.89	63.90	8	16.32	0.89	22.48	8
	0.00	0.00	0.00	0.00	8				
3910.0	0.00	67.79	0.89	69.51	8	0.83	0.89	6.99	8
	0.00	0.00	0.00	0.00	8				
4561.7	0.00	63.16	0.89	64.88	8	-15.11	0.89	21.28	8
	0.00	0.00	0.00	0.00	8				
5213.3	0.00	48.00	0.89	49.72	8	-31.51	0.89	37.67	8
	0.00	0.00	0.00	0.00	8				
5865.0	0.00	22.15	0.89	23.87	8	-47.68	0.89	53.84	8
	0.00	0.00	0.00	0.00	8				
6516.7	0.00	0.00	0.00	0.00	8	-62.93	0.89	69.10	8
	0.00	-13.95	0.89	-15.67	8				
7168.3	0.00	0.00	0.00	0.00	8	-77.28	0.89	83.44	8
	0.00	-59.68	0.89	-61.40	8				
7820.0	0.00	0.00	0.00	0.00	8	-90.71	0.89	96.88	8
	0.00	-114.47	0.89	-116.19	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

325.0	0.00	0.00	0.00	0.00	8	-55.42	-1.60	66.54	8
	0.00	-1.61	-1.60	-4.71	8				
433.3	0.00	0.00	0.00	0.00	8	-57.58	-1.60	68.70	8
	0.00	-7.73	-1.60	-10.83	8				
541.7	0.00	0.00	0.00	0.00	8	-59.74	-1.60	70.86	8
	0.00	-14.08	-1.60	-17.19	8				
650.0	0.00	0.00	0.00	0.00	8	-61.89	-1.60	73.02	8
	0.00	-20.67	-1.60	-23.78	8				
758.3	0.00	0.00	0.00	0.00	8	-64.05	-1.60	75.17	8
	0.00	-27.49	-1.60	-30.60	8				
866.7	0.00	0.00	0.00	0.00	8	-66.21	-1.60	77.33	8
	0.00	-34.55	-1.60	-37.66	8				
975.0	0.00	0.00	0.00	0.00	8	-68.36	-1.60	79.49	8
	0.00	-41.84	-1.60	-44.94	8				
1083.3	0.00	0.00	0.00	0.00	8	-70.52	-1.60	81.64	8
	0.00	-49.36	-1.60	-52.47	8				
1191.7	0.00	0.00	0.00	0.00	8	-72.68	-1.60	83.80	8
	0.00	-57.12	-1.60	-60.22	8				
1300.0	0.00	0.00	0.00	0.00	8	-74.84	-1.60	85.96	8
	0.00	-65.11	-1.60	-68.22	8				

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	0.00/ 226.19(2-12i)	195.11/ 339.29(3-12i)	8i @ 165 mm
108.3	0.00/ 226.19(2-12i)	195.11/ 339.29(3-12i)	8i @ 165 mm
216.7	0.00/ 226.19(2-12i)	195.11/ 339.29(3-12i)	8i @ 165 mm
325.0	195.11/ 339.29(3-12i)	195.11/ 339.29(3-12i)	8i @ 165 mm
433.3	195.11/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
541.7	195.11/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
650.0	195.11/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
758.3	195.11/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
866.7	195.11/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
975.0	215.28/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
1083.3	253.05/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
1191.7	292.59/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm
1300.0	333.96/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 165 mm

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 689.0 mm AWAY FROM START SUPPORT
VY = -62.59 MX = -1.60 LD= 8
Provide 2 Legged 8i @ 165 mm c/c

SHEAR DESIGN RESULTS AT 729.0 mm AWAY FROM END SUPPORT
VY = -60.40 MX = -1.60 LD= 8
Provide 2 Legged 8i @ 165 mm c/c

For ADHITHYAA CONSTRUCTIONS

Proprietor

420.8	0.00	0.00	0.00	0.00	8	69.87	0.65	74.42	8
	0.00	-49.70	0.65	-50.72	8				
841.7	0.00	0.00	0.00	0.00	8	60.51	0.65	65.07	8
	0.00	-22.37	0.65	-23.39	8				
1262.5	0.00	0.59	0.65	1.61	8	47.21	0.65	51.76	8
	0.00	0.00	0.00	0.00	8				
1683.3	0.00	18.47	0.65	19.50	8	35.22	0.65	39.77	8
	0.00	0.00	0.00	0.00	8				
2104.2	0.00	30.93	0.65	31.95	8	22.35	0.65	26.91	8
	0.00	0.00	0.00	0.00	8				
2525.0	0.00	37.47	0.65	38.49	8	8.61	0.65	13.16	8
	0.00	0.00	0.00	0.00	8				
2945.8	0.00	37.61	0.65	38.63	8	-6.01	0.65	10.57	8
	0.00	0.00	0.00	0.00	8				
3366.7	0.00	30.96	0.65	31.98	8	-23.55	0.65	28.11	8
	0.00	0.00	0.00	0.00	8				
3787.5	0.00	18.40	0.65	19.42	8	-35.32	0.65	39.88	8
	0.00	0.00	0.00	0.00	8				
4208.3	0.00	0.31	0.65	1.33	8	-48.79	0.65	53.34	8
	0.00	0.00	0.00	0.00	8				
4629.2	0.00	0.00	0.00	0.00	8	-59.54	0.65	64.10	8
	0.00	-22.39	0.65	-23.41	8				
5050.0	0.00	0.00	0.00	0.00	8	-67.92	0.65	72.47	8
	0.00	-49.20	0.65	-50.22	8				

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	656.20/ 678.58(6-12i)	0.00/ 226.19(2-12i)	8i @ 130 mm
420.8	368.23/ 452.39(4-12i)	0.00/ 226.19(2-12i)	8i @ 130 mm
841.7	160.60/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 130 mm
1262.5	136.46/ 339.29(3-12i)	136.46/ 339.29(3-12i)	8i @ 130 mm
1683.3	0.00/ 226.19(2-12i)	136.46/ 339.29(3-12i)	8i @ 130 mm
2104.2	0.00/ 226.19(2-12i)	223.01/ 339.29(3-12i)	8i @ 130 mm
2525.0	0.00/ 226.19(2-12i)	272.21/ 339.29(3-12i)	8i @ 130 mm
2945.8	0.00/ 226.19(2-12i)	273.31/ 339.29(3-12i)	8i @ 130 mm
3366.7	0.00/ 226.19(2-12i)	223.22/ 339.29(3-12i)	8i @ 130 mm
3787.5	0.00/ 226.19(2-12i)	136.46/ 339.29(3-12i)	8i @ 130 mm
4208.3	136.46/ 339.29(3-12i)	136.46/ 339.29(3-12i)	8i @ 130 mm
4629.2	160.73/ 339.29(3-12i)	0.00/ 226.19(2-12i)	8i @ 130 mm
5050.0	364.17/ 452.39(4-12i)	0.00/ 226.19(2-12i)	8i @ 130 mm

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 534.5 mm AWAY FROM START SUPPORT
VY = 70.21 MX = 0.65 LD= 8
Provide 2 Legged 8i @ 130 mm c/c

For ADHITHYAA CONSTRUCTIONS

Proprietor

TRICHY * ARCHITECTS PLUS *

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	572.71/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm
651.7	285.98/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm
1303.3	195.11/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm
1955.0	0.00/ 628.32(2-20i)	194.33/ 402.12(2-16i)	8i @ 165 mm
2606.7	0.00/ 628.32(2-20i)	233.32/ 402.12(2-16i)	8i @ 165 mm
3258.3	0.00/ 628.32(2-20i)	312.95/ 402.12(2-16i)	8i @ 165 mm
3910.0	0.00/ 628.32(2-20i)	342.30/ 402.12(2-16i)	8i @ 165 mm
4561.7	0.00/ 628.32(2-20i)	318.06/ 402.12(2-16i)	8i @ 165 mm
5213.3	0.00/ 628.32(2-20i)	240.24/ 402.12(2-16i)	8i @ 165 mm
5865.0	0.00/ 628.32(2-20i)	194.33/ 402.12(2-16i)	8i @ 165 mm
6516.7	195.11/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm
7168.3	301.35/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm
7820.0	604.39/ 628.32(2-20i)	0.00/ 402.12(2-16i)	8i @ 165 mm

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 725.0 mm AWAY FROM START SUPPORT
VY = 72.56 MX = 0.89 LD= 8
Provide 2 Legged 8i @ 165 mm c/c

SHEAR DESIGN RESULTS AT 685.0 mm AWAY FROM END SUPPORT
VY = -76.59 MX = 0.89 LD= 8
Provide 2 Legged 8i @ 165 mm c/c

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2004 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 5050.0 mm SIZE: 230.0 mm X 380.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	0.00	0.00	0.00	8	78.35	0.65	82.90	8
	0.00	-80.90	0.65	-81.92	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	0.00/ 226.19(2-12i)|	264.76/ 339.29(3-12i)|	8i @ 185 mm
133.3	0.00/ 226.19(2-12i)|	249.59/ 339.29(3-12i)|	8i @ 185 mm
266.7	0.00/ 226.19(2-12i)|	232.82/ 339.29(3-12i)|	8i @ 185 mm
400.0	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
533.3	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
666.7	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
800.0	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
933.3	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
1066.7	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
1200.0	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
1333.3	0.00/ 226.19(2-12i)|	222.48/ 339.29(3-12i)|	8i @ 185 mm
1466.7	222.48/ 339.29(3-12i)|	0.00/ 226.19(2-12i)|	8i @ 185 mm
1600.0	222.48/ 339.29(3-12i)|	0.00/ 226.19(2-12i)|	8i @ 185 mm

SHEAR DESIGN RESULTS AT DISTANCE d (EFFECTIVE DEPTH) FROM FACE OF THE SUPPORT

SHEAR DESIGN RESULTS AT 799.0 mm AWAY FROM START SUPPORT
VY = -47.21 MX = 0.53 LD= 8
Provide 2 Legged 8i @ 185 mm c/c

SHEAR DESIGN RESULTS AT 684.0 mm AWAY FROM END SUPPORT
VY = -52.22 MX = 0.53 LD= 8
Provide 2 Legged 8i @ 185 mm c/c

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2006 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 4250.0 mm SIZE: 230.0 mm X 380.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	0.00	0.00	0.00	8	49.90	3.20	72.17	8
	0.00	-8.30	3.20	-13.29	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

SHEAR DESIGN RESULTS AT 539.0 mm AWAY FROM END SUPPORT
VY = -57.27 MX = 0.65 LD= 8
Provide 2 Legged 8i @ 130 mm c/c

IS-456 L I M I T S T A T E D E S I G N
B E A M N O. 2005 D E S I G N R E S U L T S

M25 Fe500 (Main) Fe500 (Sec.)

LENGTH: 1600.0 mm SIZE: 230.0 mm X 600.0 mm COVER: 25.0 mm

DESIGN LOAD SUMMARY (KN MET)

SECTION (in mm)	FLEXURE (Maxm. Sagg./Hogg./Eqv. moments) P	MZ	MX	ME	Load #	SHEAR VY	MX	VE	Load #
0.0	0.00	61.72	0.53	62.84	8	-24.64	0.53	28.31	8
	0.00	0.00	0.00	0.00	8				
133.3	0.00	58.26	0.53	59.38	8	-27.29	0.53	30.96	8
	0.00	0.00	0.00	0.00	8				
266.7	0.00	54.42	0.53	55.54	8	-30.40	0.53	34.08	8
	0.00	0.00	0.00	0.00	8				
400.0	0.00	50.13	0.53	51.25	8	-33.97	0.53	37.64	8
	0.00	0.00	0.00	0.00	8				
533.3	0.00	45.34	0.53	46.46	8	-38.00	0.53	41.67	8
	0.00	0.00	0.00	0.00	8				
666.7	0.00	39.98	0.53	41.10	8	-42.48	0.53	46.15	8
	0.00	0.00	0.00	0.00	8				
800.0	0.00	33.99	0.53	35.11	8	-47.41	0.53	51.08	8
	0.00	0.00	0.00	0.00	8				
933.3	0.00	27.31	0.53	28.43	8	-52.81	0.53	56.48	8
	0.00	0.00	0.00	0.00	8				
1066.7	0.00	19.89	0.53	21.01	8	-58.65	0.53	62.33	8
	0.00	0.00	0.00	0.00	8				
1200.0	0.00	11.68	0.53	12.80	8	-64.28	0.53	67.95	8
	0.00	0.00	0.00	0.00	8				
1333.3	0.00	2.79	0.53	3.91	8	-68.98	0.53	72.65	8
	0.00	0.00	0.00	0.00	8				
1466.7	0.00	0.00	0.00	0.00	8	-72.78	0.53	76.45	8
	0.00	-6.67	0.53	-7.79	8				
1600.0	0.00	0.00	0.00	0.00	8	-75.66	0.53	79.33	8
	0.00	-16.58	0.53	-17.70	8				

For ADHITHYAA CONSTRUCTIONS

Proprietor

354.2	0.00	8.12	3.20	13.12	8	42.69	3.20	64.96	8
	0.00	0.00	0.00	0.00	8				
708.3	0.00	21.81	3.20	26.81	8	34.57	3.20	56.85	8
	0.00	0.00	0.00	0.00	8				
1062.5	0.00	32.44	3.20	37.43	8	25.56	3.20	47.84	8
	0.00	0.00	0.00	0.00	8				
1416.7	0.00	39.67	3.20	44.66	8	15.65	3.20	37.93	8
	0.00	0.00	0.00	0.00	8				
1770.8	0.00	43.17	3.20	48.16	8	4.84	3.20	27.12	8
	0.00	0.00	0.00	0.00	8				
2125.0	0.00	42.60	3.20	47.59	8	-6.86	3.20	29.14	8
	0.00	0.00	0.00	0.00	8				
2479.2	0.00	37.63	3.20	42.63	8	-19.47	3.20	41.74	8
	0.00	0.00	0.00	0.00	8				
2833.3	0.00	27.93	3.20	32.92	8	-32.97	3.20	55.25	8
	0.00	0.00	0.00	0.00	8				
3187.5	0.00	13.38	3.20	18.38	8	-46.50	3.20	68.78	8
	0.00	0.00	0.00	0.00	8				
3541.7	0.00	0.00	0.00	0.00	8	-58.10	3.20	80.37	8
	0.00	-5.41	3.20	-10.41	8				
3895.8	0.00	0.00	0.00	0.00	8	-67.76	3.20	90.04	8
	0.00	-27.83	3.20	-32.83	8				
4250.0	0.00	0.00	0.00	0.00	8	-75.49	3.20	97.77	8
	0.00	-53.27	3.20	-58.27	8				

SUMMARY OF REINF. AREA (Sq.mm)

SECTION (in mm)	TOP Reqd./Provided reinf.	BOTTOM Reqd./Provided reinf.	STIRRUPS (2 legged)
0.0	136.46/ 339.29(3-12i)	0.00/ 402.12(2-16i)	8i @ 130 mm
354.2	0.00/ 226.19(2-12i)	135.68/ 402.12(2-16i)	8i @ 130 mm
708.3	0.00/ 226.19(2-12i)	186.45/ 402.12(2-16i)	8i @ 130 mm
1062.5	0.00/ 226.19(2-12i)	265.95/ 402.12(2-16i)	8i @ 130 mm
1416.7	0.00/ 226.19(2-12i)	322.19/ 402.12(2-16i)	8i @ 130 mm
1770.8	0.00/ 226.19(2-12i)	350.10/ 402.12(2-16i)	8i @ 130 mm
2125.0	0.00/ 226.19(2-12i)	345.53/ 402.12(2-16i)	8i @ 130 mm
2479.2	0.00/ 226.19(2-12i)	306.14/ 402.12(2-16i)	8i @ 130 mm
2833.3	0.00/ 226.19(2-12i)	231.76/ 402.12(2-16i)	8i @ 130 mm
3187.5	0.00/ 226.19(2-12i)	135.68/ 402.12(2-16i)	8i @ 130 mm
3541.7	136.46/ 339.29(3-12i)	0.00/ 402.12(2-16i)	8i @ 130 mm
3895.8	229.56/ 339.29(3-12i)	0.00/ 402.12(2-16i)	8i @ 130 mm
4250.0	430.39/ 452.39(4-12i)	0.00/ 402.12(2-16i)	8i @ 130 mm

For ADHITHYAA CONSTRUCTIONS

Proprietor

TRICHY ARCHITECTS PLUS

STRUCTURAL DESIGN CALCULATION REPORT FOR THE PROPOSED CONSTRUCTION OF RESIDENTIAL APARTMENT (Non-High Rise), IN T.S.NO: 1350/114, BLOCK: 41 & WARD: A, THIMMARAYASAMUTHIRAM VILLAGE,SRIRANGAM ZONE,TIRUCHIRAPALLI CITY CORPORATION.

ANNEXURE-D

RC DESIGN OF SLAB

For ADHITHYAA CONSTRUCTIONS

Proprietor

ARCHITECTS PLUS TRICHY

Slab design

Slab no: 1

1 Panel size

2	2.97
10	5.44

2 Slab type

1 >2 ONE WAY SLAB TWO WAY SL ONE WAY SLAB 1.83164983 TWO WAY SLAB

3 Depth

IF

a	s.s slab	28	
b	continious	32	

4 Depth

Lx/d

d=Lx/a (or) b 0.0928125 92.8125 mm 91 mm

5 Over all depth

D= d+c.c+Ø/2 115 4.527559055 inches

6 Load calculation

1	Self weight	DX25(M25)	2.875	Kn/m²
2	Live load	As per is 875 part 2	3	Kn/m²
3	Floor Finish	As per is 875 part 2	1.5	Kn/m²
4	Total load	1+2+3	7.375	Kn/m²
5	ultimate load	1.5x(4) =	11.0625	Kn/m²

7 Moment

Mux(+ve)=αx.Wu.Lx²	3.610504631	KN.m
Mux(-ve)=αx.Wu.Lx²	2.732273775	KN.m
Muy=αy.Wu.Lx²	3.1225986	KN.m

8 Req.depth

Mu=0.138fckbd²

dreq=(Mu/0.138fckb)^1/2 1046.523082 32.350009 mm

9 Depth Check

if d > dreq

SAFE OK

10 Reinforcement detail

Grade of steel= 500 N/mm2

dia of main rod = 8 mm 154.7

Mu/bd²= 0.43599863 N/mm²

P_t=table 3 0.167 **Min Rein=** **0.85*b*d/f_y** **154.7** mm²

Ast= $P_t$bd/10(151.97 200 mm² **Max.spac=300mm**

dia of rod= 8 mm **Min.spac=75mm**

Area of rod= 50.24 50.24 mm²

Spacing= 251.2 250

11 Distribution Rod

.12%of cross sectional area

138 200 mm²

dia of rod= 8 mm

Area of rod= 50.24 mm²

Spacing= 251.2

12 Check for shear

V_u=WuLx/2	16.4278125	Kn
T_v=Vu/bd	0.18052541	N/mm²
P_t=100Ast/bd	0.167	
T_c=Table 19 f	0.29	N/mm²
k= pg. 72 is 45	1.3	
T_c=	0.377	N/mm²

T_c>T_v

SAFE OK

40.2.1.1 For solid slabs, the design shear strength for concrete shall be $\tau_c k$, where k has the values given below:

Overall Depth of Slab, mm	300 or more	275	250	225	200	175	150 or less
k	1.00	1.05	1.10	1.15	1.20	1.25	1.30

NOTE — This provision shall not apply to flat slabs for which 31.6 shall apply.

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13 Deflection check

$(L/d)_{bsc}$=26 | 26

$(L/d)_{Max}=(L/d)_{bsc}$ xK_txK_cxK_f | 52 K_t=fig 4

L/d(act)= 32.6373626

$(L/d)_{max}>(L/d)_{act}$

SAFE OK

f_s=	220.3565
K_t=	2
K_c=	1
K_f=	1

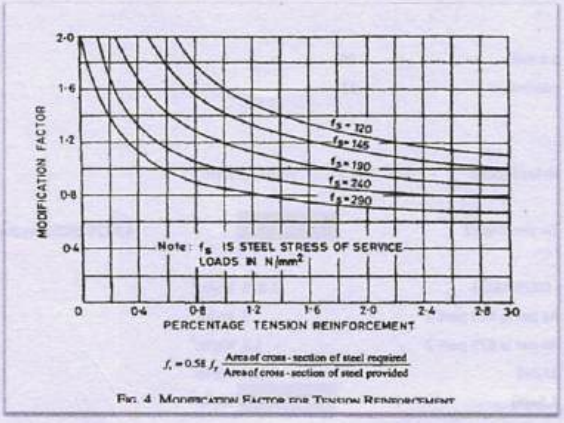


FIG. 4 MODIFICATION FACTOR FOR TENSION REINFORCEMENT

2.5 CONTROL OF DEFLECTION

2.5.1 The deflection of beams and would generally be within permissible if the ratio of span to effective depth member does not exceed the values o in accordance with 22.2.1 of the Co following basic values of span to e depth are given:

Simply supported	20
Continuous	26
Cantilever	7

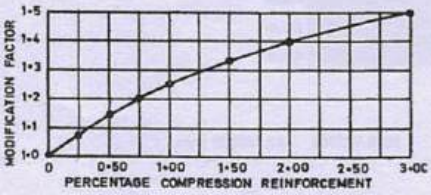


FIG. 5 MODIFICATION FACTOR FOR COMPRESSION REINFORCEMENT

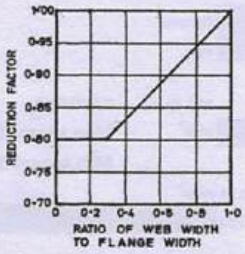


FIG. 6 REDUCTION FACTORS FOR RATIOS OF SPAN TO EFFECTIVE DEPTH FOR FLANGED BEAMS

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Table 26 Bending Moment Coefficients for Rectangular Panels Supported on Four Sides with Provision for Torsion at Corners

(*Clauses* D-1.1 *and* 24.4.1)

Case No.	Type of Panel and Moments Considered	Short Span Coefficients α_x (Values of l_y/l_x)								Long Span Coefficients α_y for All Values of l_y/l_x
		1.0	1.1	1.2	1.3	1.4	1.5	1.75	2.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	*Interior Panels:*									
	Negative moment at continuous edge	0.032	0.037	0.043	0.047	0.051	0.053	0.060	0.065	0.032
	Positive moment at mid-span	0.024	0.028	0.032	0.036	0.039	0.041	0.045	0.049	0.024
2	*One Short Edge Continuous:*									
	Negative moment at continuous edge	0.037	0.043	0.048	0.051	0.055	0.057	0.064	0.068	0.037
	Positive moment at mid-span	0.028	0.032	0.036	0.039	0.041	0.044	0.048	0.052	0.028
3	*One Long Edge Discontinuous:*									
	Negative moment at continuous edge	0.037	0.044	0.052	0.057	0.063	0.067	0.077	0.085	0.037
	Positive moment at mid-span	0.028	0.033	0.039	0.044	0.047	0.051	0.059	0.065	0.028
4	*Two Adjacent Edges Discontinuous:*									
	Negative moment at continuous edge	0.047	0.053	0.060	0.065	0.071	0.075	0.084	0.091	0.047
	Positive moment at mid-span	0.035	0.040	0.045	0.049	0.053	0.056	0.063	0.069	0.035
5	*Two Short Edges Discontinuous:*									
	Negative moment at continuous edge	0.045	0.049	0.052	0.056	0.059	0.060	0.065	0.069	—
	Positive moment at mid-span	0.035	0.037	0.040	0.043	0.044	0.045	0.049	0.052	0.035
6	*Two Long Edges Discontinuous:*									
	Negative moment at continuous edge	—	—	—	—	—	—	—	—	0.045
	Positive moment at mid-span	0.035	0.043	0.051	0.057	0.063	0.068	0.080	0.088	0.035
7	*Three Edges Discontinuous (One Long Edge Continuous):*									
	Negative moment at continuous edge	0.057	0.064	0.071	0.076	0.080	0.084	0.091	0.097	—
	Positive moment at mid-span	0.043	0.048	0.053	0.057	0.060	0.064	0.069	0.073	0.043
8	*Three Edges Discontinuous (One Short Edge Continuous):*									
	Negative moment at continuous edge	—	—	—	—	—	—	—	—	0.057
	Positive moment at mid-span	0.043	0.051	0.059	0.065	0.071	0.076	0.087	0.096	0.043
9	*Four Edges Discontinuous:*									
	Positive moment at mid-span	0.056	0.064	0.072	0.079	0.085	0.089	0.100	0.107	0.056

TABLE 3 FLEXURE — REINFORCEMENT PERCENTAGE, p_t FOR SINGLY REINFORCED SECTIONS

480
500
f_{ck}
25

f_{ck} = 25 N/mm²

M_u/bd^2, N/mm²	f_y, N/mm²					M_u/bd^2, N/mm²	f_y, N/mm²				
	240	250	415	480	500		240	250	415	480	500
0·30	0·146	0·140	0·084	0·073	0·070	2·55	1·435	1·358	0·818	0·708	0·679
0·35	0·171	0·164	0·099	0·085	0·082	2·60	1·448	1·390	0·837	0·724	0·695
0·40	0·195	0·188	0·113	0·098	0·094	2·65	1·462	1·422	0·857	0·741	0·711
0·45	0·220	0·211	0·127	0·110	0·106	2·70	1·515	1·455	0·876	0·758	0·727
0·50	0·245	0·236	0·142	0·123	0·118	2·75	1·549	1·487	0·896	0·775	0·744
0·55	0·271	0·260	0·156	0·135	0·130	2·80	1·584	1·520	0·916	0·792	0·760
0·60	0·296	0·284	0·171	0·148	0·142	2·85	1·618	1·554	0·936	0·809	0·777
0·63	0·321	0·309	0·186	0·161	0·154	2·90	1·653	1·587	0·956	0·827	0·794
0·70	0·347	0·333	0·201	0·174	0·167	2·95	1·689	1·621	0·977	0·844	0·811
0·75	0·373	0·358	0·216	0·186	0·179	3·00	1·724	1·655	0·997	0·862	0·828
0·80	0·399	0·383	0·231	0·199	0·191	3·05	1·760	1·690	1·018	0·880	0·845
0·85	0·425	0·408	0·246	0·212	0·204	3·10	1·797	1·725	1·039	0·898	0·863
0·90	0·451	0·433	0·261	0·225	0·216	3·15	1·834	1·760	1·061	0·917	0·880
0·95	0·477	0·458	0·276	0·239	0·229	3·20	1·871	1·795	1·082	0·936	0·898
1·00	0·504	0·483	0·291	0·252	0·242	3·25	1·909	1·832	1·104	0·954	0·916
1·05	0·530	0·509	0·307	0·265	0·255	3·30	1·947	1·869	1·126	0·973	0·935
1·10	0·557	0·535	0·322	0·279	0·267	3·32	1·962	1·884	1·135	0·981	0·942
1·15	0·584	0·561	0·338	0·292	0·280	3·34	1·978	1·899	1·144	0·989	
1·20	0·611	0·587	0·353	0·306	0·293	3·36	1·993	1·914	1·153		
1·25	0·638	0·613	0·369	0·319	0·306	3·38	2·009	1·929	1·162		
1·30	0·666	0·639	0·385	0·333	0·320	3·40	2·025	1·944	1·171		
1·35	0·693	0·666	0·401	0·347	0·333	3·42	2·040	1·959	1·180		
1·40	0·721	0·692	0·417	0·360	0·346	3·44	2·056	1·974	1·189		
1·45	0·749	0·719	0·433	0·374	0·359	3·46	2·072	1·989			
1·50	0·777	0·746	0·449	0·388	0·373	3·48	2·088	2·005			
1·55	0·805	0·773	0·466	0·401	0·387	3·50	2·104	2·020			
1·60	0·834	0·800	0·482	0·417	0·400	3·52	2·120	2·036			
1·65	0·862	0·828	0·499	0·431	0·414	3·54	2·137	2·051			
1·70	0·891	0·856	0·515	0·446	0·428	3·56	2·153	2·067			
1·75	0·920	0·883	0·532	0·460	0·442	3·58	2·170	2·083			
1·80	0·949	0·911	0·549	0·475	0·456	3·60	2·186	2·099			
1·85	0·979	0·940	0·566	0·489	0·470	3·62	2·203	2·115			
1·90	1·009	0·968	0·583	0·504	0·484	3·64	2·219	2·131			
1·95	1·038	0·997	0·601	0·519	0·498	3·66	2·236	2·147			
2·00	1·068	1·026	0·618	0·534	0·513	3·68	2·253	2·163			
2·05	1·099	1·055	0·635	0·549	0·527	3·70	2·270	2·179			
2·10	1·129	1·084	0·653	0·565	0·542	3·72	2·287	2·196			
2·15	1·160	1·114	0·671	0·580	0·557	3·74	2·304				
2·20	1·191	1·143	0·689	0·596	0·572						
2·25	1·222	1·173	0·707	0·611	0·587						
2·30	1·254	1·204	0·725	0·627	0·602						
2·35	1·285	1·234	0·743	0·643	0·617						
2·40	1·317	1·265	0·762	0·659	0·632						
2·45	1·350	1·296	0·781	0·675	0·648						
2·50	1·382	1·327	0·799	0·691	0·663						

NOTE — Blanks indicate inadmissible reinforcement percentage (*see* Table 5).

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Table 19 Design Shear Strength of Concrete, τ_c, N/mm²

(*Clauses* 40.2.1, 40.2.2, 40.3, 40.4, 40.5.3, 41.3.2, 41.3.3 *and* 41.4.3)

$100\frac{A_s}{bd}$	Concrete Grade					
	M 15	M 20	M 25	M 30	M 35	M 40 and above
(1)	(2)	(3)	(4)	(5)	(6)	(7)
≤ 0.15	0.28	0.28	0.29	0.29	0.29	0.30
0.25	0.35	0.36	0.36	0.37	0.37	0.38
0.50	0.46	0.48	0.49	0.50	0.50	0.51
0.75	0.54	0.56	0.57	0.59	0.59	0.60
1.00	0.60	0.62	0.64	0.66	0.67	0.68
1.25	0.64	0.67	0.70	0.71	0.73	0.74
1.50	0.68	0.72	0.74	0.76	0.78	0.79
1.75	0.71	0.75	0.78	0.80	0.82	0.84
2.00	0.71	0.79	0.82	0.84	0.86	0.88
2.25	0.71	0.81	0.85	0.88	0.90	0.92
2.50	0.71	0.82	0.88	0.91	0.93	0.95
2.75	0.71	0.82	0.90	0.94	0.96	0.98
3.00 and above	0.71	0.82	0.92	0.96	0.99	1.01

NOTE — The term A_s is the area of longitudinal tension reinforcement which continues at least one effective depth beyond the section being considered except at support where the full area of tension reinforcement may be used provided the detailing conforms to 26.2.2 and 26.2.3

d

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What land actually changed hands for around this plot, taken from the registered deeds.
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What it is worth and what it costs to register.

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