Verified RealEstate™

Your trusted partner for buying, selling, and managing property, ensuring hassle-free service with 100% transparency.

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

hello@verified.realestate
+91 9996 12 9996

Official Property Record

Digitally Verified Record - Powered by Verified RealEstate™



BURO ENGINEERS (I) PRIVATE LTD.,
Civil & Structural Consultants
New No.31, (Old No.14), Besant Avenue Road, Adyar, Chennai - 600 020, TN, India. Tel : 91 44 2491 2755
e-mail : buroindia@buroengineers.in, admin@buroengineers.in
CIN : U45201TN2005PTC055334

STABILITY CERTIFICATE

The detailed engineering and structure design of the proposed building comprising of Stilt floor part (parking) and Ground floor part (Lobby, gym, Transformer room, Store room, Meter room) + 1st floor to 7th floors (Residential Units) at Old No.10, New door No.19, Padmavathiyar Salai, Jeypore Colony, Gopalapuram, Chennai - 600 086 Comprised in T.S.No.67/83, Block No.04 of Mylapore Village within the limits of Greater Chennai Corporation has been done by us based on the report of the geotechnical investigation (soil test) done by Geo Marine Consultants (P) Ltd, Report No. GMC-CCCL-GT-066 Dated 28-07-2008 and considering the functional requirements of the building.

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

We further certify that:

i. The minimum grade of concrete is M30

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 Code 875 and the design of earthquake resistant structure as per IS Code 1893:2016

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

Encl.: Structural Design Calculations

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

PROPOSED RESIDENTIAL DEVELOPMENT AT GOPALAPURAM, CHENNAI

DESIGN BRIEF REPORT FOR STRUCTURAL SERVICES

Client:	ASTA	**M/s. ASTA CONSTRUCTION,** CHENNAI.
Structural Consultant:		**BURO ENGINNERS (I) PVT LTD** Civil & Structural Consultants New No.31, (old No. 14), Besant Avenue, Adyar, Chennai 600 020.

DOCUMENT NO : STR - DBR/Rev-R0

DATE	ISSUE	PREPARED	CHECKED	REVISION
05-04-2024	Report	S.M	P.J	R0

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

CONTENTS

		PAGE NO.
1	PROJECT INFORMATION	3
1.1	Introduction	3
1.2	Facilities	3
2	STORY INFORMATION	3
2.1	Floor to Floor height	3
3	SITE DISCRIPTION	4
3.1	Ground Conditions	5
4	CODE OF PRACTICES	5
4.1	Code, Standards & Reference	5
5	FIRE RATING	7
6	STRUCTRAL SYSTEM	7
7	FOUNDATION	7
8	MATERIAL GRADES	8
8.1	Concrete	8
8.2	Reinforcement	9
9	DESIGN OF LOADINGS	9
9.1	Material Density	9
9.2	Superimposed Dead & Live Loads	10
9.3	Seismic Design Parameters	11
9.4	Wind Loads	14
10	LOAD COMBINATIONS	15
11	SERVICIBILITY LIMITS	16
12	STRUCTURAL ANALYSIS & DESIGN APPROACH	17
13	COMPUTER PROGRAMS	19

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

1.0 PROJECT INFORMATION

1.1 Introduction:

This Design Brief Report (DBR) is for the Proposed Residential Development at Goplapuram, Chennai, for M/s. ASTA Construction.

The proposed residential building comprises Ground floor + 7 Upper floors.

This report provides the information on Codes of Practice, Design loading, Material Strength considered for the Design and Analysis of the building. In addition this report includes Structural system, Foundation system, Method statement of structural analysis which will be adopted for design and analysis for the building.

1.2 Facilities:

The proposed building, HAJ Jeypore Colony Apartments, is primarily a residential building housing apartments at the superstructure and car parking facilities at the ground floor level.

2.0 STORY INFORMATION

Story	Facilities
Ground Floor	Car Parking, Gym and Electrical Room
1st to 7th Floor	Each Floor Comprises of 2 Residential Units, 6th and the 7th floor comprises of duplex units.
Terrace	Open terrace, OHT & LMR

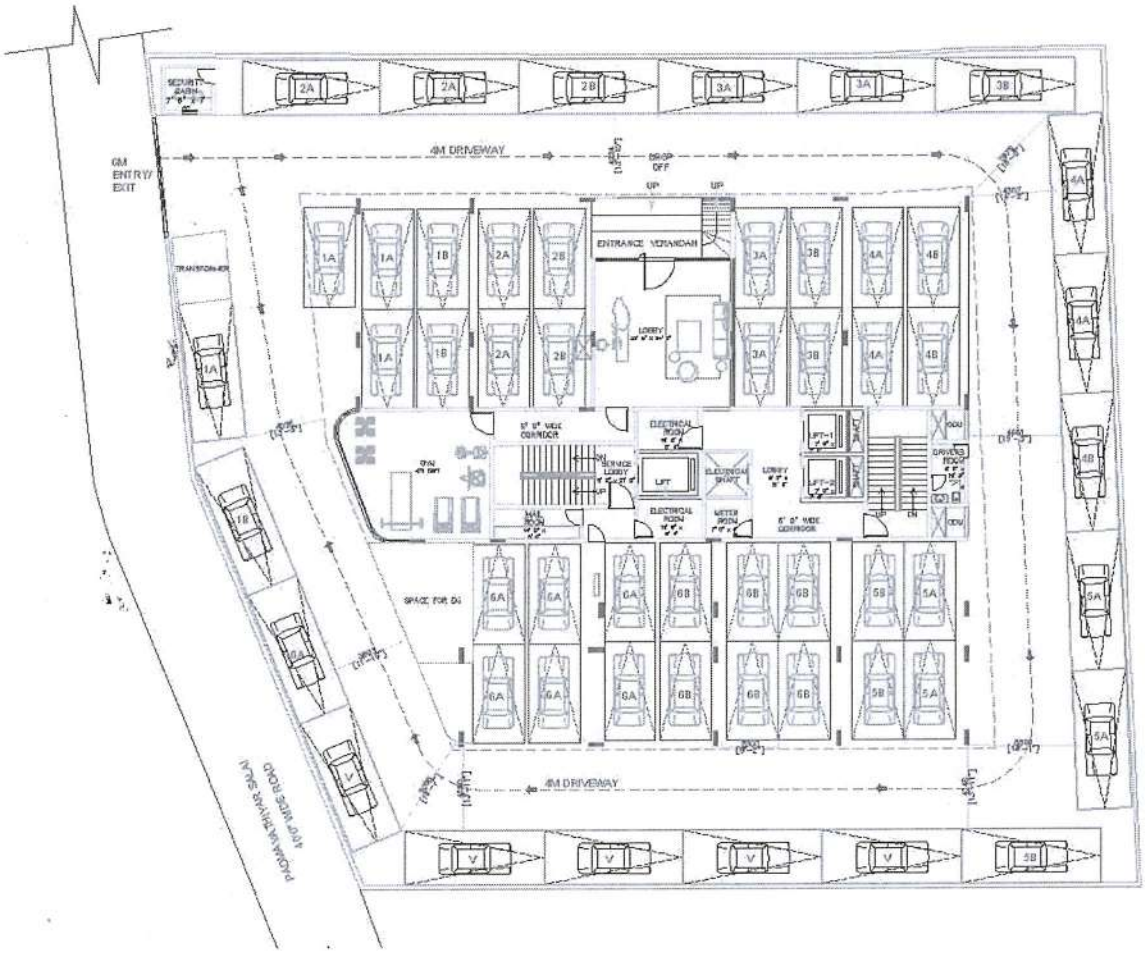
2.1 Floor to Floor Height:

Ground Floor	3.75m
1st to Terrace	3.75m

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

3.0 SITE DISCRIPTION

The site is located adjacent to a major roads and can be accessed from Padmavathiyar Salai from the West.



SITE PLAN

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

3.1 Ground Condition:

Based on our observations from the previous soil report (GMC-CCCL-GT-066) from Geo Marine Consultants (P) Ltd., Chennai the top filled up layer is a very stiff sandy silt clay with moderate to high swelling properties, and it is ideal to provide soil nailing with shotcreting the exposed surface.

The site consist of Pile Foundation from the existing building of 2B+S+4 Story. The existing piles of diameter 600mm and 800mm which starts at 7.0m below EGL. The site is bounded by Contiguous Bored Pile on all four sides.

4.0 CODES OF PRACTICE

The relevant Indian Standard codes below are followed.

4.1 Code, Standards and References:

All design of structures shall comply with the requirements specified in the following.

a. Relevant Indian Standard Codes of Practice
b. National Building Code.
c. Local Building regulations.
d. Other relevant International codes where required.

All applicable latest edition of codes and standards will be referred and adopted in the analysis of structures and the design and detailing of structural members. All structural elements design shall be carried out primarily based on. Indian Standards and Codes with latest revision, with amendments if any, as on date.In addition, other international codes and standards shall also be referred when required and relevant.

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

CODE	DESCRIPTION
IS 875(Part 1) 1987	Code of practice for Design Loads (other than earthquake) for buildings and structures - Unit weights of buildings materials and stored material
IS 875 (Part 2) 1987	Code of practice for Design Loads (other than earthquake) for buildings and structures - Imposed Loads

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

IS 875 (Part 3) 2015	Code of practice for Design Loads (other than earthquake) for buildings and structures – Wind Loads
IS 875 (Part 5) 1987	Code of practice for Design Loads (other than earthquake) for buildings and structures – Special Loads and load combinations
IS 456 – 2000	Code of Practice for Plain and Reinforced Concrete
IS 16700 – 2017	Criteria for Structural Safety of Tall Concrete Buildings
IS 1343 – 2012	Code of Practice for Prestressed Concrete
IS 1893 – 2016	Criteria for earthquake resistant design of structures
IS 4326 –1993	Code of practice for Earthquake Resistant Design and Construction of Buildings
IS 3370 – 2009	Code of Practice for Concrete structures for the storage of liquids
IS 1904-1995	Code of Practice for design and construction of Foundation
IS 1080 – 1997	Code of Practice for design and construction of shallow Foundation
IS 2950 - 1998	Code of Practice for design and construction of Raft Foundation
IS 800 – 2007	Code of practice for General Construction in steel
BS 8110 : 1997	Plain and reinforced concrete-code of practice(British standard)
ACI 318	Plain and reinforced concrete-code of practice (American standard)
IS 13920: 2016	Code of practice for ductile detailing of reinforced concrete structures subjected to seismic forces

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

SP24	Explanatory Hand book on Indian standard code of practice
SP34	Handbook on concrete reinforcement and detailing

5.0 COVER AND FIRE RATING

Cover to reinforcement considered for various elements

Structural element	Exposure condition	Fire rating in hours	Cover	
Raft	Severe		50 (Bottom)	50 (Top)
Column		2	40	
Shear wall		2	30	
Beam (Simply supported)		2	40	
Beam (Continuous)		2	30	
Slab (Simply supported)		2	35	
Slab (Continuous)		2	25	

6.0 STRUCTURAL SYSTEM

Floor system: The structural Floor system for the super structure is R.C.C Beam with R.C.C slab. The slab thicknesses are to be 125mm/150mm/200mm. And for the Sub structure floor system is RCC Beam and slab system.

Lateral load resisting system:

Ductile RC structural wall system.

7.0 FOUNDATION

The following are inferred from the Geo-technical investigation report.

The proposed development plan seeks to utilize the existing pile foundation while assessing the need for any additional piles for structural enhancement to accommodate the new structure's requirements. The Basements of the existing building will be undisturbed and the floors will be filled with soil with high level of compaction. The

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

additional pile will be starting from the ground level and will be bored to a depth of 19.0m below EGL or until moderately weathered rock is observed.

We infer from the soil report that pile foundation is recommended with pile load carrying capacity as

Length of Pile below EGL (m)	Dia of Pile (mm)	Safe Vertical Load Carrying Capacty (kN)
19.0m	600	1600
	800	2800

Thus the proposed type of foundation is Pile Foundation resting on Raft.

8.0 MATERIAL GRADES

Materials specified will confirm to the latest edition of the relevant Indian Standards. Specifications for materials will include for sampling and testing as stipulated in the design standards. Detailed material specifications will be included in the Technical specifications.

8.1 Concrete

Durability provisions for concrete structures shall be as per 'Severe' conditions of environment in accordance with IS 456:2000.

Keeping the durability and structural requirements, the proposed Compressive Strength of structural concrete at 28 days, for various structural elements/members are as indicated in the below table

Structural Elements		Compressive Strength at 28 days	Concrete grade
Minimum grade of concrete for any structural member is considered as		30 N/Sq.mm	M30
All Structural concrete for :			
Columns, Shear walls & Core walls	Foundation to Terrace	35 N/Sq.mm	M35
Pile and Raft		30 N/Sq.mm	M30
Beams and slabs	Ground to Terrace	30 N/Sq.mm	M30
Overhead Water Tank, UG Water Tank, STP & Pump room		30 N/Sq.mm	M30

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

8.2 Reinforcement

All reinforcement shall confirm to IS: 1786-2008 having minimum yield strength of 550 N/sq mm (Fe 550).

Youngs' Modulus (Es)	200,000N/Sq.mm
Yield Stress (fy)	550 N/Sq.mm
Diameters {in mm} (d)	8, 10, 12, 16, 20, 25 & 32
Density ('Y)	78.5 kN/cum

9.0 DESIGN OF LOADINGS

9.1 Material Density

Unit weight of materials are as per IS: 875 (Part-I) 1987.

Unit weight of concrete	-	25 KN / Cum.
Unit weight of steel	-	78.5 KN / Cum.
Screed concrete	-	24 KN / Cum.
Unit weight of dry soil	-	18 KN / Cum.
Unit weight of saturated soil	-	20 KN / Cum.
Unit weight of Glass	-	27.2 KN / Cum.
Unit weight of water	-	9.81 KN / Cum.
Aerated block masonry	-	8.65 KN / Cum.
Light weight concrete filling	-	16.0 KN / Cum

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

9.2 Superimposed Dead Loads and Live Loads

The following are the imposed loads such as SDL and LL to be considered for the design of floor system depending usage floor. In addition to these loads, self-weight of structural elements will be considered depending member sizes shown in the floor plans.

Usage	SDL (kN/m2)				LL (kN/m2)
	Partition Wall	Services	Finishes	Total	
Staircase	0.00	0.00	3.00	3.00	3.00
Toilet	0.00	0.00	3.60	3.60	2.00
Bed, Living, Dinning & Kitchen	0.00	0.00	1.20	1.20	2.00
Balcony	0.00	0.00	3.60	3.60	3.00
Lobby & Corridor	0.00	0.00	1.20	1.20	3.00
Terrace	0.00	0.00	3.60	3.60	4.00
LMR	0.00	0.00	3.60	3.60	10.00
OHT	0.00	10xWater Height	1.80	0.00	0.00
Landscape	0.00	12.60(0.15x24+0.45x 20=12.6)		12.60	2.00

Permissible reduction in imposed load on each floor is considered for design of columns and footings as per IS 875 Part (2).

a) **SUPER IMPOSED DEAD LOADS (kN/m²)**

Floor Finishes of 50 mm thickness have been considered on all the typical floors, toilet 150mm and balcony-150mm

TERRACES (Load in kN/m2)

Waterproofing + Screed 3.60 (0.15(average floor finish.) x 24=3.60)

b) **SELF-WEIGHT OF LIGHT WEIGHT WALLS (kN/m²)**

Infill walls (20mm for External wall & internal wall 15mm plastering on

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Either side)

(i)	200mm thick light weight block wall	2.60kN/m^2
(ii)	100mm thick light weight block wall	1.60kN/m^2

Water Tank — Water height x 10

9.3 Seismic Design Parameters:

Design of lateral force under seismic condition shall be as per IS1893 – 2016. Total lateral force (base shear) of the building shall be estimated at ground floor level as per clause 7.2.1 of IS1893 – 2016 which provides by

Base shear Vb = Ah W

Ah is horizontal seismic coefficient and W is seismic weight of the building, Horizontal seismic coefficient depends on location of the building (Zone factor Z), usage of the building (Importance factor, I), building lateral resisting system (Response reduction factor, R) and design acceleration coefficient (Sa /g) which is based on subsoil condition and fundamental natural period (Ta).

For the proposed development is for commercial use. Considering it, the seismic weight is summation of total dead load and 25% of live load where live load is equal and less than 3 kN/sq.m and 50% of live load greater that 3 kN/sq.m

1) The lateral load resisting system of the buildings is ductile shear wall. Confirming to this all the RC Ductile Walls are designed for 100% Lateral Loads, also the Columns are independently designed for lateral loads based on their lateral stiffness.
2) As per IS 1893:2016 code, Chennai lies in Zone III with Zone factor Z = 0.16
3) The Design Base Shear is given by V_b = Ah x W, Where Ah = Z / 2 x I/R x S_a/g

   I = Importance Factor = 1.2

   Soil Type 1 (Rock or Dense soil)

   R (Response reduction factor) = 4.0.

   Sa/g = Average Response acceleration coefficient

   For the building height with reference to IS: 1893-2016, since the buildings are well connected with basement walls so for the time period calculation the heights are considered ground floor to roof that is 30m.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

With reference to IS 1893 - 2016 clause 7.6.2 (b) the time period for building each directions are as follows,

The fundamental natural period (Ta) for building,

c) All other buildings:

$$T_a = \frac{0.09h}{\sqrt{d}}$$

where

h = height of building, as defined in **7.6.2**(a), in m; and

d = base dimension of the building at the plinth level along the considered direction of earthquake shaking, in m.

where,

Base Dimension along X Direction, dx = 33.48m (Longer length)

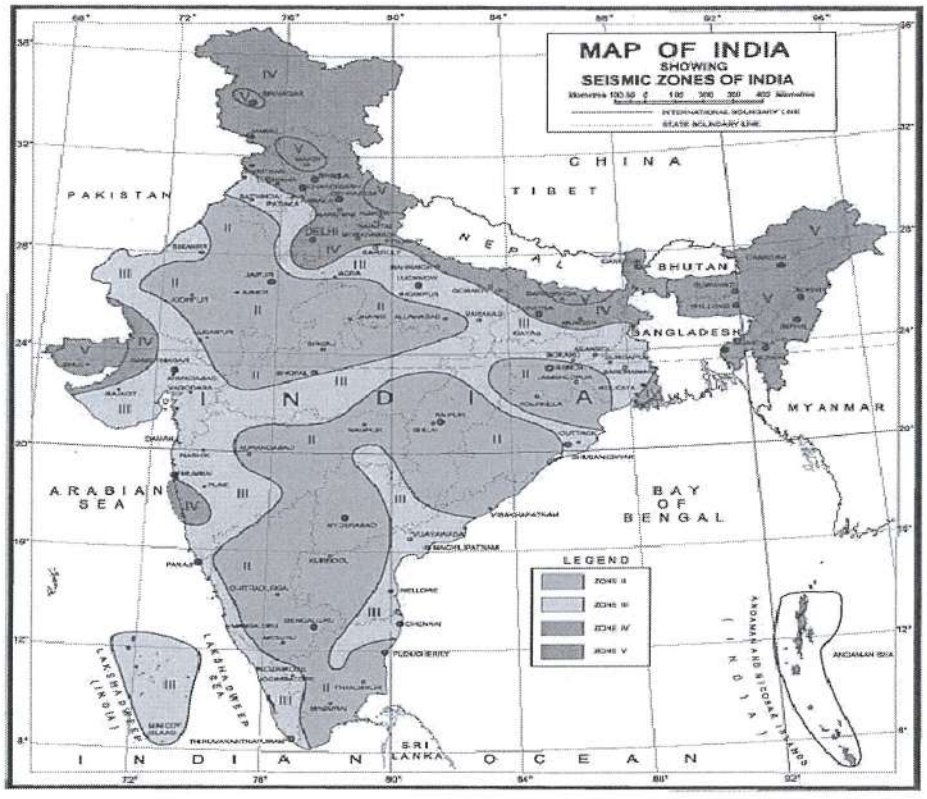
Base Dimension along Y Direction, dy = 27.46m (Longer length)

H = 30m

T_a = 0.757 (along X direction)

T_a = 0.909 (along Y direction)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631



SEISMIC ZONE CLASSIFICATION FROM IS 1893: 2016

Dynamic Analysis

Response spectrum method of Dynamic Analysis carried out with following parameters pertaining to dynamic analysis.

Number of modes Considered : 10 Numbers (Min)
Modal Combination Method Used : Complete Quadratic combination (CQC).
Directional Combination Method used : Square root of the sum of Square (SRSS).
Modal case type : Ritz vector Method
Cut off frequency in case response spectrum method of analysis - 33 Hz.
Mass participation is 90% as per our analysis
Damping 5%is used for seismic analysis
Dynamic analysis of building is carried out. The members are designed accordingly.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

9.5 Wind Loads

The wind pressure shall be calculated based on the basic wind speed and other provisions laid in IS 875 Part (3) - 2015

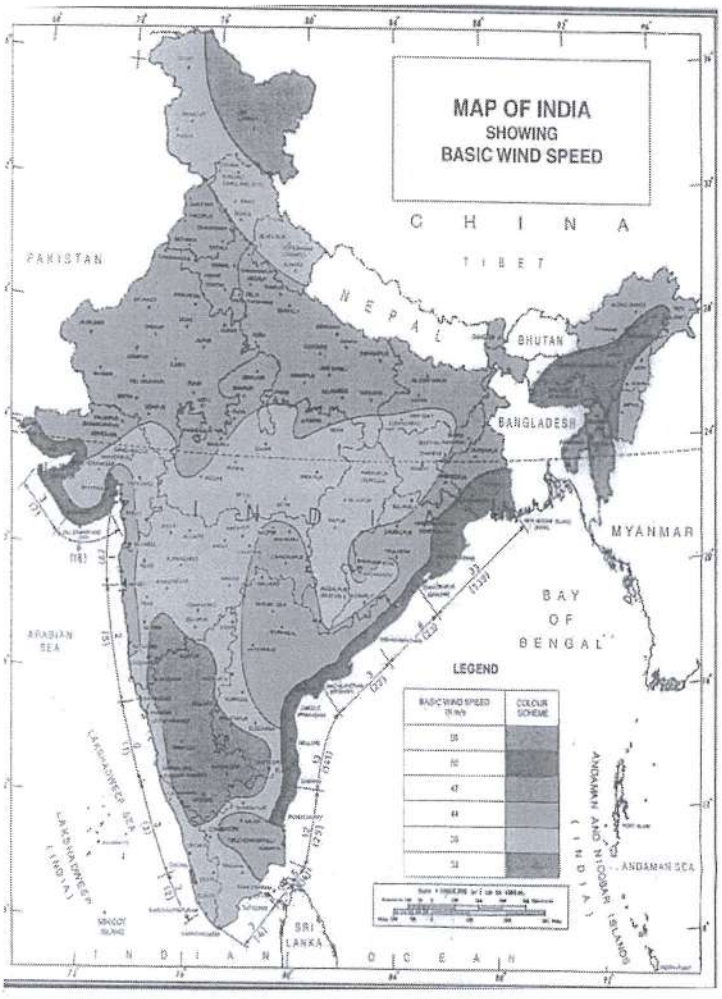
Design Wind Speed, VZ			— Vbxk1x k2x k3x k4
Vb	→	Basic Wind velocity for Chennai	— 50m/s
K1	→	Risk coefficient for all general buildings	— 1.00
k2	→	Terrain category 2	— To suit the height of the structure for terrain
k2		(H=30m -GF to Roof)	— 1.12
k3	→	Topography factor	— 1.00
k4	→	Importance Factor for cyclonic Region	— 1.00

Based on the above,

Max. design wind speed (VZ)	(Vbxk1x k2x k3x k4)	= 56m/s
Max. design wind pressure (Pz)	— 0.6 x Vz2	= 1881.6 N/m2
Design wind pressure: pd	= Pz x Kax Kd x Kc	= 1371.68 N/m2

Kd	→ Wind directionality factor	— 0.90
ka	→ Area averaging factor	— 0.90
Kc	→ Combination factor	— 0.90

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631



INDIAN WIND SPEED CLASSIFICATION FROM IS 875 PART (III)

10.0 LOAD COMBINATION

The various loads combinations used for design in accordance with IS 1893-2016 are as follows:

1. 1.5 (DL + LL)
2. 1.2 (DL + LL + SPECX)
3. 1.2 (DL + LL + SPECY)
4. 1.2 (DL + LL ± WindX)
5. 1.2 (DL + LL ± WindY)
6. 1.5 (DL + SPECX)
7. 1.5 (DL + SPECY)
8. 1.5 (DL ± WindX)
9. 1.5 (DL ± WindY)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

10. 0.9DL + 1.5SPECX
11. 0.9DL + 1.5SPECY
12. 0.9DL ± 1.5WindX
13. 0.9DL ± 1.5WindY

The various service loads combinations of structure as per IS 456 are as follows

14. 1.0DL +1.0 LL
15. 1.0DL + 1.0SPECX
16. 1.0DL + 1.0SPECY
17. 1.0DL ± 1.0WindX
18. 1.0DL ± 1.0WindY
19. 1.0DL ± 1.0TEMP
20. 1.0DL + 0.8LL + 0.8SPECX
21. 1.0DL + 0.8LL + 0.8SPECY
22. 1.0DL + 0.8LL ± 0.8WindX
23. 1.0DL + 0.8LL ± 0.8WindY

Where,
DL - Dead load,
LL - Live load
Wind X- Wind load in x - direction
Wind Y- Wind load in y-direction
SPECX- Earthquake load in x-direction
SPECY - Earthquake load in y-direction
TEMP - Temperature load
AL -Accidental Load (such as fire tender load)

11.0 SERVICIBILITY LIMITS

11.1 Lateral Deflection (Wind)

Overall Deflection < Height/500
Storey Deflection < Storey height/500

11.2 Lateral Deflection (Seismic)

Overall Drift < H / 250
Storey Drift < 0.004 times storey height

11.3 Vertical Deflection of Beams and Slabs due to Gravity Loads

Total Deflection (DL + LL) < Span/250

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Deflection including the effects of Temperature, Creep and Shrinkage Occurring after erection of partitions and the application of finishes < Span/350 or 20mm whichever is less.

12.0 STRUCTURAL ANALYSIS AND DESIGN APPROACH

Computer-aided analysis using finite element method (FEM) shall be carried out for the design of structural elements. For 3D or 2D structural frame analysis latest version of software ETABS or SAFE shall be used, Prokon, RCDC calculations for manual design of elements and verified in-house spreadsheets will be used for the design of reinforced concrete (RC) and steel elements in consideration of flexure, shear and axial forces.

Assumptions for 3D model analysis using ETABS

Column: Frame Element
RC Wall: Wall (Shell) Element
Beam Element: Frame Element
Slab: Shell Element

The following are general parameters adopted in the analysis and design,
Modulus of Elasticity of Concrete -5000$\sqrt{}$fck
Consideration of Diaphragm - Semi Rigid Diaphragm.
Slab/Wall element considered as Shell element

Stiffness modification factors are adopted in the analysis as per IS -16700-2017, Table.6.

Table 6 Cracked RC Section Properties

(Clause 7.2)

Sl No.	Structural Element	Un-factored Loads		Factored Loads	
		Area	Moment of Inertia	Area	Moment of Inertia
(1)	(2)	(3)	(4)	(5)	(6)
i)	Slabs	1.0 A_g	0.35 I_g	1.00 A_g	0.25 I_g
ii)	Beams	1.0 A_g	0.7 I_g	1.00 A_g	0.35 I_g
iii)	Columns	1.0 A_g	0.9 I_g	1.00 A_g	0.70 I_g
iv)	Walls	1.0 A_g	0.9 I_g	1.00 A_g	0.70 I_g

The following parameters and methods are adopted in creating ETABS 3D model for the buildings and design of structural elements.

- ✓ The 3D ETABS model generated based on the preliminary floor plans (shuttering drawings) prepared using preliminary sizes.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

- ✓ Sectional properties are assigned to all the structural elements as per the preliminary floor plans (shuttering drawings).
- ✓ External & Internal in fill wall loads are assigned as uniformly distributed line load on beams and as area load if the wall is intending to distribute on slab directly.
- ✓ Slabs are modelled as shell element if floor system and slabs are assigned with horizontal diaphragms.
- ✓ 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/SDL 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-Part-3, 2015.
- ✓ Temperature loads are applied on to the terraces and to areas directly exposed to atmosphere.
- ✓ 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 0.000001 to torsional constant "J". Hence no specific design for Torsion is required for these beams.
- ✓ Concrete cover to reinforcement complied accordance with IS 456-2000, Table.16 & 16A.
- ✓ All vertical wall elements are assigned with auto meshing/manual messing appropriately in order to achieve accuracy in results.

Design approach of structural elements

Shear wall/Column:
RC Structural Walls & Columns which are supporting both vertical loads and lateral forces are designed for the most adverse load conditions and envelope of the forces which will be the maximum for that structural element from the load combinations considered in the 3D Etabs Model.
RCDC a design software will be used to design the element for the maximum forces obtained from the Etabs model analysis results.

Beams: Each Beam will be designed for maximum forces from the 3D analysis using Etabs and RCDC Softwares.

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

Line (Wall) Load & Application: Non load bearing or infill wall loads are calculated aappropriately and Applied as uniformly distributed line load.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

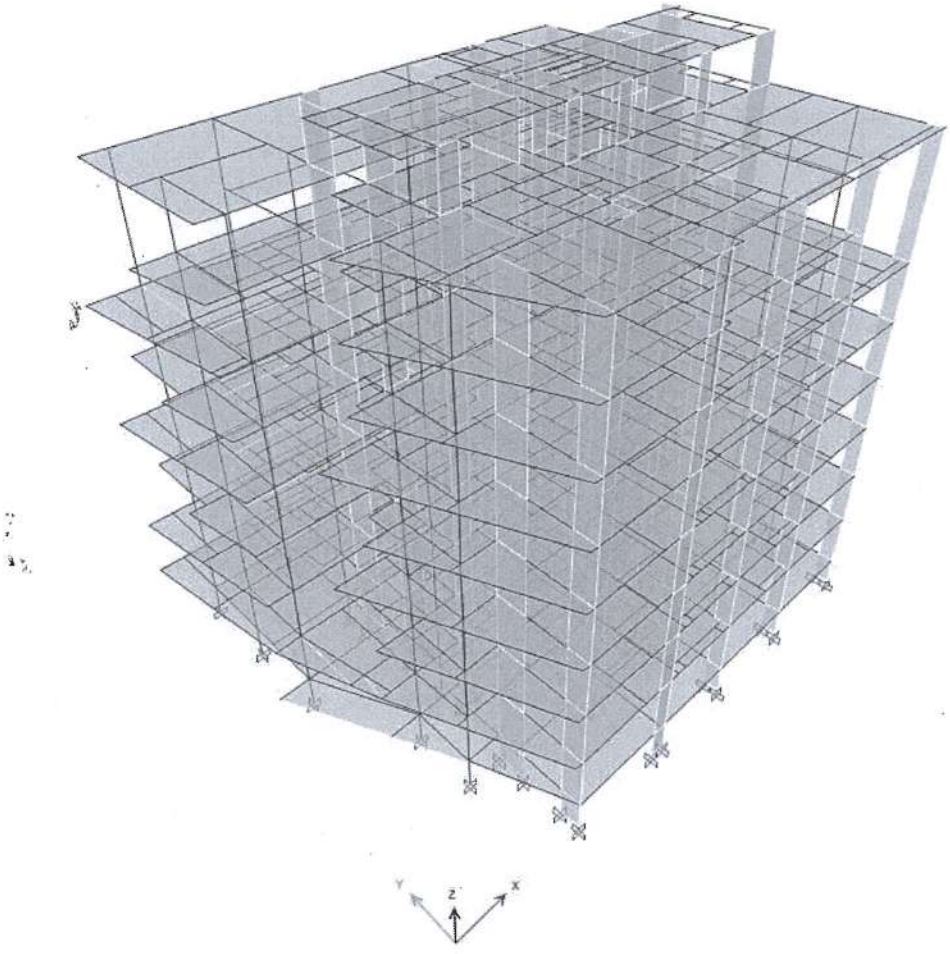
13.0 COMPUTER PROGRAMS

The following Software / spreadsheet to be used to carry out Structural analysis and design.

1.	PROKON Ver 2.3	- Wall & Beam design
2.	ETABS Ver 19.1	- Three Dimensional Program
3.	SAFE Ver 20.0	- Raft Analysis / Strip Analysis
4.	In-House Spreadsheet	- one way/ two way slab design
5.	Rapt-6	- Post Tensioning Analysis & Design
6.	RCDC	- Beam Design, Isolated footing design, Column design and Wall design
STAAD PRO & ETABS		- Structural Steel Design.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS®



ASTA AURA

Model File: ASTA AURO, Revision 0
24-04-2025

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

1 Structure Data

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity.

1.1 Story Data

Table 1.1 - Story Definitions

Tower	Name	Height m	Master Story	Similar To	Splice Story	Splice Height m	Color
T1	Oht & Lmr	3	No	None	No		Yellow
T1	Terrace	3.75	No	None	No		Blue
T1	7	3.75	No	None	No		Cyan
T1	6	3.75	No	None	No		Magenta
T1	5	3.75	No	1	No		Gray8Dark
T1	4	3.75	No	2	No		Green
T1	3	3.75	No	1	No		Red
T1	2	3.75	Yes	None	No		Yellow
T1	1	3.75	Yes	None	No		Blue
T1	GF	2	No	None	No		Cyan

2 Loads

This chapter provides loading information as applied to the model.

2.1 Load Sets

Table 2.1 - Shell Uniform Load Sets

Name	Load Pattern	Load Value kN/m2
Balcony 3.6,2	SDL	3.6
Balcony 3.6,2	Live<3	2
Bed, Living, Dinning, Kitchen 1.8,2	SDL	1.8
Bed, Living, Dinning, Kitchen 1.8,2	Live<3	2
Car Parking 1.8,4	SDL	1.8
Car Parking 1.8,4	Live>3	4
Deck 3.6,3	SDL	3.6
Deck 3.6,3	Live<3	3
DG 3.6,10	SDL	3.6
DG 3.6,10	SDL	10
GF Lobby	SDL	2.4
GF Lobby	Live<3	3
Landscape 12.6,5	SDL	12.6
Landscape 12.6,5	Live>3	5
LMR 3.6,10	SDL	15
LMR 3.6,10	Roof Live	10
Lobby & Corridor 1.8,3	SDL	1.8
Lobby & Corridor 1.8,3	Live<3	3
OHT 15,20	SDL	15
OHT 15,20	Roof Live	20
Service Area 1.8,2	SDL	1.8
Service Area 1.8,2	Live<3	2
Solar Panel 3.6,7	SDL	3.6
Solar Panel 3.6,7	SDL	7
Staircase 3,3	Live<3	3
Staircase 3,3	SDL	4
Terrace 3.6,4	SDL	3.6
Terrace 3.6,4	Roof Live	4
Toilet 150mm Filling3.6,2	SDL	3.6
Toilet 150mm Filling3.6,2	Live<3	2
Utility Room 4.8,2	SDL	4.8
Utility Room 4.8,2	Live<3	2

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

2.2 Auto Seismic Loading

IS 1893:2016 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQ X according to IS 1893:2016, as calculated by ETABS.

Direction and Eccentricity

Direction = X

Structural Period

Period Calculation Method = User Specified

User Period T = 0.858sec

Factors and Coefficients

Seismic Zone Factor, Z [IS Table 3] Z = 0.16

Response Reduction Factor, R [IS Table 9] R = 4

Importance Factor, I [IS Table 8] I = 1.2

Site Type [IS Table 1] = II

Seismic Response

Spectral Acceleration Coefficient, S_a/g [IS 6.4.2] $\frac{S_a}{g} = \frac{1.36}{T}$ $\frac{S_a}{g} = 1.585082$

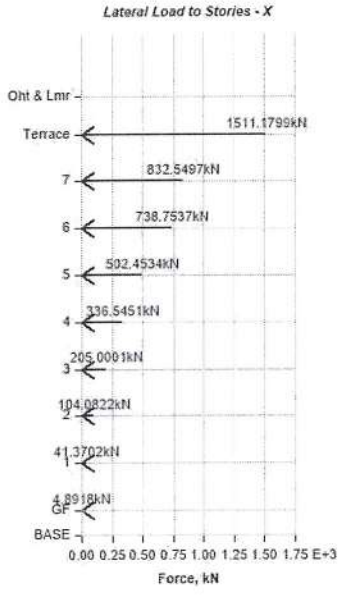
Equivalent Lateral Forces

Seismic Coefficient, A_h [IS 6.4.2] $A_h = \frac{ZI\frac{S_a}{g}}{2R}$

Calculated Base Shear

Direction	Period Used (sec)	W (kN)	V_b (kN)
X	0.858	112423.9275	4276.8263

Applied Story Forces



Story	Elevation	X-Dir	Y-Dir
	m	kN	kN
Oht & Lmr	35	0	0
Terrace	32	1511.1799	0
7	28.25	832.5497	0
6	24.5	738.7537	0
5	20.75	502.4534	0
4	17	336.5451	0
3	13.25	205.0001	0
2	9.5	104.0822	0
1	5.75	41.3702	0
GF	2	4.8918	0
BASE	0	0	0

JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/0
NEW No.31 (OLD No.14), BESANT AVENUE
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

IS 1893:2016 Auto Seismic Load Calculation

This calculation presents the automatically generated lateral seismic loads for load pattern EQ Y according to IS 1893:2016, as calculated by ETABS.

Direction and Eccentricity

Direction = Y

Structural Period

Period Calculation Method = User Specified

User Period T = 0.803sec

Factors and Coefficients

Seismic Zone Factor, Z [IS Table 3] Z = 0.16

Response Reduction Factor, R [IS Table 9] R = 4

Importance Factor, I [IS Table 8] I = 1.2

Site Type [IS Table 1] = II

Seismic Response

Spectral Acceleration Coefficient, S_a/g [IS 6.4.2] $\frac{S_a}{g} = \frac{1.36}{T}$ $\frac{S_a}{g} = 1.693649$

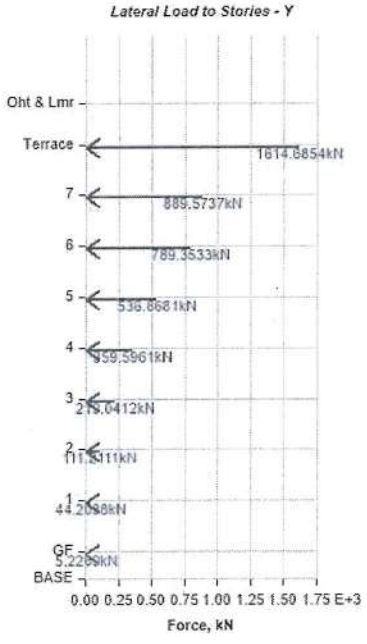
Equivalent Lateral Forces

Seismic Coefficient, A_h [IS 6.4.2] $A_h = \frac{ZI\frac{S_a}{g}}{2R}$

Calculated Base Shear

Direction	Period Used (sec)	W (kN)	V_b (kN)
Y	0.803	112423.9275	4569.7596

Applied Story Forces



Story	Elevation	X-Dir	Y-Dir
	m	kN	kN
Oht & Lmr	35	0	0
Terrace	32	0	1614.6854
7	28.25	0	889.5737
6	24.5	0	789.3533
5	20.75	0	536.8681
4	17	0	359.5961
3	13.25	0	219.0412
2	9.5	0	111.2111
1	5.75	0	44.2038
GF	2	0	5.2269
BASE	0	0	0

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

2.3 Load Combinations

Table 2.4 - Load Combination Definitions

Name	Type	Is Auto	Load Name	Mode	SF	Notes
0.9 D - 1.5 WX	Linear Add	No	Dead		0.9	Dead (min) - Wind [Strength]
0.9 D - 1.5 WX			Wall		0.9	
0.9 D - 1.5 WX			SDL		0.9	
0.9 D - 1.5 WX			W X		-1.5	
0.9 D - 1.5 WX			Temp		1	
0.9 D - 1.5 WY	Linear Add	No	Dead		0.9	Dead (min) - Wind [Strength]
0.9 D - 1.5 WY			Wall		0.9	
0.9 D - 1.5 WY			SDL		0.9	
0.9 D - 1.5 WY			W Y		-1.5	
0.9 D - 1.5 WY			Temp		1	
0.9 D + 1.5 SPECX	Linear Add	No	Dead		0.9	Dead (min) + Response Spectrum [Strength]
0.9 D + 1.5 SPECX			Wall		0.9	
0.9 D + 1.5 SPECX			SDL		0.9	
0.9 D + 1.5 SPECX			Spec X		1.5	
0.9 D + 1.5 SPECX			Temp		1	
0.9 D + 1.5 SPECXW	Linear Add	No	Dead		0.9	Dead (min) + Response Spectrum [Strength]
0.9 D + 1.5 SPECXW			Wall		0.9	
0.9 D + 1.5 SPECXW			SDL		0.9	
0.9 D + 1.5 SPECXW			Spec XW		1.5	
0.9 D + 1.5 SPECXW			Temp		1	
0.9 D + 1.5 SPECY	Linear Add	No	Dead		0.9	Dead (min) + Response Spectrum [Strength]
0.9 D + 1.5 SPECY			Wall		0.9	
0.9 D + 1.5 SPECY			SDL		0.9	
0.9 D + 1.5 SPECY			Spec Y		1.5	
0.9 D + 1.5 SPECY			Temp		1	
0.9 D + 1.5 SPECYW	Linear Add	No	Dead		0.9	Dead (min) + Response Spectrum [Strength]
0.9 D + 1.5 SPECYW			Wall		0.9	
0.9 D + 1.5 SPECYW			SDL		0.9	
0.9 D + 1.5 SPECYW			Spec YW		1.5	
0.9 D + 1.5 SPECYW			Temp		1	
0.9 D + 1.5 WX	Linear Add	No	Dead		0.9	Dead (min) + Wind [Strength]
0.9 D + 1.5 WX			Wall		0.9	
0.9 D + 1.5 WX			SDL		0.9	
0.9 D + 1.5 WX			W X		1.5	
0.9 D + 1.5 WX			Temp		1	
0.9 D + 1.5 WY	Linear Add	No	Dead		0.9	Dead (min) + Wind [Strength]
0.9 D + 1.5 WY			Wall		0.9	
0.9 D + 1.5 WY			SDL		0.9	
0.9 D + 1.5 WY			W Y		1.5	
0.9 D + 1.5 WY			Temp		1	
1.2 (D+L+SPECX)	Linear Add	No	Dead		1.2	Dead + Live + Response Spectrum [Strength]
1.2 (D+L+SPECX)			Live>3		1.2	
1.2 (D+L+SPECX)			Wall		1.2	
1.2 (D+L+SPECX)			SDL		1.2	
1.2 (D+L+SPECX)			Spec X		1.2	
1.2 (D+L+SPECX)			Live<3		1.2	
1.2 (D+L+SPECX)			Temp		1	
1.2 (D+L+SPECXW)	Linear Add	No	Dead		1.2	Dead + Live + Response Spectrum [Strength]
1.2 (D+L+SPECXW)			Live>3		1.2	
1.2 (D+L+SPECXW)			Wall		1.2	
1.2 (D+L+SPECXW)			SDL		1.2	
1.2 (D+L+SPECXW)			Spec XW		1.2	
1.2 (D+L+SPECXW)			Live<3		1.2	
1.2 (D+L+SPECXW)			Temp		1	
1.2 (D+L+SPECY)	Linear Add	No	Dead		1.2	Dead + Live + Response Spectrum [Strength]
1.2 (D+L+SPECY)			Live>3		1.2	
1.2 (D+L+SPECY)			Wall		1.2	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 98[illegible]45631

Name	Type	Is Auto	Load Name	Mode	SF	Notes
1.2 (D+L+SPECY)			SDL		1.2	
1.2 (D+L+SPECY)			Spec Y		1.2	
1.2 (D+L+SPECY)			Live<3		1.2	
1.2 (D+L+SPECY)			Temp		1	
1.2 (D+L+SPECYW)	Linear Add	No	Dead		1.2	Dead + Live + Response Spectrum [Strength]
1.2 (D+L+SPECYW)			Live>3		1.2	
1.2 (D+L+SPECYW)			Wall		1.2	
1.2 (D+L+SPECYW)			SDL		1.2	
1.2 (D+L+SPECYW)			Spec YW		1.2	
1.2 (D+L+SPECYW)			Live<3		1.2	
1.2 (D+L+SPECYW)			Temp		1	
1.2 (D+L+WX)	Linear Add	No	Dead		1.2	Dead + Live + Wind + Snow [Strength]
1.2 (D+L+WX)			Live>3		1.2	
1.2 (D+L+WX)			Wall		1.2	
1.2 (D+L+WX)			SDL		1.2	
1.2 (D+L+WX)			W X		1.2	
1.2 (D+L+WX)			Live<3		1.2	
1.2 (D+L+WX)			Temp		1	
1.2(D+L+WY)	Linear Add	No	Dead		1.2	Dead + Live + Wind + Snow [Strength]
1.2(D+L+WY)			Live>3		1.2	
1.2(D+L+WY)			Wall		1.2	
1.2(D+L+WY)			SDL		1.2	
1.2(D+L+WY)			W Y		1.2	
1.2(D+L+WY)			Live<3		1.2	
1.2(D+L+WY)			Temp		1	
1.2(D+L-WX)	Linear Add	No	Dead		1.2	Dead + Live - Wind + Snow [Strength]
1.2(D+L-WX)			Live>3		1.2	
1.2(D+L-WX)			Wall		1.2	
1.2(D+L-WX)			SDL		1.2	
1.2(D+L-WX)			W X		-1.2	
1.2(D+L-WX)			Live<3		1.2	
1.2(D+L-WX)			Temp		1	
1.2 (D+L-WY)	Linear Add	No	Dead		1.2	Dead + Live - Wind + Snow [Strength]
1.2 (D+L-WY)			Live>3		1.2	
1.2 (D+L-WY)			Wall		1.2	
1.2 (D+L-WY)			SDL		1.2	
1.2 (D+L-WY)			W Y		-1.2	
1.2 (D+L-WY)			Live<3		1.2	
1.2 (D+L-WY)			Temp		1	
1.5 (D+L)	Linear Add	No	Dead		1.5	Dead + Live [Strength]
1.5 (D+L)			Live>3		1.5	
1.5 (D+L)			Wall		1.5	
1.5 (D+L)			SDL		1.5	
1.5 (D+L)			Live<3		1.5	
1.5 (D+L)			Temp		1	
1.5 (D+SPECX)	Linear Add	No	Dead		1.5	Dead + Response Spectrum [Strength]
1.5 (D+SPECX)			Wall		1.5	
1.5 (D+SPECX)			SDL		1.5	
1.5 (D+SPECX)			Spec X		1.5	
1.5 (D+SPECX)			Temp		1	
1.5 (D+SPECXW)	Linear Add	No	Dead		1.5	Dead + Response Spectrum [Strength]
1.5 (D+SPECXW)			Wall		1.5	
1.5 (D+SPECXW)			SDL		1.5	
1.5 (D+SPECXW)			Spec XW		1.5	
1.5 (D+SPECXW)			Temp		1	
1.5 (D+SPECY)	Linear Add	No	Dead		1.5	Dead + Response Spectrum [Strength]
1.5 (D+SPECY)			Wall		1.5	
1.5 (D+SPECY)			SDL		1.5	
1.5 (D+SPECY)			Spec Y		1.5	
1.5 (D+SPECY)			Temp		1	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Name	Type	Is Auto	Load Name	Mode	SF	Notes
1.5 (D+SPECYW)	Linear Add	No	Dead		1.5	Dead + Response Spectrum [Strength]
1.5 (D+SPECYW)			Wall		1.5	
1.5 (D+SPECYW)			SDL		1.5	
1.5 (D+SPECYW)			Spec YW		1.5	
1.5 (D+SPECYW)			Temp		1	
1.5 (D+WX)	Linear Add	No	Dead		1.5	Dead + Wind [Strength]
1.5 (D+WX)			Wall		1.5	
1.5 (D+WX)			SDL		1.5	
1.5 (D+WX)			W X		1.5	
1.5 (D+WX)			Temp		1	
1.5 (D+WY)	Linear Add	No	Dead		1.5	Dead + Wind [Strength]
1.5 (D+WY)			Wall		1.5	
1.5 (D+WY)			SDL		1.5	
1.5 (D+WY)			W Y		1.5	
1.5 (D+WY)			Temp		1	
1.5 (D-WX)	Linear Add	No	Dead		1.5	Dead - Wind [Strength]
1.5 (D-WX)			Wall		1.5	
1.5 (D-WX)			SDL		1.5	
1.5 (D-WX)			W X		-1.5	
1.5 (D-WX)			Temp		1	
1.5 (D-WY)	Linear Add	No	Dead		1.5	Dead - Wind [Strength]
1.5 (D-WY)			Wall		1.5	
1.5 (D-WY)			SDL		1.5	
1.5 (D-WY)			W Y		-1.5	
1.5 (D-WY)			Temp		1	
1.5 D	Linear Add	No	Dead		1.5	Dead [Strength]
1.5 D			Wall		1.5	
1.5 D			SDL		1.5	
1.5 D			Temp		1	
D+L	Linear Add	No	Dead		1	
D+L			Live>3		1	
D+L			Live<3		1	
D+L			Wall		1	
D+L			SDL		1	
D+L			Roof Live		1	
Envelope - Beam Design	Envelope	No	1.5 D		1	
Envelope - Beam Design			1.5 (D+L)		1	
Envelope - Beam Design			1.2 (D+L+WX)		1	
Envelope - Beam Design			1.2(D+L-WX)		1	
Envelope - Beam Design			1.2(D+L+WY)		1	
Envelope - Beam Design			1.2 (D+L-WY)		1	
Envelope - Beam Design			1.5 (D+WX)		1	
Envelope - Beam Design			1.5 (D-WX)		1	
Envelope - Beam Design			1.5 (D+WY)		1	
Envelope - Beam Design			1.5 (D-WY)		1	
Envelope - Beam Design			0.9 D + 1.5 WX		1	
Envelope - Beam Design			0.9 D - 1.5 WX		1	
Envelope - Beam Design			0.9 D + 1.5 WY		1	
Envelope - Beam Design			0.9 D - 1.5 WY		1	
Envelope - Beam Design			1.2 (D+L+SPECX)		1	
Envelope - Beam Design			1.2 (D+L+SPECY)		1	
Envelope - Beam Design			1.5 (D+SPECX)		1	
Envelope - Beam Design			1.5 (D+SPECY)		1	
Envelope - Beam Design			0.9 D + 1.5 SPECX		1	
Envelope - Beam Design			0.9 D + 1.5 SPECY		1	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

COLUMN DESIGN

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

1 Design Data

This chapter provides design data and results.

1.1 Concrete Frame Design

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
Terrace	C9	4	C 300X800 M35	3750	1	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	1996	0.83
Bottom	2905	1.21

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	523.792	70.0409	309.4203	3000	1.5 (D+SPECXW)
Bottom	524.1927	-140.2462	-215.6272	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	133.8694	3000	1.5 (D+SPECYW)
Bottom	332.53	133.8694	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	79.8753	3000	1.5 (D+SPECYW)
Bottom	886.75	79.8753	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
7	C9	70	C 300X800 M35	3750	0.9	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	1920	0.8
Bottom	1920	0.8

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	1230.185	53.6398	213.8387	3000	1.5 (D+SPECXW)
Bottom	1179.833	-82.0986	-333.5447	0	1.5 (D+SPECXW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	108.5602	3000	1.5 (D+SPECYW)
Bottom	332.53	108.5602	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	66.0931	3000	1.5 (D+SPECYW)
Bottom	886.75	66.0931	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.,
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
6	C9	69	C 300X800 M35	3750	0.8	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	1920	0.8
Bottom	2174	0.91

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	2071.2566	52.9249	229.7251	3000	1.5 (D+SPECXW)
Bottom	2181.4761	-149.9427	-200.922	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	108.8617	3000	1.5 (D+SPECYW)
Bottom	332.53	108.8617	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	76.0251	3000	1.5 (D+SPECYW)
Bottom	886.75	76.0251	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
5	C9	68	C 300X800 M35	3750	0.7	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	1920	0.8
Bottom	3831	1.6

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	2887.4173	102.3594	128.8002	3000	1.5 (D+SPECYW)
Bottom	2914.4093	-165.0113	-202.5608	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	108.8947	3000	1.5 (D+SPECYW)
Bottom	332.53	108.8947	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	89.0872	3000	1.5 (D+SPECYW)
Bottom	886.75	89.0872	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
4	C9	67	C 300X800 M35	3750	0.6	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	2636	1.1
Bottom	5108	2.13

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	3626.7876	98.6914	128.0007	3000	1.5 (D+SPECYW)
Bottom	3653.7797	-163.6444	-211.7696	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	111.9316	3000	1.5 (D+SPECYW)
Bottom	332.53	111.9316	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	87.4038	3000	1.5 (D+SPECYW)
Bottom	886.75	87.4038	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
3	C9	65	C 300X800 M35	3750	0.6	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	4275	1.78
Bottom	6695	2.79

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	4370.8408	96.7293	142.7808	3000	1.5 (D+SPECYW)
Bottom	4397.8329	-165.5318	-213.314	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	110.8234	3000	1.5 (D+SPECYW)
Bottom	332.53	110.8234	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	87.3896	3000	1.5 (D+SPECYW)
Bottom	886.75	87.3896	0	1.5 (D+SPECYW)



P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
2	C9	66	C 300X800 M35	3750	0.6	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
300	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γc	γs
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	6206	2.59
Bottom	7900	3.29

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	5155.1779	103.1036	91.6591	3000	1.5 (D+L)
Bottom	4990.7148	-99.8143	-415.4349	0	1.5 (D+SPECXW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	332.53	113.6991	3000	1.5 (D+SPECYW)
Bottom	332.53	113.6991	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	72.4363	3000	1.5 (D+SPECYW)
Bottom	886.75	72.4363	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
1	C9	71	C 400X800 M35	3750	0.6	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
400	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	4801	1.5
Bottom	5933	1.85

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	5947.0969	91.4149	194.2718	3000	1.5 (D+L)
Bottom	5910.981	-198.9698	-193.092	0	1.5 (D+SPECYW)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	443.37	88.5804	3000	1.5 (D+SPECYW)
Bottom	443.37	88.5804	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	102.7745	3000	1.5 (D+SPECYW)
Bottom	886.75	102.7745	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Concrete Frame Design

IS 456:2000 Column Section Design (Envelope)

Column Element Details (Envelope)

Level	Element	Unique Name	Section ID	Length (mm)	LLRF	Type
GF	C9	614	C 400X800 M35	2000	0.6	Ordinary Frame

Section Properties

b (mm)	h (mm)	dc (mm)	Cover (Torsion) (mm)
400	800	60	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Longitudinal Reinforcement Design for P_u - M_{u2} - M_{u3} Interaction

Column End	Rebar Area mm²	Rebar %
Top	7075	2.21
Bottom	7106	2.22

Design Axial Force & Biaxial Moment for P_u - M_{u2} - M_{u3} Interaction

Column End	Design P_u kN	Design M_{u2} kN-m	Design M_{u3} kN-m	Station Loc mm	Controlling Combo
Top	6604.1919	132.0838	-4.2696	1200	1.5 (D+L)
Bottom	6618.5876	-132.3718	-6.5586	0	1.5 (D+L)

Shear Reinforcement for Major Shear, V_{u2}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u2} kN	Station Loc mm	Controlling Combo
Top	443.37	51.3334	1200	1.5 (D+SPECYW)
Bottom	443.37	51.3334	0	1.5 (D+SPECYW)

Shear Reinforcement for Minor Shear, V_{u3}

Column End	Rebar A_{sv} /s mm²/m	Design V_{u3} kN	Station Loc mm	Controlling Combo
Top	886.75	124.0917	1200	1.5 (D+SPECYW)
Bottom	886.75	124.0917	0	1.5 (D+SPECYW)

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

SHEARWALL DESIGN

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

2 Design Data

This chapter provides design data and results.

1.1 Shear Wall Design

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
Terrace	W2	15325.1	19050.2	2900	200	1

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_s	Γ_c	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm^2)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm^2
Top	5177	0.0089	0.0022	1.5 (D+SPECXW)	1098.2784	-156.8336	1703.005	580000
Bottom	2886	0.005	0.0022	0.9 D + 1.5 SPECXW	683.2205	128.039	-557.4729	580000

Shear Design

Station Location	ID	Rebar mm^2/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	510.23	1.5 (D+SPECYW)	1056.9777	1964.3884	-680.4319	253.2574	680.4319
Bottom	Leg 1	573.79	1.5 (D+SPECYW)	1138.5161	42.05	-680.4319	200.0447	680.4319

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	0	1.5 (D+L)	0	0	0	0
Top–Right	Leg 1	300	1.5 (D+SPECYW)	1262.9271	1964.3884	9.18	7
Bottom–Left	Leg 1	0	1.5 (D+SPECYW)	1344.4655	-993.2883	5.86	7
Botttom–Right	Leg 1	0	1.5 (D+SPECYW)	1344.4655	42.05	2.47	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
7	W2	15325.1	19050.2	2900	200	0.9

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_S	Γ_C	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm^2)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm^2
Top	2729	0.0047	0.0022	0.9 D + 1.5 SPECXW	1019.2557	136.9124	633.2073	580000
Bottom	2515	0.0043	0.0022	0.9 D + 1.5 SPECXW	1068.1787	138.6323	-505.3791	580000

Shear Design

Station Location	ID	Rebar mm^2/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	1655.9065	1233.5902	-446.2955	206.8987	625.5074
Bottom	Leg 1	500	1.5 (D+SPECYW)	1737.445	417.6377	-446.2955	200.2961	618.9048

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top-Left	Leg 1	0	1.5 (D+SPECYW)	2236.2462	-394.1653	5.26	7
Top-Right	Leg 1	300	1.5 (D+SPECYW)	2236.2462	1233.5902	8.26	7
Bottom-Left	Leg 1	300	1.5 (D+SPECYW)	2317.7846	-983.4495	7.5	7
Botttom-Right	Leg 1	0	1.5 (D+SPECYW)	2317.7846	417.6377	5.49	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
6	W2	15325.1	19050.2	2900	200	0.8

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_s	γ_c	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm^2)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm^2
Top	2565	0.0044	0.0022	0.9 D + 1.5 SPECXW	1380.0254	153.404	612.5203	580000
Bottom	2338	0.004	0.0022	0.9 D + 1.5 SPECXW	1428.9484	155.1239	-487.8793	580000

Shear Design

Station Location	ID	Rebar mm^2/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	2204.2993	1248.4669	-413.0343	213.4024	632.0111
Bottom	Leg 1	500	1.5 (D+SPECYW)	2285.8377	657.4578	-413.0343	205.6003	624.209

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	400	1.5 (D+SPECYW)	3145.1422	-573.3912	7.47	7
Top–Right	Leg 1	400	1.5 (D+SPECYW)	3145.1422	1248.4669	9.88	7
Bottom–Left	Leg 1	400	1.5 (D+SPECYW)	3226.6806	-1090.6673	9.45	7
Botttom–Right	Leg 1	400	1.5 (D+SPECYW)	3226.6806	657.4578	7.91	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
5	W2	15325.1	19050.2	2900	200	0.7

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_S	Γ_C	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm²)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm²
Top	3563	0.0061	0.0022	1.5 (D+SPECXW)	3718.8244	239.5298	880.41	580000
Bottom	3074	0.0053	0.0022	1.5 (D+SPECXW)	3800.3629	242.3964	-646.048	580000

Shear Design

Station Location	ID	Rebar mm²/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	2760.0708	1463.344	-474.5487	261.1129	679.7216
Bottom	Leg 1	500	1.5 (D+SPECYW)	2841.6092	738.0772	-474.5487	248.922	667.5307

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	500	1.5 (D+SPECYW)	4075.343	-598.3693	9.16	7
Top–Right	Leg 1	500	1.5 (D+SPECYW)	4075.343	1463.344	12.25	7
Bottom–Left	Leg 1	500	1.5 (D+SPECYW)	4156.8815	-1223.9638	11.53	7
Botttom–Right	Leg 1	500	1.5 (D+SPECYW)	4156.8815	738.0772	9.8	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
4	W2	15325.1	19050.2	2900	200	0.6

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_S	Γ_C	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm²)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm²
Top	5415	0.0093	0.0022	1.5 (D+SPECXW)	4556.3492	272.048	878.3839	580000
Bottom	5110	0.0088	0.0022	1.5 (D+SPECXW)	4637.8876	274.9146	-714.3473	580000

Shear Design

Station Location	ID	Rebar mm²/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	3298.4859	1495.6314	-523.9512	333.1747	751.7834
Bottom	Leg 1	500	1.5 (D+SPECYW)	3380.0243	873.1567	-523.9512	326.3719	744.9806

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	500	1.5 (D+SPECYW)	5025.4408	-653.0749	10.99	7
Top–Right	Leg 1	600	1.5 (D+SPECYW)	5025.4408	1495.6314	14	7
Bottom–Left	Leg 1	600	1.5 (D+SPECYW)	5106.9792	-1320.8091	13.52	7
Botttom–Right	Leg 1	600	1.5 (D+SPECYW)	5106.9792	873.1567	11.92	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
3	W2	15325.1	19050.2	2900	200	0.6

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_S	Γ_C	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm²)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm²
Top	7770	0.0134	0.0022	1.5 (D+SPECYW)	6002.7024	253.5535	1418.4452	580000
Bottom	8720	0.015	0.0022	1.5 (D+SPECYW)	6084.2408	256.4201	-1645.0999	580000

Shear Design

Station Location	ID	Rebar mm²/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	3815.5825	1418.4452	-604.0231	390.5546	809.1633
Bottom	Leg 1	500	1.5 (D+SPECYW)	3897.121	1253.5298	-604.0231	411.0203	829.629

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	600	1.5 (D+SPECYW)	6002.7024	-523.7104	12.22	7
Top–Right	Leg 1	700	1.5 (D+SPECYW)	6002.7024	1418.4452	15.41	7
Bottom–Left	Leg 1	700	1.5 (D+SPECYW)	6084.2408	-1645.0999	16.36	7
Botttom–Right	Leg 1	700	1.5 (D+SPECYW)	6084.2408	1253.5298	14.96	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
2	W2	15325.1	19050.2	2900	200	0.6

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

Γ_S	Γ_C	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	200

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm²)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm²
Top	10356	0.0179	0.0022	1.5 (D+SPECYW)	6999.0331	280.7897	1350.4096	580000
Bottom	14285	0.0246	0.0022	1.5 (D+SPECYW)	7080.5716	283.6563	-2668.9227	580000

Shear Design

Station Location	ID	Rebar mm²/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	500	1.5 (D+SPECYW)	4315.3125	1350.4096	-768.5667	442.4318	861.0405
Bottom	Leg 1	500	1.5 (D+SPECYW)	4396.8509	2499.3974	-768.5667	504.989	923.5977

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	700	1.5 (D+SPECYW)	6999.0331	-374.658	13.4	7
Top–Right	Leg 1	800	1.5 (D+SPECYW)	6999.0331	1350.4096	16.88	7
Bottom–Left	Leg 1	900	1.5 (D+SPECYW)	7080.5716	-2668.9227	21.73	7
Botttom–Right	Leg 1	900	1.5 (D+SPECYW)	7080.5716	2499.3974	21.12	7



P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
1	W2	15325.1	19050.2	2900	300	0.6

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_s	γ_c	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	300
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	300

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm²)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm²
Top	2175	0.0025	0.0024	1.5 (D+SPECYW)	7965.2489	-159.305	-1207.0764	870000
Bottom	7728	0.0089	0.0024	1.5 (D+SPECYW)	8087.5566	266.3141	4844.8558	870000

Shear Design

Station Location	ID	Rebar mm²/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	870.18	1.5 (D+SPECYW)	4792.716	2358.3714	-1025.6789	297.1466	1025.6789
Bottom	Leg 1	750	1.5 (D+SPECYW)	4915.0236	4844.8558	-1025.6789	486.5163	1114.4293

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	600	1.5 (D+SPECYW)	7965.2489	-1207.0764	12.03	7
Top–Right	Leg 1	600	1.5 (D+SPECYW)	7965.2489	2358.3714	14.76	7
Bottom–Left	Leg 1	750	1.5 (D+SPECYW)	8087.5566	-4771.1938	20.64	7
Botttom–Right	Leg 1	750	1.5 (D+SPECYW)	8087.5566	4844.8558	20.82	7

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

ETABS Shear Wall Design

IS 456:2000 Pier Design

Pier Details

Story ID	Pier ID	Centroid X (mm)	Centroid Y (mm)	Length (mm)	Thickness (mm)	LLRF
GF	W2	15325.1	19050.2	2900	300	0.6

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_s	γ_c	IP_{MAX}	IP_{MIN}	P_{MAX}	MinEcc Major	MinEcc Minor
1.15	1.5	0.04	0.0025	0.8	Yes	Yes

Pier Leg Location, Length and Thickness

Station Location	ID	Left X_1 mm	Left Y_1 mm	Right X_2 mm	Right Y_2 mm	Length mm	Thickness mm
Top	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	300
Bottom	Leg 1	15325.1	17600.2	15325.1	20500.2	2900	300

Flexural Design for P_u, M_{u2} and M_{u3}

Station Location	Required Rebar Area (mm^2)	Required Reinf Ratio	Current Reinf Ratio	Flexural Combo	P_u kN	M_{u2} kN-m	M_{u3} kN-m	Pier A_g mm^2
Top	5093	0.0059	0.0024	1.5 (D+SPECYW)	8888.6605	-177.7732	4501.0504	870000
Bottom	8353	0.0096	0.0024	1.5 (D+SPECYW)	8953.8912	179.0778	5478.241	870000

Shear Design

Station Location	ID	Rebar mm^2/m	Shear Combo	P_u kN	M_u kN-m	V_u kN	V_c kN	$V_c + V_s$ kN
Top	Leg 1	750	1.5 (D+SPECYW)	5235.5711	4501.0504	-766.3995	409.4494	1037.3624
Bottom	Leg 1	750	1.5 (D+SPECYW)	5300.8018	5478.241	-766.3995	511.1793	1139.0924

Boundary Element Check

Station Location	ID	Edge Length (mm)	Governing Combo	P_u kN	M_u kN-m	Stress Comp MPa	Stress Limit MPa
Top–Left	Leg 1	750	1.5 (D+SPECYW)	8888.6605	-3576.504	18.72	7
Top–Right	Leg 1	900	1.5 (D+SPECYW)	8888.6605	4501.0504	20.92	7
Bottom–Left	Leg 1	900	1.5 (D+SPECYW)	8953.8912	-4872.9601	21.88	7
Botttom–Right	Leg 1	900	1.5 (D+SPECYW)	8953.8912	5478.241	23.32	7



P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

BEAM DESIGN

P. JEGATHEESAN, M.E., (Struct.,)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

3 Design Data

This chapter provides design data and results.

1.1 Concrete Frame Design

ETABS Concrete Frame Design

IS 456:2000 Beam Section Design (Envelope)

Beam Element Details

Level	Element	Unique Name	Section ID	Length (mm)	LLRF
3	B336	676	B 200X750 M35	6950	1

Section Properties

b (mm)	h (mm)	b_f (mm)	d_s (mm)	d_{ct} (mm)	d_{cb} (mm)
200	750	200	0	30	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γc	γs
1.5	1.15

Flexural Reinforcement for Major Axis Moment, M_{u3}

	End-I Rebar Area mm²	End-I Rebar %	Middle Rebar Area mm²	Middle Rebar %	End-J Rebar Area mm²	End-J Rebar %
Top (+2 Axis)	1029	0.69	223	0.15	761	0.51
Bot (-2 Axis)	223	0.15	425	0.28	223	0.15

Flexural Design Moment, M_{u3} and Axial Force, P_u

	Station Loc mm	Design M_u kN-m	Design P_u kN	Combo Name
Top (+2 Axis) End-I	0	-313.8924	0	Envelope - Beam Design
Top (+2 Axis) Middle	5053.3	-7.9961	0	Envelope - Beam Design
Top (+2 Axis) End-J	6950	-240.0855	0	Envelope - Beam Design
Bot (-2 Axis) End-I	1588.3	42.5861	0	Envelope - Beam Design
Bot (-2 Axis) Middle	3156.6	139.3404	0	Envelope - Beam Design
Bot (-2 Axis) End-J	6135	4.0734	0	Envelope - Beam Design

Shear Reinforcement for Major Shear, V_{u2}

End-I Rebar A_{sv} /s mm²/m	Middle Rebar A_{sv} /s mm²/m	End-J Rebar A_{sv} /s mm²/m
368.32	231.64	331.61

Design Shear Force for Major Shear, V_{u2}

End-I Design V_u kN	End-I Station Loc mm	Middle Design V_u kN	Middle Station Loc mm	End-J Design V_u kN	End-J Station Loc mm
154.0093	958.3	102.4601	1916.7	140.9123	6135
Envelope - Beam Design		Envelope - Beam Design		Envelope - Beam Design	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Torsion Reinforcement

Shear Rebar A_{svt} /s mm²/m
0

Design Torsion Force

Design T_u kN-m	Station Loc mm	Design T_u kN-m	Station Loc mm
0.0012	958.3	0.0012	958.3
Envelope - Beam Design		Envelope - Beam Design	

ETABS Concrete Frame Design

IS 456:2000 Beam Section Design (Envelope)

Beam Element Details

Level	Element	Unique Name	Section ID	Length (mm)	LLRF
4	B336	678	B 200X750 M35	6950	1

Section Properties

b (mm)	h (mm)	b_f (mm)	d_s (mm)	d_{ct} (mm)	d_{cb} (mm)
200	750	200	0	30	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γc	γs
1.5	1.15

Flexural Reinforcement for Major Axis Moment, M_{u3}

	End-I Rebar Area mm²	End-I Rebar %	Middle Rebar Area mm²	Middle Rebar %	End-J Rebar Area mm²	End-J Rebar %
Top (+2 Axis)	1023	0.68	223	0.15	778	0.52
Bot (-2 Axis)	223	0.15	423	0.28	223	0.15

Flexural Design Moment, M_{u3} and Axial Force, P_u

	Station Loc mm	Design M_u kN-m	Design P_u kN	Combo Name
Top (+2 Axis) End-I	0	-312.4566	0	Envelope - Beam Design
Top (+2 Axis) Middle	5053.3	-9.9126	0	Envelope - Beam Design
Top (+2 Axis) End-J	6950	-244.6995	0	Envelope - Beam Design
Bot (-2 Axis) End-I	1588.3	43.6498	0	Envelope - Beam Design
Bot (-2 Axis) Middle	3156.6	138.7546	0	Envelope - Beam Design
Bot (-2 Axis) End-J	6135	3.3261	0	Envelope - Beam Design

Shear Reinforcement for Major Shear, V_{u2}

End-I Rebar A_{sv} /s mm²/m	Middle Rebar A_{sv} /s mm²/m	End-J Rebar A_{sv} /s mm²/m
365.16	228.73	333.58

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Design Shear Force for Major Shear, V_{u2}

End-I Design V_u kN	End-I Station Loc mm	Middle Design V_u kN	Middle Station Loc mm	End-J Design V_u kN	End-J Station Loc mm
153.0712	958.3	101.7054	1916.7	142.0652	6135
Envelope - Beam Design		Envelope - Beam Design		Envelope - Beam Design	

Torsion Reinforcement

Shear Rebar A_{svt} /s mm²/m
0

Design Torsion Force

Design T_u kN-m	Station Loc mm	Design T_u kN-m	Station Loc mm
0.0012	958.3	0.0012	958.3
Envelope - Beam Design		Envelope - Beam Design	

ETABS Concrete Frame Design

IS 456:2000 Beam Section Design (Envelope)

Beam Element Details

Level	Element	Unique Name	Section ID	Length (mm)	LLRF
5	B336	679	B 200X750 M35	6950	1

Section Properties

b (mm)	h (mm)	b_f (mm)	d_s (mm)	d_{ct} (mm)	d_{cb} (mm)
200	750	200	0	30	30

Material Properties

E_c (MPa)	f_{ck} (MPa)	Lt.Wt Factor (Unitless)	f_y (MPa)	f_{ys} (MPa)
29580.4	35	1	550	415

Design Code Parameters

γ_c	γ_s
1.5	1.15

Flexural Reinforcement for Major Axis Moment, M_{u3}

	End-I Rebar Area mm²	End-I Rebar %	Middle Rebar Area mm²	Middle Rebar %	End-J Rebar Area mm²	End-J Rebar %
Top (+2 Axis)	1013	0.68	223	0.15	775	0.52
Bot (-2 Axis)	223	0.15	423	0.28	223	0.15

Flexural Design Moment, M_{u3} and Axial Force, P_u

	Station Loc mm	Design M_u kN-m	Design P_u kN	Combo Name
Top (+2 Axis) End-I	0	-309.777	0	Envelope - Beam Design
Top (+2 Axis) Middle	5053.3	-9.595	0	Envelope - Beam Design
Top (+2 Axis) End-J	6950	-243.9514	0	Envelope - Beam Design
Bot (-2 Axis) End-I	1588.3	43.4375	0	Envelope - Beam Design
Bot (-2 Axis) Middle	3156.6	138.7487	0	Envelope - Beam Design
Bot (-2 Axis) End-J	6135	2.9131	0	Envelope - Beam Design

Shear Reinforcement for Major Shear, V_{u2}

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

End-I Rebar A_{sv} /s mm²/m	Middle Rebar A_{sv} /s mm²/m	End-J Rebar A_{sv} /s mm²/m
363.04	227.16	332.93

Design Shear Force for Major Shear, V_{u2}

End-I Design V_u kN	End-I Station Loc mm	Middle Design V_u kN	Middle Station Loc mm	End-J Design V_u kN	End-J Station Loc mm
152.2467	958.3	101.2964	1916.7	141.798	6135
Envelope - Beam Design		Envelope - Beam Design		Envelope - Beam Design	

Torsion Reinforcement

Shear Rebar A_{svt} /s mm²/m
0

Design Torsion Force

Design T_u kN-m	Station Loc mm	Design T_u kN-m	Station Loc mm
0.0012	6950	0.0012	6950
Envelope - Beam Design		Envelope - Beam Design	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

SLAB DESIGN

P. JEGATHEESAN, M.E., (Struct.,)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

DESIGN OF SLAB : **1S19**

Panel Name : One longer edge discontinuous Code : 6

Clear Longer span, ly = 3600 mm

Clear Shorter span, lx = 3325 mm

ly / lx = 1.08 < 2, Hence, Twoway slab.

Effective Longer span = 3696.00 mm

Effective Shorter span = 3421.00 mm

Assume thickness of slab = 125.00 mm

Effective depth available = 96.00 mm

Loads :

Dead Load and Imposed Load (fixed) :

Floor finish = 1.800 kN/m^2

Self weight = 3.125 kN/m^2

w_{DL} = 4.925 kN/m^2

Imposed Load (Not fixed) :

Occupancy classification as per IS: 875(Part 2) - 1987 :

Live load = 2.000 kN/m^2

w_{LL} = 2.000 kN/m^2

Total load, $w = w_{DL} + w_{LL}$ = 6.925 kN/m^2

Span Moments:

Along Shorter span: $BM = \alpha_x w l_x^2$ = 0.032 x 6.93 x 3.421^2 = 2.59 kNm M_{ux1} = 3.89 kNm

Along Longer span: $BM = \alpha_y w l_x^2$ = 0.028 x 6.93 x 3.421^2 = 2.27 kNm M_{uy1} = 3.40 kNm

Support Moments:

Along Shorter span: $BM = \alpha_x w l_x^2$ = 0.043 x 6.93 x 3.421^2 = 3.45 kNm M_{ux2} = 5.18 kNm

Along Longer span: $BM = \alpha_y w l_x^2$ = 0.037 x 6.93 x 3.421^2 = 3.00 kNm M_{uy2} = 4.50 kNm

Check for section :

Factored Max. BM, Mu = 5.18 kNm / m

For M30 grade concrete & Fe500 grade steel , $Mu,lim / bd^2$ = 4.139

Effective depth required = 35.37 mm < Effective depth available, OK

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Along the Shorter span

A_{st} reqd at midspan :

$A_{st} = [\ 0.5 f_{ck}/f_y\ ]\ \{1 - \sqrt{(\ 1 - [4.6\ M_{ux1}/(f_{ck}\ bd^2)]\ )}\}\ b\ d =$ 94.76 mm^2/m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2/m OK

A_{st} reqd at support :

$A_{st} = [\ 0.5 f_{ck}/f_y\ ]\ \{1 - \sqrt{(\ 1 - [4.6\ M_{ux2}/(f_{ck}\ bd^2)]\ )}\}\ b\ d =$ 126.87 mm^2/m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2/m OK

Along the Longer span

A_{st} reqd at midspan :

$A_{st} = [\ 0.5 f_{ck}/f_y\ ]\ \{1 - \sqrt{(\ 1 - [4.6\ M_{uy1}/(f_{ck}\ bd^2)]\ )}\}\ b\ d =$ 82.74 mm^2/m

Provide 8 mm dia bars @ 200 mm As = 251.33 mm^2/m OK

A_{st} reqd at support :

$A_{st} = [\ 0.5 f_{ck}/f_y\ ]\ \{1 - \sqrt{(\ 1 - [4.6\ M_{uy2}/(f_{ck}\ bd^2)]\ )}\}\ b\ d =$ 109.86 mm^2/m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2/m OK

Min Ast = 0.12% Gross section area = 150 mm^2/m

Distribution steel = 0.5 x (0.12/100) x 1000 x 125 = 75.00 mm^2/m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2/m OK

Max Spacing = 3d or 300 mm whichever is less = 288 mm or 300 mm

Check for deflection:

fs = 0.58 x fy x (Ast req/Ast pro) = 109.34 MPa

MF = 1/(0.225+0.00322 fs – 0.625 log 10 (1/pt)) ≤ 2 = 2.000

Type of Slab = Continuous

Effective Shorter span = 3421.00 mm

Basic Value = 40

Allowable l/d = 80.00

Actual l/d = 35.64 Hence OK

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

DESIGN OF SLAB : 1S18

Panel Name : Two adjacent edges discontinuous Code : 8

Clear Longer span, ly = 3975 mm

Clear Shorter span, lx = 3600 mm

ly / lx = 1.10 < 2, Hence, Twoway slab.

Effective Longer span = 4071.00 mm

Effective Shorter span = 3696.00 mm

Assume thickness of slab = 125.00 mm

Effective depth available = 96.00 mm

Loads :

Dead Load and Imposed Load (fixed) :

Floor finish = 1.800 kN/m^2

Self weight = 3.125 kN/m^2

w_{DL} = 4.925 kN/m^2

Imposed Load (Not fixed) :

Occupancy classification as per IS: 875(Part 2) - 1987 :

Live load = 2.000 kN/m^2

w_{LL} = 2.000 kN/m^2

Total load, $w = w_{DL} + w_{LL}$ = 6.925 kN/m^2

Span Moments:

Along Shorter span: $BM = \alpha_x w l_x^2$ = 0.040 x 6.93 x 3.696^2 = 3.78 kNm M_{ux1} = 5.68 kNm

Along Longer span: $BM = \alpha_y w l_x^2$ = 0.035 x 6.93 x 3.696^2 = 3.31 kNm M_{uy1} = 4.97 kNm

Support Moments:

Along Shorter span: $BM = \alpha_x w l_x^2$ = 0.053 x 6.93 x 3.696^2 = 5.01 kNm M_{ux2} = 7.52 kNm

Along Longer span: $BM = \alpha_y w l_x^2$ = 0.047 x 6.93 x 3.696^2 = 4.45 kNm M_{uy2} = 6.67 kNm

Check for section :

Factored Max. BM, Mu = 7.52 kNm / m

For M30 grade concrete & Fe500 grade steel, $Mu\ lim / bd^2$ = 4.139

Effective depth required = 42.63 mm < Effective depth available, OK

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

Along the Shorter span

A_{st} reqd at midspan :

$A_{st} = [\ 0.5 f_{ck} / f_y\ ] \{ 1 - \sqrt{(\ 1 - [4.6\ M_{ux1} / (f_{ck}\ bd^2)]\ )} \}\ b\ d =$ 139.36 mm^2 / m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2 / m OK

A_{st} reqd at support :

$A_{st} = [\ 0.5 f_{ck} / f_y\ ] \{ 1 - \sqrt{(\ 1 - [4.6\ M_{ux2} / (f_{ck}\ bd^2)]\ )} \}\ b\ d =$ 186.20 mm^2 / m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2 / m OK

Along the Longer span

A_{st} reqd at midspan :

$A_{st} = [\ 0.5 f_{ck} / f_y\ ] \{ 1 - \sqrt{(\ 1 - [4.6\ M_{uy1} / (f_{ck}\ bd^2)]\ )} \}\ b\ d =$ 121.55 mm^2 / m

Provide 8 mm dia bars @ 200 mm As = 251.33 mm^2 / m OK

A_{st} reqd at support :

$A_{st} = [\ 0.5 f_{ck} / f_y\ ] \{ 1 - \sqrt{(\ 1 - [4.6\ M_{uy2} / (f_{ck}\ bd^2)]\ )} \}\ b\ d =$ 164.48 mm^2 / m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2 / m OK

Min Ast = 0.12% Gross section area = 150 mm^2 / m

Distribution steel = 0.5 x (0.12/100) x 1000 x 125 = 75.00 mm^2 / m

Provide 8 mm dia bars @ 200 mm c/c As = 251.33 mm^2 / m OK

Max Spacing = 3d or 300 mm whichever is less = 288 mm or 300 mm

Check for deflection:

fs = 0.58 x fy x (Ast req/Ast pro) = 160.80 MPa

MF = 1/(0.225+0.00322 fs – 0.625 log 10 (1/pt)) ≤ 2 = 2.000

Type of Slab = Continuous

Effective Shorter span = 3696.00 mm

Basic Value = 26

Allowable l/d = 52.00

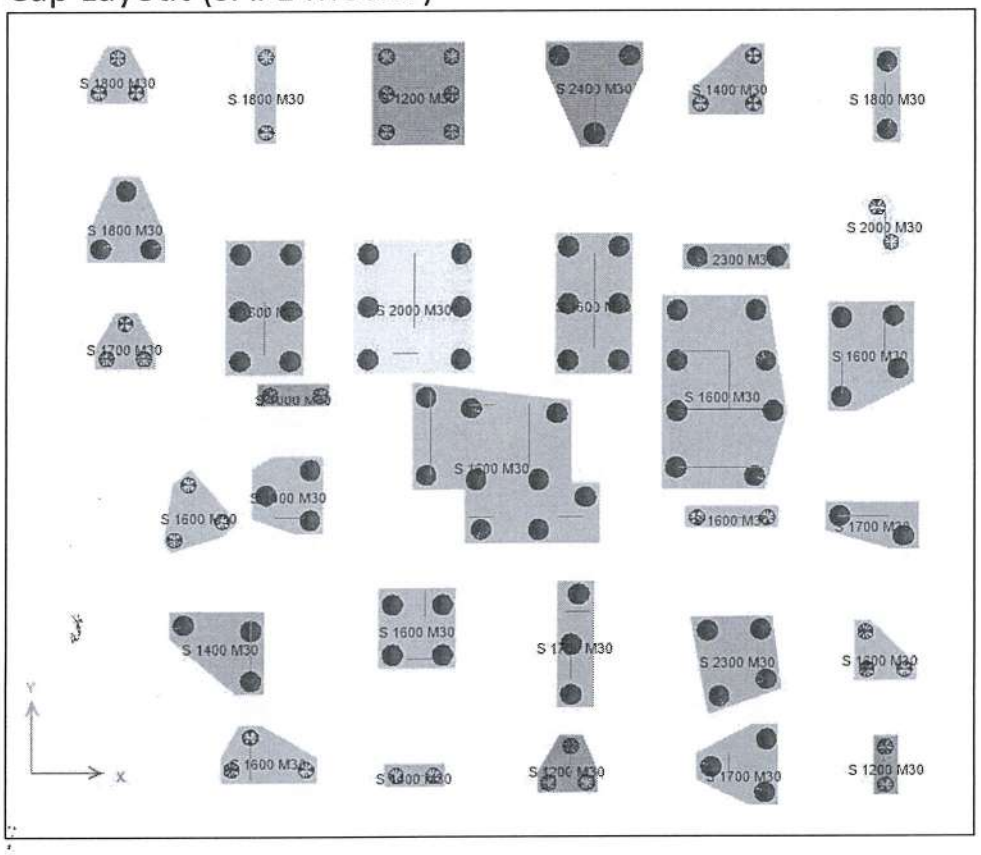
Actual l/d = 38.50 Hence OK

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

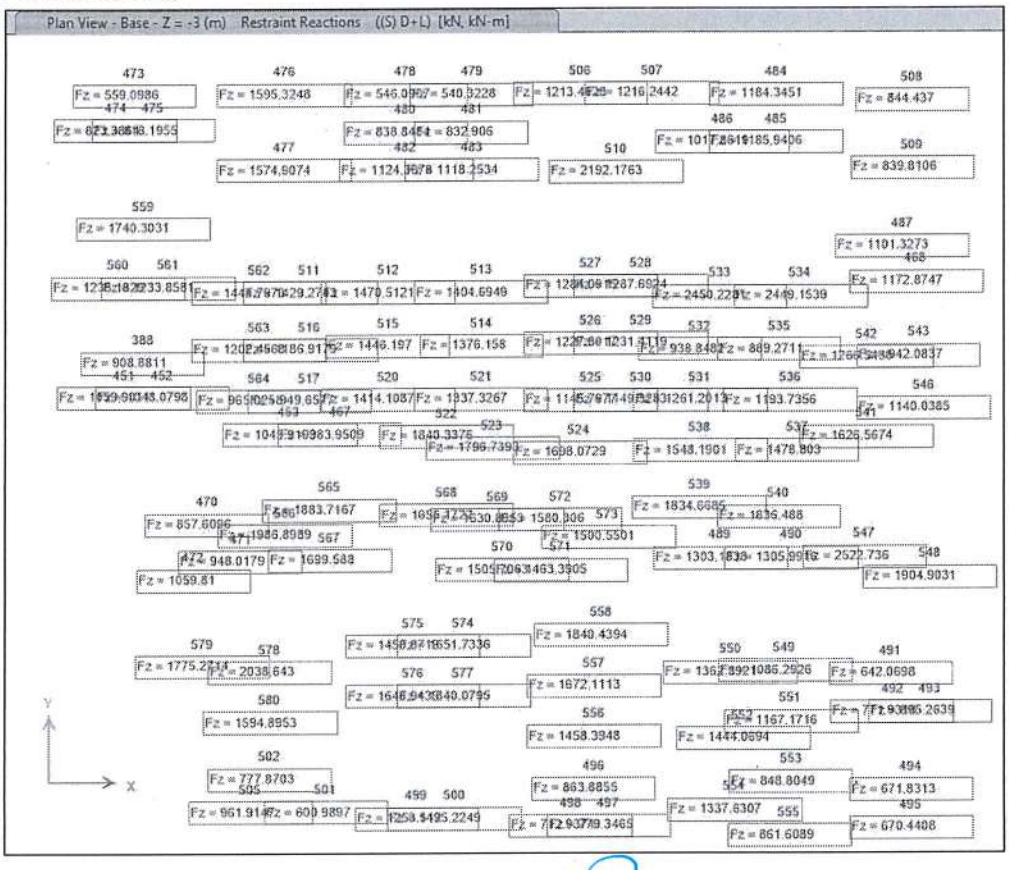
FOUNDATION DESIGN

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

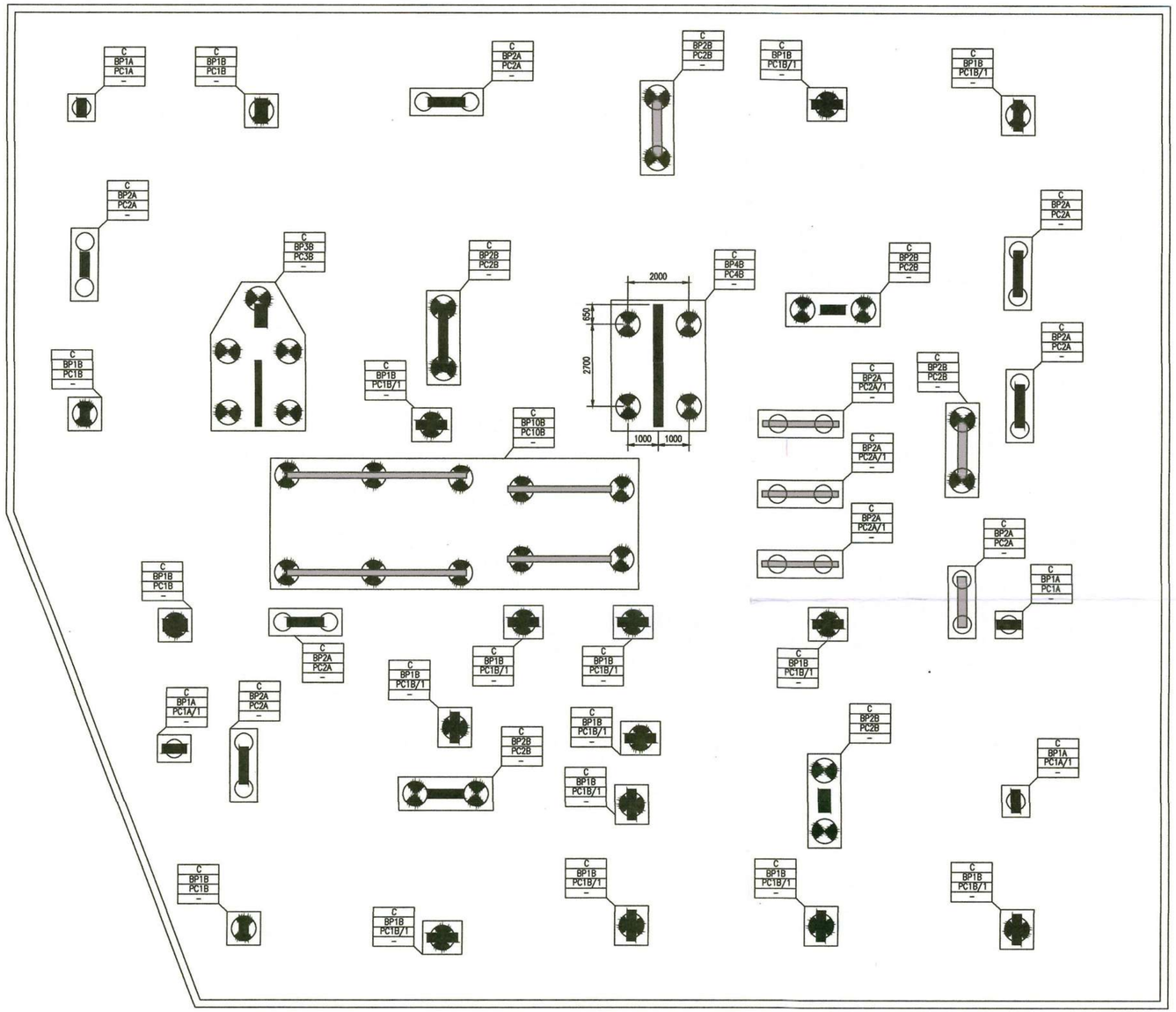
Pile Cap Layout (SAFE Model)



Pile Reactions



P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
Mail : jegatheesan@burroengineers.in



HAJ PROPOSED PILE LOCATION

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M30
2. GRADE OF STEEL Fe500

BORED PILE REINFORCEMENT DETAILS

BORED PILE MARK / TYPE	SIZE	WORKING COMPRESSION CAPACITY (TONS)	LONGITUDINAL REINFORCEMENT	LINKS		NOS. OF PILES
				S1	S2	
○ TYPE A	600ø	160	–	T8–150	T8–200	
⊗ TYPE B	800ø	280	–	T8–150	T8–200	

THE FOUNDATION IS DESIGNED FOR STILT+7 TYPICAL FLOORS+ROOF ONLY

ALL SETTING OUT DIMENSION SHOWN IN THE STRUCTURAL DRAWINGS, SHALL BE VERIFIED WITH THE LATEST ARCHITECTURAL DRAWING BEFORE COMMENCEMENT OF CONSTRUCTION. IF THERE IS ANY DISCREPANCY, IT SHOULD BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER. THE CONSTRUCTION CAN ONLY PROCEED UPON RECEIVING THE CONFIRMATION FROM THE ARCHITECT ON THE DIMENSIONS.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

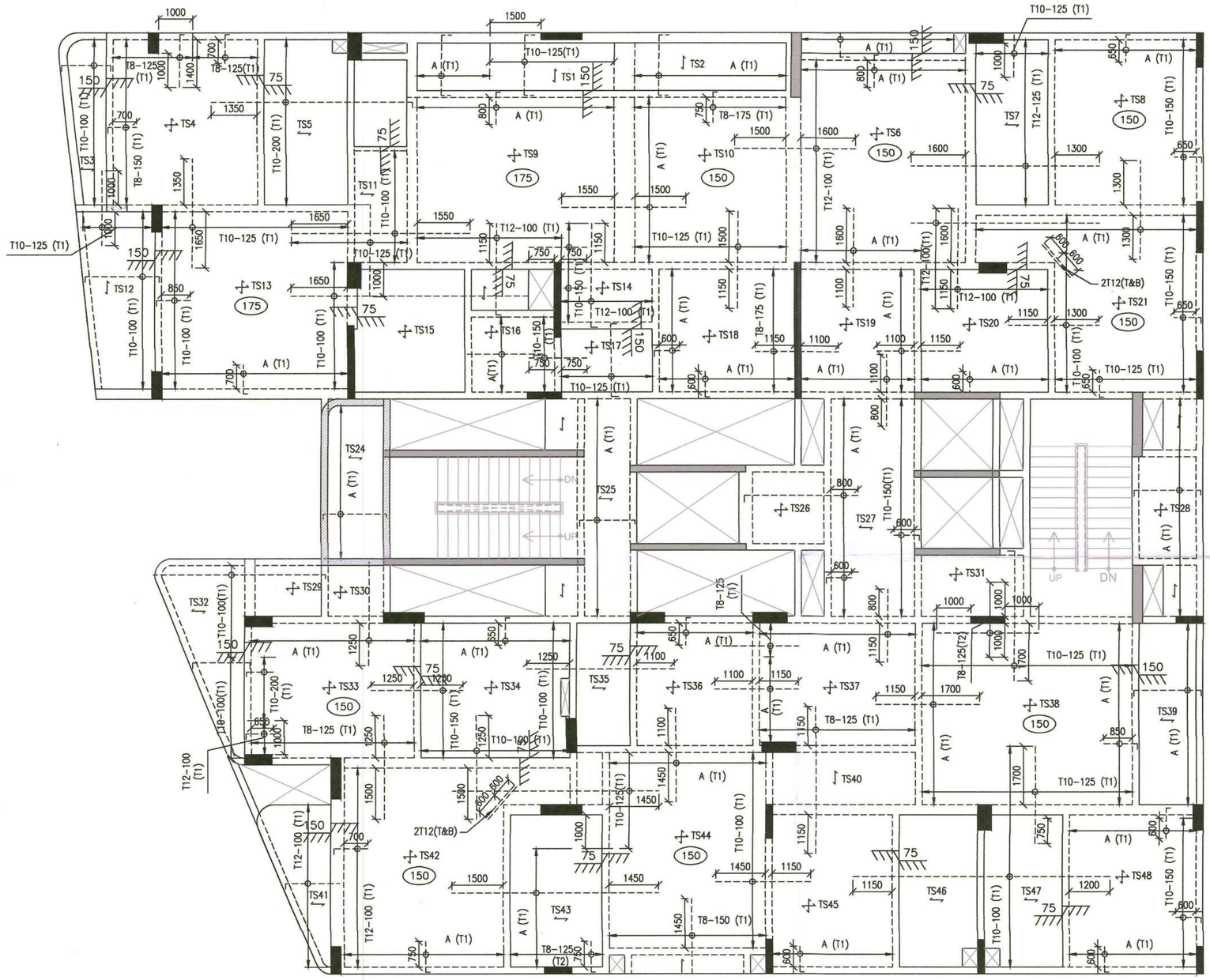
drawing title

PILE & PILECAP LAYOUT PLAN

scale	AS SHOWN	design by	ASHFAQ
drawn by	KIRUTHIGA	checked by	PJ
date	MAY 2009	approved by	–
drawing no.	BEI689_/S-/PL/--/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-PL--01_.dwg



TYPICAL FLOOR SLAB TOP REINF. DETAILS

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550
3. ALL THE SLABS ARE TO BE 125mm THICK.

REINFORCEMENT SCHEDULE

MARK	SIZE	SPACING
A	T8	200

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

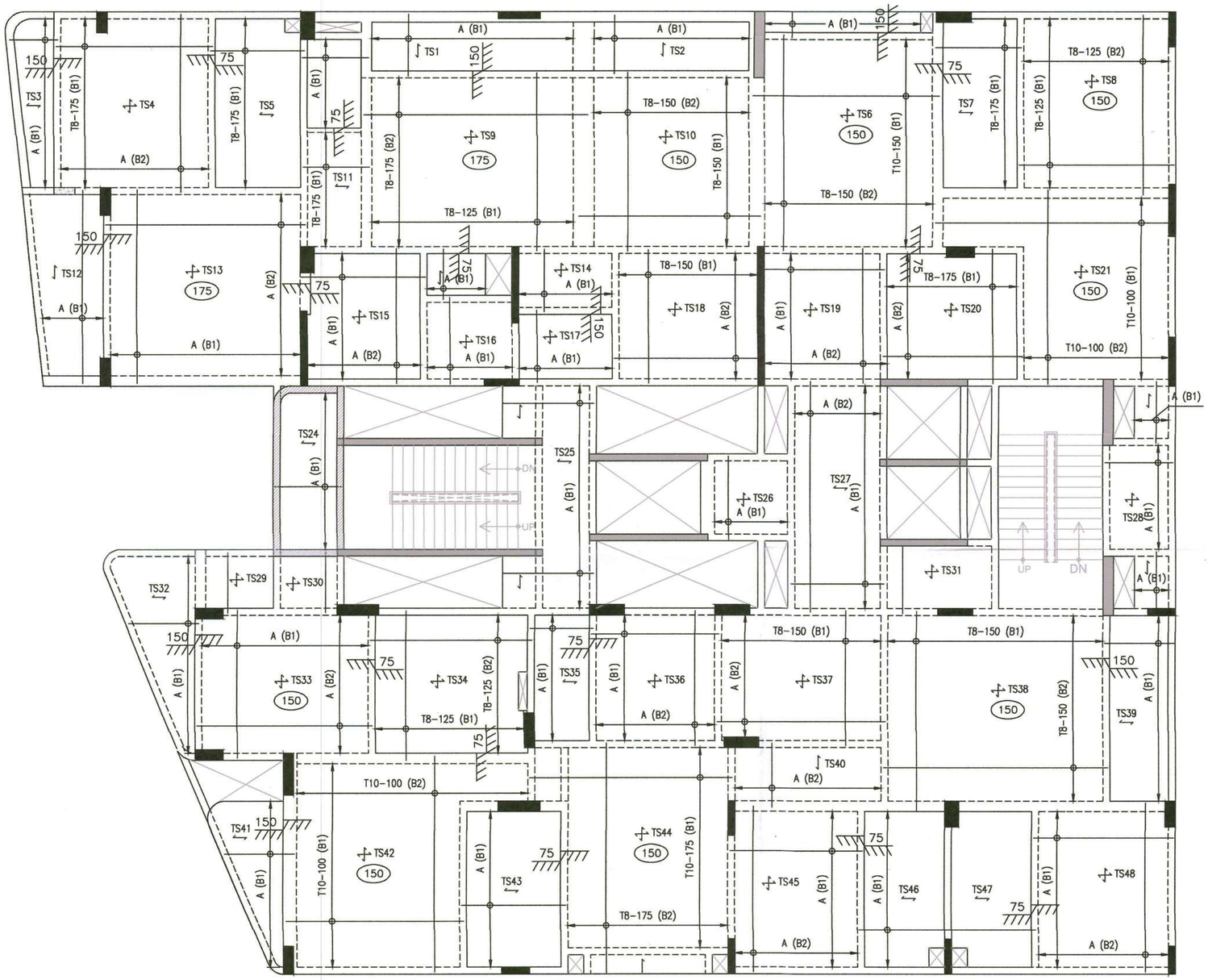
drawing title

TYPICAL FLOOR (1ST TO 7TH) SLAB TOP REINF.DETAILS

scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI689_/S-/SB/T/--/02		revision –

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-SBT--02_.dwg



TYPICAL FLOOR BOTTOM REINF. DETAILS

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550
3. ALL THE SLABS ARE TO BE 125mm THICK.

REINFORCEMENT SCHEDULE

MARK	SIZE	SPACING
A	T8	200

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

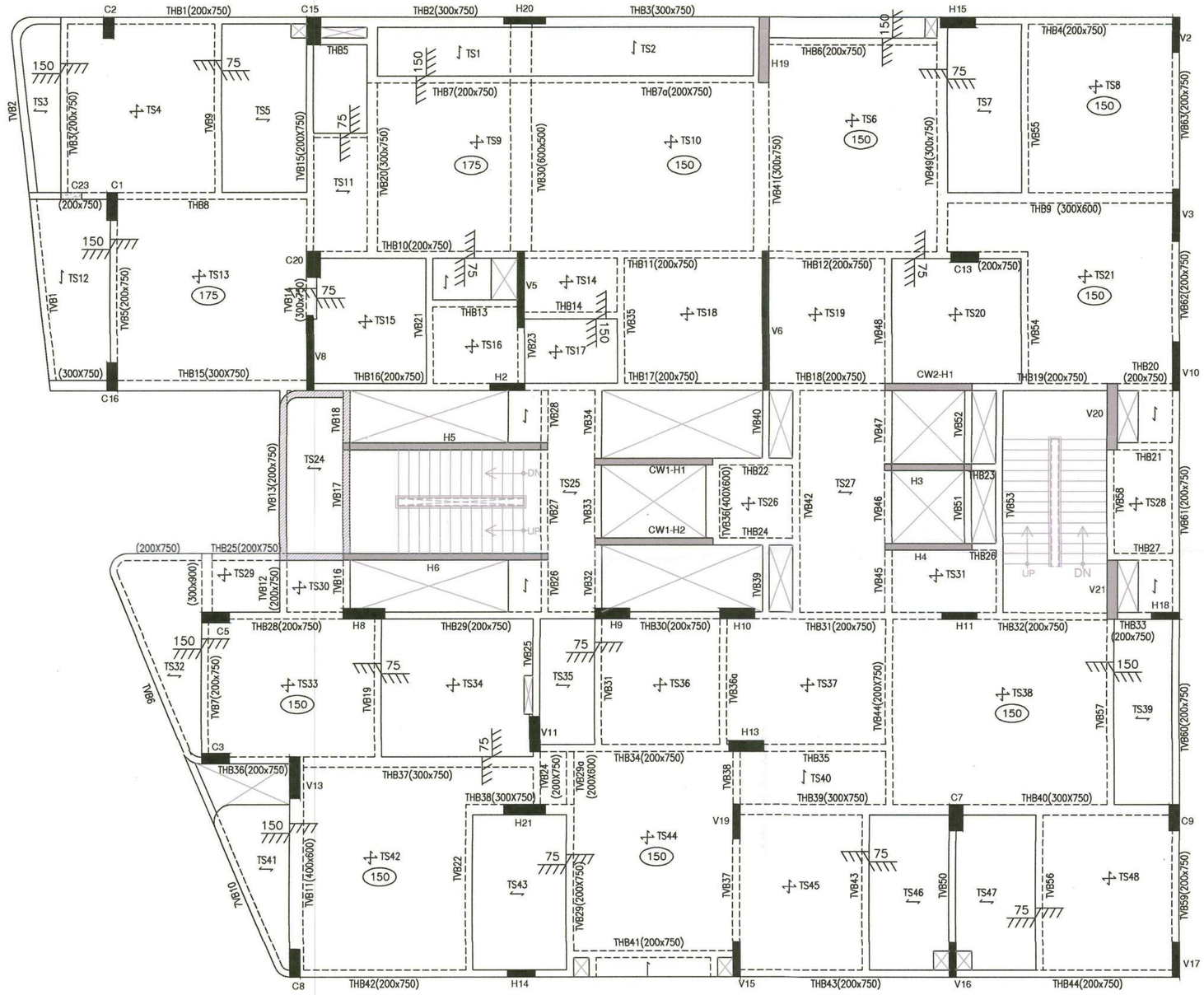
drawing title

TYPICAL FLOOR (1ST TO 7TH) SLAB
BOTTOM REINF.DETAILS

scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI689_/S-/SB/T/--/01		revision –

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-SBT--01_.dwg



TYPICAL FLOOR (1ST TO 7TH) FRAMING PLAN

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550
3. ALL THE BEAMS ARE TO BE 200X600mm.
4. ALL THE SLABS ARE TO BE 125mm THICK.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	07/10/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

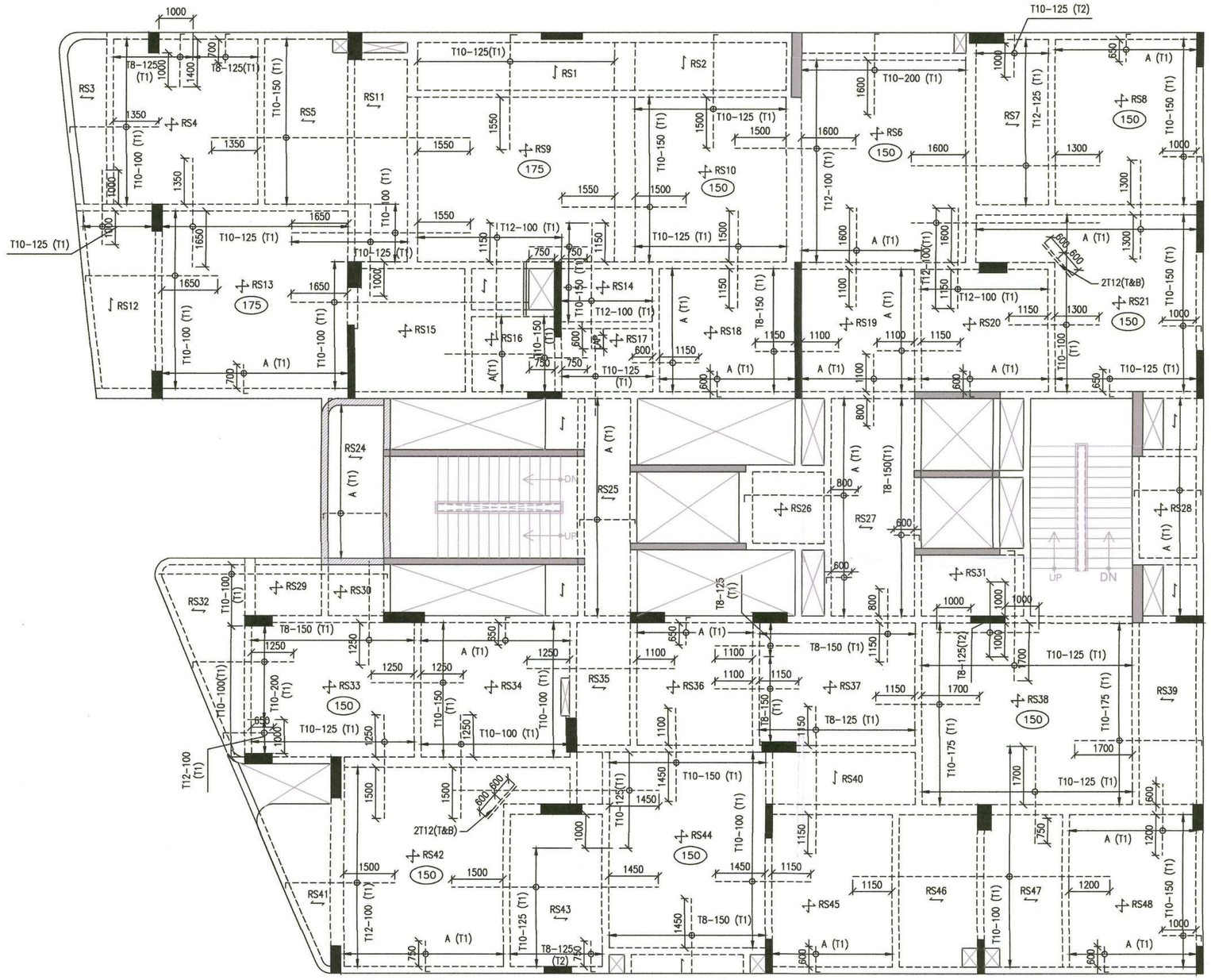
drawing title

TYPICAL FLOOR (1ST TO 7TH) FRAMING PLAN

scale	NTS	design by	SURYA
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/FP/T/--/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-FPT--01_.dwg



ROOF SLAB TOP REINF. DETAILS

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550
3. ALL THE SLABS ARE TO BE 125mm THICK.

REINFORCEMENT SCHEDULE

MARK	SIZE	SPACING
A	T8	200

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

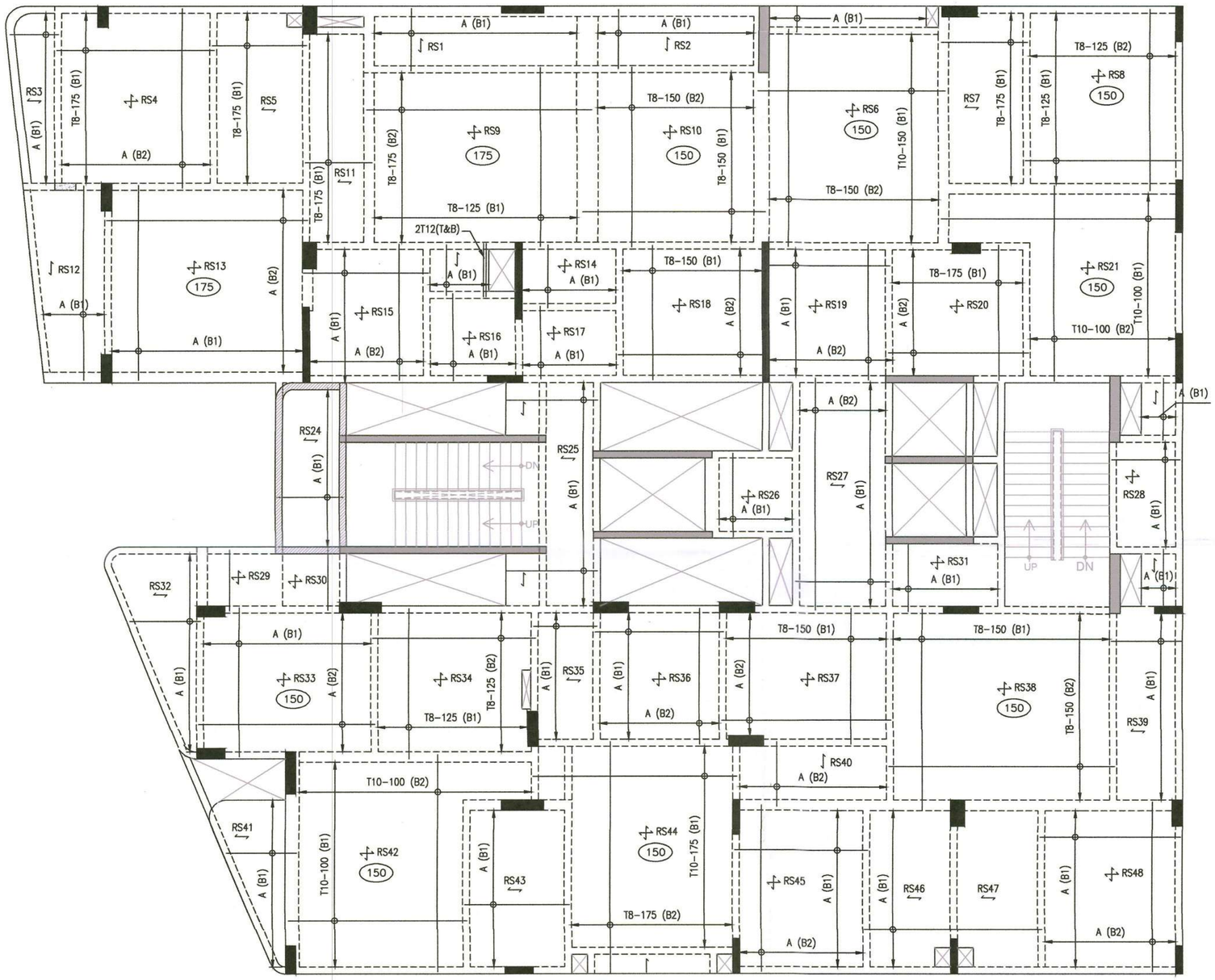
drawing title

ROOF SLAB
TOP REINF.DETAILS

scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI689_/S-/SB/R/--/02	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-SBR--02_.dwg



ROOF SLAB BOTTOM REINF. DETAILS

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550
3. ALL THE SLABS ARE TO BE 125mm THICK.

REINFORCEMENT SCHEDULE

MARK	SIZE	SPACING
A	T8	200

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

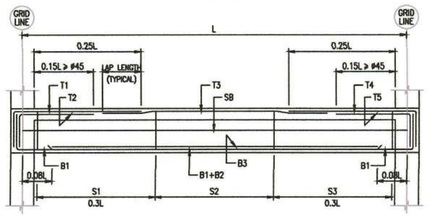
drawing title

ROOF SLAB
BOTTOM REINF.DETAILS

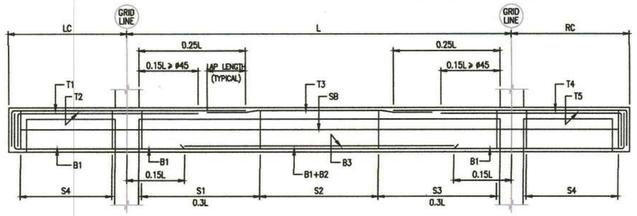
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI689_/S-/SB/R/--/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-SBR--01_.dwg



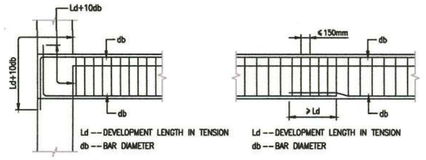
TYPICAL DETAIL OF SINGLE SPAN BEAM (1)



TYPICAL DETAIL OF SINGLE SPAN BEAM WITH CANTILEVERS (2)

L —— LENGTH OF SPAN UNDER CONSIDERATION
RC —— LENGTH OF RIGHT END CANTILEVER
LC —— LENGTH OF LEFT END CANTILEVER
(1) —— CATEGORY

LOCATION			SIZE		SPAN			REINFORCEMENT									SIDE BAR	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	SPAN									(EACH FACE)						
								T1	T2	T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	
RVB39	1	–	200	600	–	2150	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB40	1	–	200	600	–	2150	–	2T20	–	2T20	2T20	2T12	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB41	1	–	300	600/750	–	5925	–	3T25	–	3T25	3T25	–	3T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB42	1	–	200	600	–	6600	–	2T12	–	2T12	2T12	–	2T16	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
RVB43	1	–	200	600	–	4700	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO RVB56
RVB49	1	–	300	600/750	–	6750	–	3T25	2T16	3T16	3T16	–	3T25 +3T25	–	–	–	T10–175	T10–200	T10–175	–	1	–
RVB50	1	–	200	600	–	4100	–	2T16	2T12	2T16	2T16	2T12	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB53	1	–	200	600	–	6600	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RVB54	1	–	300	750	–	3800	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T12–100	T12–200	T12–100	–	1	–
RVB55	1	–	200	600	–	5100	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
RVB5	1	–	200	750	–	4900	–	2T25	2T20	2T25	2T25	2T20	2T25	–	2T16	–	T8–125	T8–175	T8–125	–	1	–
RVB7	2	–	200/300	750/900	–	4050	1850	2T25	–	2T25	2T25/ 3T25 +2T25	3T25	2T25/ 3T25	–	–	–	T8–200	T8–200	T8–200	T12–200	1/1a	–
RHB23	1	–	200	750	2700	4000	–	2T20	2T16	2T20	2T20	2T20	2T20	–	2T20	–	T8–200	T8–200	T8–200	T10–200	1	
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	T1	T2	T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	REMARKS
LOCATION			SIZE		SPAN			REINFORCEMENT								SIDE BAR	STIRRUPS					



ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

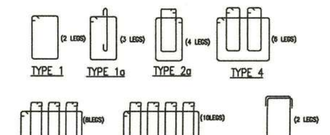
NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN

LAP/SPLICE IN BEAM

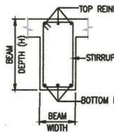
NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION

NOTES :

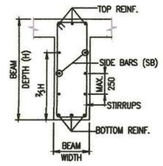
1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE



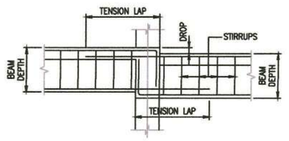
STIRRUPS TYPE



TYP. BEAM SECTION

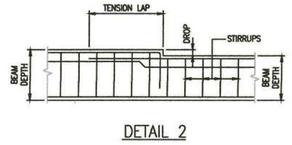


TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

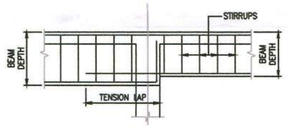


DETAIL 1

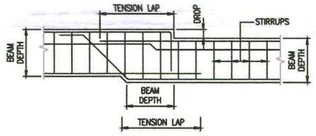
Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued



DETAIL 2



DETAIL 3



DETAIL 4

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

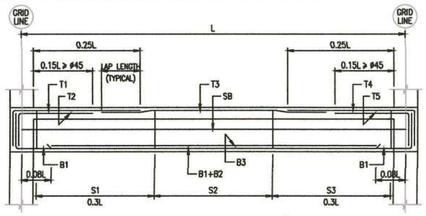
drawing title

ROOF BEAM SCHEDULE

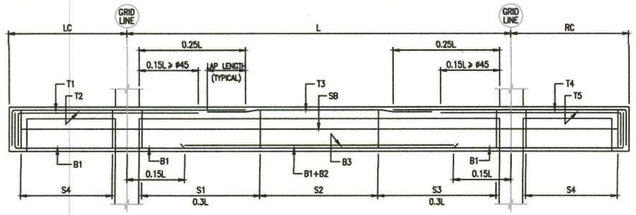
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/BM/R-/04	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-BMR--04_.dwg



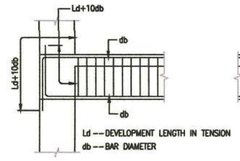
TYPICAL DETAIL OF SINGLE SPAN BEAM (1)



TYPICAL DETAIL OF SINGLE SPAN BEAM WITH CANTILEVERS (2)

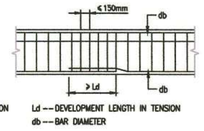
L —— LENGTH OF SPAN UNDER CONSIDERATION
RC —— LENGTH OF RIGHT END CANTILEVER
LC —— LENGTH OF LEFT END CANTILEVER
(1) —— CATEGORY

LOCATION			SIZE		SPAN			REINFORCEMENT								SIDE BAR	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	SPAN T1	T2	T3	T4	T5	B1	B2	B3	(EACH FACE) SB	S1	S2	S3	S4	TYPE	
RHB4	1	–	200	750	–	6750	–	3T20	2T12	3T20	3T20	–	3T16	–	2T12	–	T8–175	T8–200	T8–175	–	1	–
RHB5	1	–	200	600	–	1800	–	2T12	–	2T12	2T12	–	2T20	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB6	1	–	200	750	–	5200	–	2T20	2T20	2T20	2T20	–	2T20	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RHB8	2	–	200	750	2400	5700	–	2T25	2T20	2T25	2T25	–	2T20	–	2T20	–	T8–150	T8–200	T8–150	T12–100	1	–
RHB9	1	–	300	600	–	6750	–	2T16	–	2T16	2T16	–	2T25	–	2T25	–	T8–150	T8–200	T8–150	–	1	–
RHB13	1	–	200	600	–	2650	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB14	1	–	200	600	–	2875	–	2T20	2T20	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB21	1	–	200	600	–	1900	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO RHB27
RHB22	1	–	200	600	–	2400	–	2T20	2T16	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO RHB24
RHB23	1	–	200	600	–	1200	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO RHB26
RHB38	2	–	300	750	1700	–	1250	2T20	2T12	2T20	2T20	2T12	2T16	–	–	–	T8–100	T8–100	T8–100	T10–100	1	–
RHB41	1	–	200	750	–	4800	–	2T20	–	2T20	2T20	–	2T20	–	–	–	T8–125	T8–200	T8–125	–	1	–
RHB42	2	–	200	750	–	6550	1500	2T25	–	2T25	2T25	2T20	2T20	–	2T12	–	T8–150	T8–200	T8–150	T10–100	1	–
RVB3	1	–	200	750	–	5050	–	2T16	–	2T16	2T16	–	2T16	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
RVB9	1	–	200	600	–	5050	–	2T12	–	2T12	2T12	–	2T20	–	2T18	–	T8–200	T8–200	T8–200	–	1	–
RVB11	1	–	400	600	–	6150	–	4T20	2T20	4T20	4T20	3T20	4T20	–	–	–	T12–100	T12–175	T12–100	–	5	–
RVB19	1	–	200	600	–	4250	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
RVB20	1	–	300	600/750	–	6700	–	3T12	–	3T12	3T12	–	3T25	–	3T20	–	T8–200	T8–200	T8–200	–	1	–
RVB21	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RVB22	1	–	200	600	–	4800	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–125	T8–200	T8–125	–	1	–
RVB23	1	–	200	600	–	2000	–	2T20	–	2T20	2T20	2T12	2T20	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB30	1	–	600	500/425	–	6750	–	6T12	–	6T12	6T12	–	6T20	–	4T20	–	T10–150	T10–200	T10–150	–	1a	–
RVB35	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T12	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RVB36	1	–	400	600	–	2300	–	2T16	–	2T16	2T16	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RVB36a	1	–	200	600	–	3825	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	T1	T2	T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	REMARKS
LOCATION			SIZE		SPAN			REINFORCEMENT								SIDE BAR	STIRRUPS					



ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN

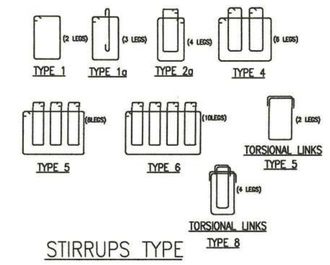


LAP/SPLICE IN BEAM

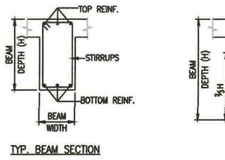
NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION

NOTES :

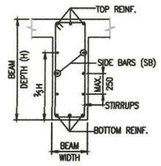
1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE



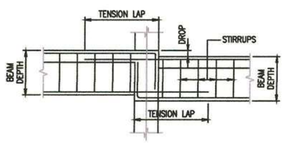
STIRRUPS TYPE



TYP. BEAM SECTION

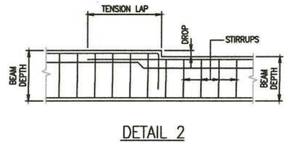


TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

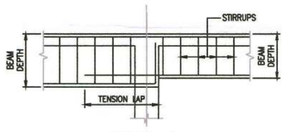


DETAIL 1

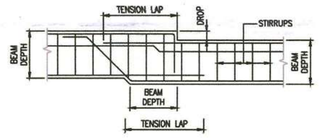
Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued



DETAIL 2



DETAIL 3



DETAIL 4

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client
ASTA CONSTRUCTION

Principal Architects
ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :
BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

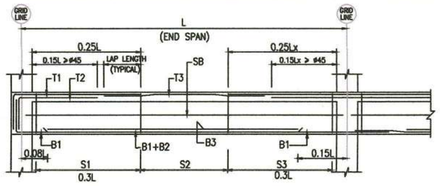
project title
HAJ
JEYPORE COLONY APARTMENTS

drawing title
ROOF BEAM SCHEDULE

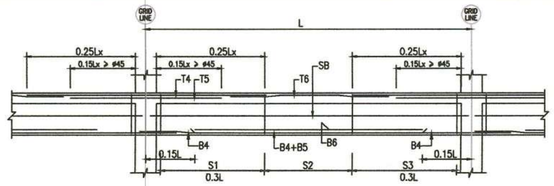
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/BM/R-/03		revision –

THIS DRAWING IS COPYRIGHT

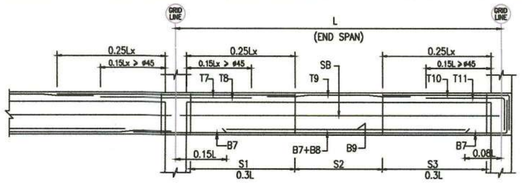
CAD FILE NAME: BEI698_S-BMR--03_.dwg



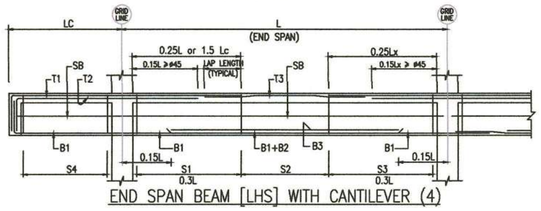
END SPAN BEAM [LHS] (1)



INTERMEDIATE SPAN BEAM (2)



END SPAN BEAM [RHS] (3)

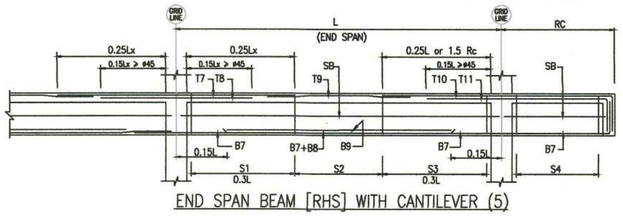


END SPAN BEAM [LHS] WITH CANTILEVER (4)

LEGEND

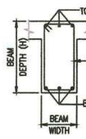
L -----LENGTH OF SPAN UNDER CONSIDERATION
La-----LENGTH OF ADJACENT SPAN TO THE SPAN UNDER CONSIDERATION
Lc-----LENGTH OF LEFT END CANTILEVER
Rc-----LENGTH OF RIGHT END CANTILEVER
(1)----CATEGORY

Lx = Length of span under consideration or Length of adjacent span whichever is greater

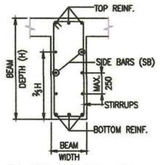


END SPAN BEAM [RHS] WITH CANTILEVER (5)

LOCATION			SIZE		SPAN			REINFORCEMENT																			SIDE BAR (EACH FACE)	STIRRUPS					REMARKS
								LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN												
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB	S1	S2	S3	S4	TYPE	
RVB8	1	–	200	600	–	4550	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB10	3	–	200	600	–	6700	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB12	1	–	200	750	–	1750	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB13	3	–	200	750	–	4900	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T16	–	2T12	–	T8-200	T8-200	T8-200	–	1	–
RVB14	1	–	300	750	–	1475	–	3T25	2T20	3T25	3T25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T12-100	T12-100	T12-100	–	1a	–
RVB15	3	–	200	750	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3T25	2T16	3T25	3T25	–	3T20	–	3T16	–	T8-150	T8-200	T8-150	–	1	–
RVB16	1	–	200	600	–	1700	–	2T16	–	2T16	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO RVB26
RVB17	2	–	200	600	–	3200	–	–	–	–	–	–	–	2T16	2T12	2T16	2T12	–	2T12	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO RVB27
RVB18	3	–	200	600	–	1700	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO RVB28
RVB25	1	–	200	750	–	2175	–	2T20	2T12	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB26	3	–	200	600	–	3400	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T16	–	2T12	–	T8-200	T8-200	T8-200	–	1	–
RVB29	1	–	200	750	–	4800	–	2T16	–	2T16	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB29a	3	–	200	600	–	1750	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB31	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB32	2	–	200	600	–	2175	–	–	–	–	–	–	–	2T12	2T12	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB33	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T12	–	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB34	3	–	200	600	–	2150	–	–	–	–	–	–	–	–	–	–	–	–	–	2T12	2T12	2T12	2T12	2T12	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB37	1	–	200	600	–	4000	–	2T16	2T12	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB38	3	–	200	600	–	2175	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
RVB44	1	–	200	750	–	5650	–	2T16	–	2T16	2T25	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB45	2	–	200	600	–	2000	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB46	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB47	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB48	3	–	200	600	–	3800	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB51	1	–	200	600	–	2300	–	2T12	–	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB52	3	–	200	600	–	2300	–	–	–	–	–	–	–	–	–	–	–	–	–	2T1	–	2T12	2T12	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
RVB57	1	–	200	600	–	6400	–	2T20	–	2T20	2T20	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-125	T8-200	T8-125	–	1	–
RVB58	3	–	200	600	–	5000	–	–	–	–	–	–	–	–	–	–	–	–	–	2T25	2T20	2T25	2T25	2T16	2T25	–	–	–	T8-175	T8-175	T8-175	–	1	–
RVB59	1	–	200	750	–	4500	–	2T20	2T16	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB60	2	–	200	750	–	5800	–	–	–	–	–	–	–	2T20	2T12	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB61	2	–	200	750	–	7200	–	–	–	–	–	–	–	2T20	–	2T20	2T16	–	2T16	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
RVB62	2	–	200	750	–	4350	–	–	–	–	–	–	–	2T20	2T20	2T20	2T25	–	–	–	–	–	–	–	–	–	–	–	T8-125	T8-125	T8-125	–	1	–
RVB63	3	–	200	750	–	5200	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T20	2T20	2T16	2T25	–	–	–	T8-200	T8-200	T8-200	–	1	–



TYP. BEAM SECTION

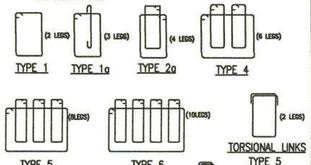


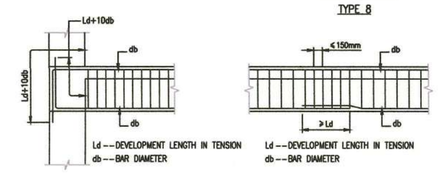
TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

NOTES :

1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE

STIRRUPS TYPE



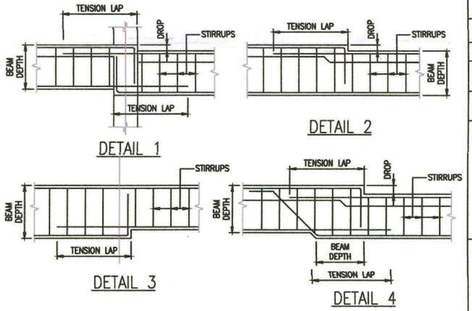


ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN

LAP/SPLICE IN BEAM

NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION



Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client
ASTA CONSTRUCTION

Principal Architects
ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :
BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

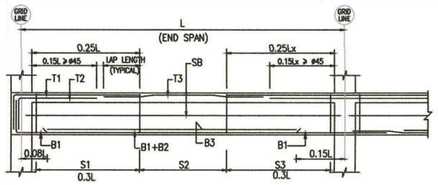
project title
HAJ
JEYPORE COLONY APARTMENTS

drawing title
ROOF BEAM SCHEDULE

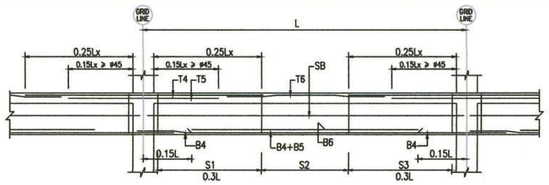
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/BM/R-/02	revision	–

THIS DRAWING IS COPYRIGHT

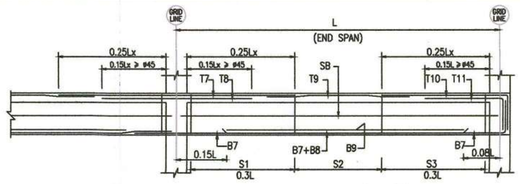
CAD FILE NAME: BEI698_S-BMR--02_.dwg



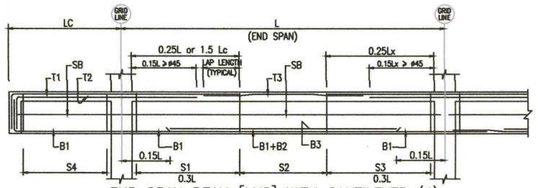
END SPAN BEAM [LHS] (1)



INTERMEDIATE SPAN BEAM (2)



END SPAN BEAM [RHS] (3)

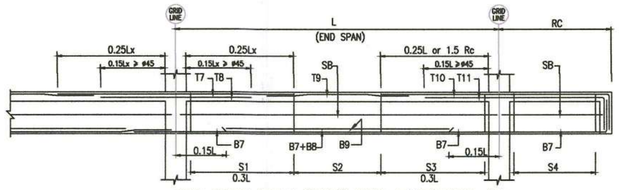


END SPAN BEAM [LHS] WITH CANTILEVER (4)

LEGEND

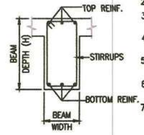
L -----LENGTH OF SPAN UNDER CONSIDERATION
La-----LENGTH OF ADJACENT SPAN TO THE SPAN UNDER CONSIDERATION
Lc-----LENGTH OF LEFT END CANTILEVER
Rc-----LENGTH OF RIGHT END CANTILEVER
(1)----CATEGORY

Lx = Length of span under consideration or Length of adjacent span whichever is greater

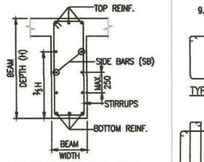


END SPAN BEAM [RHS] WITH CANTILEVER (5)

LOCATION			SIZE		SPAN			REINFORCEMENT																				SIDE BAR (EACH FACE)	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN															
								T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB	S1	S2	S3	S4	TYPE	
RHB1	4	–	200	750	1400	5900	–	2T25	2T20	2T25	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–200	T8–100	T12–100	1	–
RHB2	2	–	300	750	–	6075	–	–	–	–	–	–	–	3T20	3T16	3T20	3T16	–	2T16	–	–	–	–	–	–	–	–	–	T8–100	T8–150	T8–100	–	1	–
RHB3	3	–	300	750	–	6900	–	–	–	–	–	–	–	–	–	–	–	–	–	3T20	3T16	3T20	3T20	2T16	3T20	–	2T20	–	T8–100	T8–200	T8–100	–	1	–
RHB7	1	–	200	750	–	6250	–	2T16	–	2T16	2T20	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB7a	5	–	200	750	–	5000	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T20	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
RHB10	–	–	200	750	–	6075	–	2T20	–	2T20	2T25	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–100	T8–100	–	1	–
RHB11	2	–	200	750	–	7050	–	–	–	–	–	–	–	2T25	2T25	2T25	2T20	–	2T16	–	–	–	–	–	–	–	–	–	T10–125	T10–175	T10–125	–	1	–
RHB12	5	–	200	750	–	5750	1850	–	–	–	–	–	–	–	–	–	–	–	–	2T25	2T16	2T20	2T20	2T20	2T20	–	2T12	–	T8–125	T8–200	T8–125	T12–100	1	–
RHB15	4	–	300	750	1785	5700	–	2T25	2T20	2T25	2T20	–	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–150	T8–200	T8–150	T10–100	1	–
RHB16	2	–	200	750	–	5675	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB17	2	–	200	750	–	7450	–	–	–	–	–	–	–	2T20	2T12	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB18	3	–	200	750	–	3900	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB19	1	–	200	750	–	4525	–	2T20	2T12	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB20	3	–	200	750	–	1850	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB28	4	–	300	900	2700	4275	–	2T25	2T20	2T20	2T25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3T8	T8–200	T8–200	T8–200	T10–100	1	–
RHB29	2	–	200	750	–	7150	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB30	2	–	200	750	–	3600	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB31	2	–	200	750	–	6400	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	2T16	–	–	–	–	–	–	–	–	–	T8–150	T8–175	T8–150	–	1	–
RHB32	2	–	200	750	–	4400	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–175	T8–200	T8–175	–	1	–
RHB33	3	–	200	750	–	1550	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	–	2T20	2T20	–	2T16	–	–	–	T8–175	T8–175	T8–175	–	1	–
RHB34	1	–	200	750	–	6050	–	2T16	–	2T16	2T16	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	M	1	–
RHB35	3	–	200	600	–	4150	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T16	2T16	2T16	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB36	1	–	200	750	–	2350	–	2T20	–	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–175	T8–175	T8–175	–	1	–
RHB37	3	–	300	750	–	6950	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T16	2T16	–	2T25	–	2T16	–	T8–125	T8–200	T8–125	–	1	–
RHB39	1	–	300	750	–	6325	–	3T20	–	3T20	3T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–200	T8–100	–	1	–
RHB40	3	–	300	750	–	6300	–	–	–	–	–	–	–	–	–	–	–	–	–	3T20	3T20	3T20	3T20	–	3T25	–	2T12	–	T10–125	T10–200	T10–125	–	1	–
RHB43	1	–	200	750	–	6225	–	2T16	–	2T16	2T20	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RHB44	3	–	200	750	–	6450	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T16	2T16	2T16	–	2T20	–	2T12	–	T8–175	T8–200	T8–175	–	1	–
RVB1	1	–	200	600	–	5550	–	2T20	–	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
RVB2	3	–	200	600	–	6400	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB	S1	S2	S3	S4	TYPE	REMARKS
LOCATION			SIZE		SPAN			LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN								SIDE BAR	STIRRUPS					
								REINFORCEMENT																										



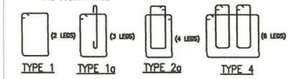
TYP. BEAM SECTION



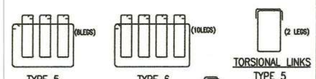
TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

NOTES :

1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE



TYPE 1 TYPE 1a TYPE 2a TYPE 4

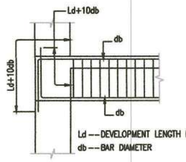


TYPE 5 TYPE 6 TORSIONAL LINKS TYPE 5

STIRRUPS TYPE

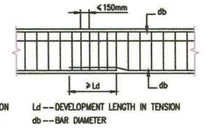


TORSIONAL LINKS TYPE 8



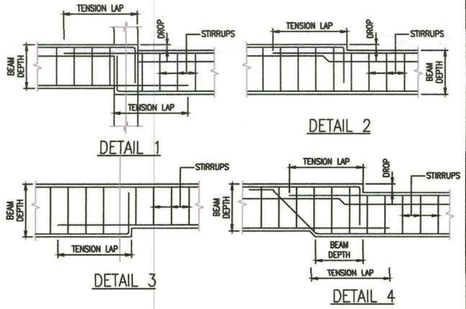
ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN



LAP/SPLICE IN BEAM

NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION



Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client
ASTA CONSTRUCTION

Principal Architects
ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road, First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :
BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road, Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

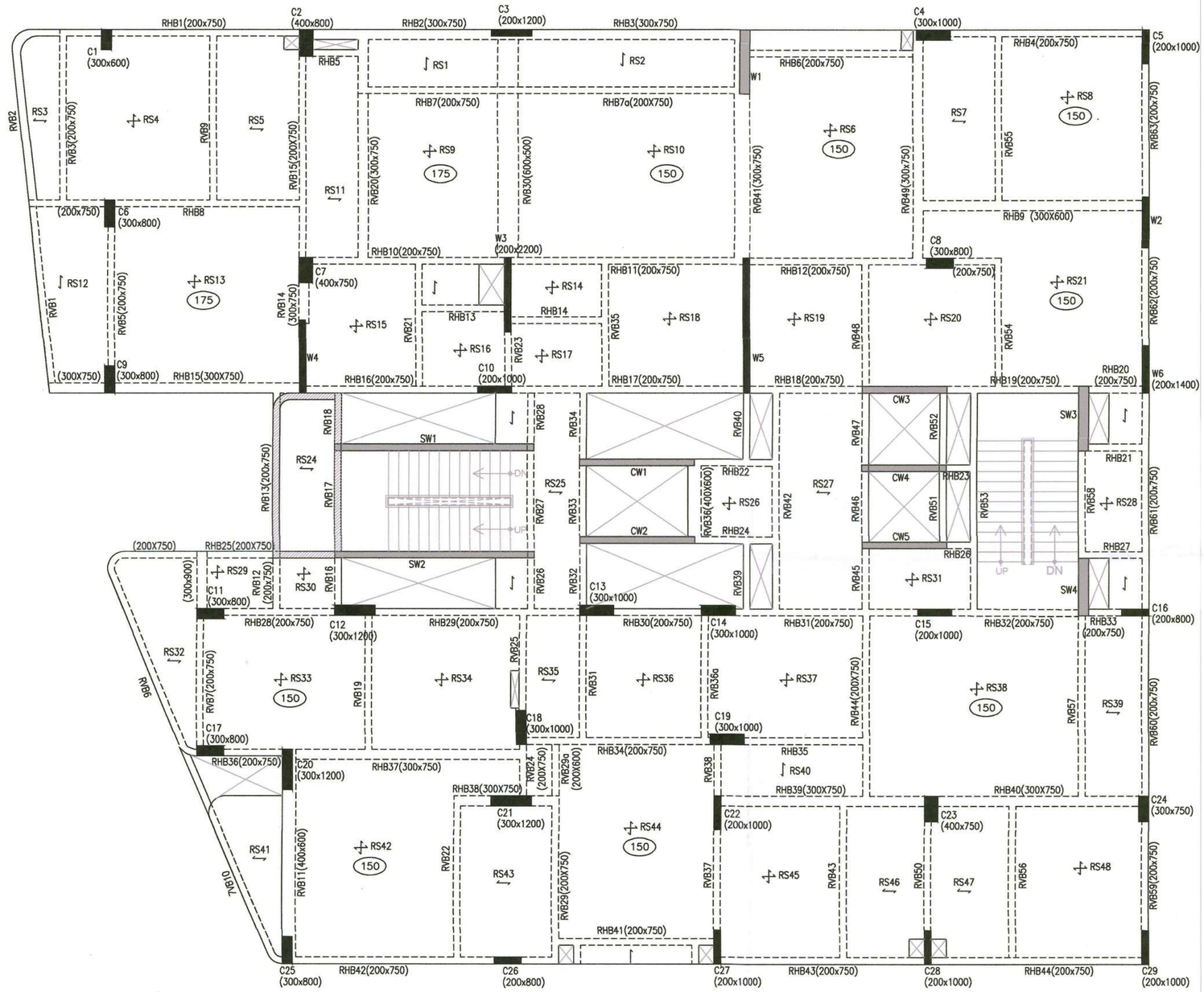
project title
HAJ
JEYPORE COLONY APARTMENTS

drawing title
ROOF BEAM SCHEDULE

scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2024	approved by	P.J
drawing no.	BEI698_/S-/BM/R-/01		revision –

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI698_S-BMR--01_.dwg



ROOF FRAMING PLAN

SCALE 1:100

NOTES

UNLESS OTHERWISE SPECIFIED

1. GRADE OF CONCRETE M35 FOR COLUMNS & RC WALLS
   GRADE OF CONCRETE M30 FOR OTHER ELEMRNTS
2. GRADE OF STEEL Fe550D
3. ALL THE BEAMS ARE TO BE 200X600mm.
4. ALL THE SLABS ARE TO BE 125mm THICK.

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

–	ISSUE FOR CONSTRUCTION	SATHYA	07/10/24
NO.	AMENDMENTS	BY	DATE

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

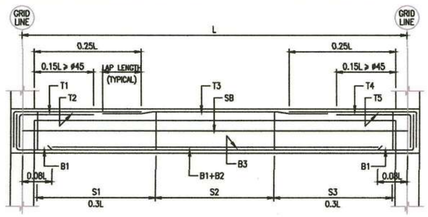
drawing title

ROOF FRAMING PLAN

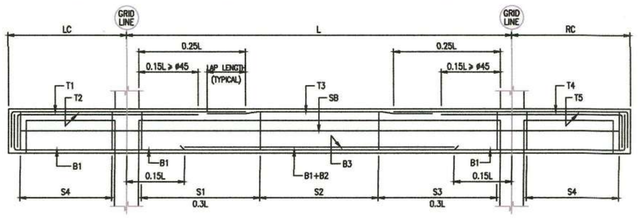
scale	NTS	design by	SURYA
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/FP/R/--/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-FPR--01_.dwg



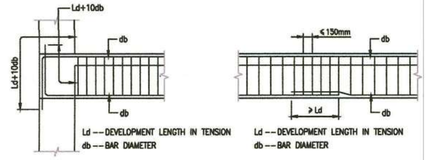
TYPICAL DETAIL OF SINGLE SPAN BEAM (1)



TYPICAL DETAIL OF SINGLE SPAN BEAM WITH CANTILEVERS (2)

L —— LENGTH OF SPAN UNDER CONSIDERATION
RC —— LENGTH OF RIGHT END CANTILEVER
LC —— LENGTH OF LEFT END CANTILEVER
(1) —— CATEGORY

LOCATION			SIZE		SPAN			REINFORCEMENT								SIDE BAR	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	SPAN T1	T2	T3	T4	T5	B1	B2	B3	SB (EACH FACE)	S1	S2	S3	S4	TYPE	
TVB39	1	–	200	600	–	2150	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB40	1	–	200	600	–	2150	–	2T20	–	2T20	2T20	2T12	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB41	1	–	300	600/750	–	5925	–	3T25	–	3T25	3T25	–	3T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB42	1	–	200	600	–	6600	–	2T12	–	2T12	2T12	–	2T16	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
TVB43	1	–	200	600	–	4700	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO TVB56
TVB49	1	–	300	600/750	–	6750	–	3T25	2T16	3T16	3T16	–	3T25 +3T25	–	–	–	T10–175	T10–200	T10–175	–	1	–
TVB50	1	–	200	600	–	4100	–	2T16	2T12	2T16	2T16	2T12	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB53	1	–	200	600	–	6600	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
TVB54	1	–	300	750	–	3800	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T12–100	T12–200	T12–100	–	1	–
TVB55	1	–	200	600	–	5100	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
TVB5	1	–	200	750	–	4900	–	2T25	2T20	2T25	2T25	2T20	2T25	–	2T16	–	T8–125	T8–175	T8–125	–	1	–
TVB7	2	–	200/300	750/900	–	4050	1850	2T25	–	2T25	2T25/ 3T25 +2T25	3T25	2T25/ 3T25	–	–	–	T8–200	T8–200	T8–200	T12–200	1/1a	–
THB23	1	–	200	750	2700	4000	–	2T20	2T16	2T20	2T20	2T20	2T20	–	2T20	–	T8–200	T8–200	T8–200	T10–200	1	
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	T1	T2	2T16 T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	REMARKS
LOCATION			SIZE		SPAN			REINFORCEMENT SPAN								SIDE BAR	STIRRUPS					



ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

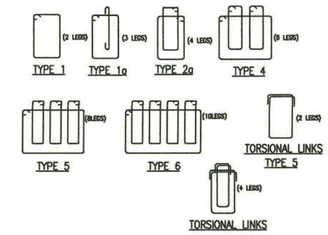
NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN

LAP/SPLICE IN BEAM

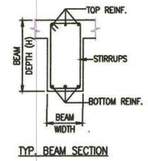
NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION

NOTES :

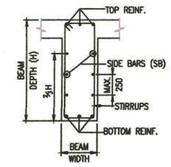
1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE



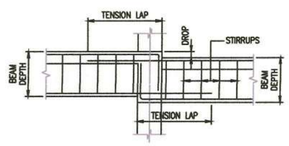
STIRRUPS TYPE



TYP. BEAM SECTION

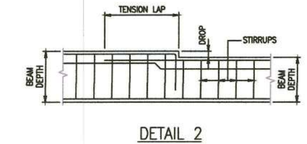


TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

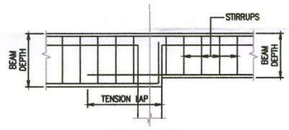


DETAIL 1

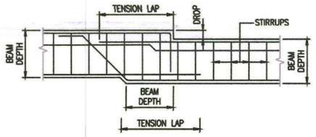
Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued



DETAIL 2



DETAIL 3



DETAIL 4

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

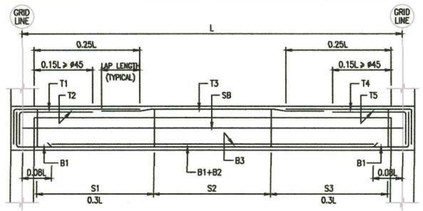
drawing title

TYPICAL FLOOR (1ST TO 7TH) BEAM SCHEDULE

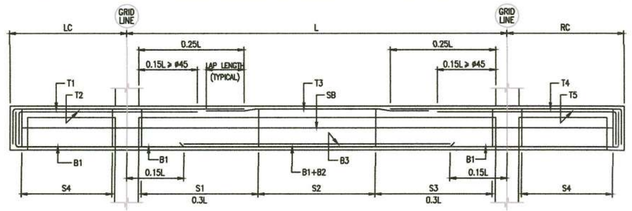
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/BM/T/--/04		revision –

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI698_S-BMT--04_.dwg



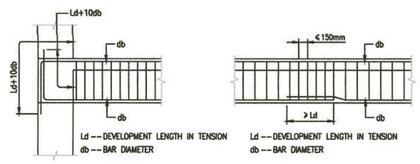
TYPICAL DETAIL OF SINGLE SPAN BEAM (1)



TYPICAL DETAIL OF SINGLE SPAN BEAM WITH CANTILEVERS (2)

L —— LENGTH OF SPAN UNDER CONSIDERATION
RC —— LENGTH OF RIGHT END CANTILEVER
LC —— LENGTH OF LEFT END CANTILEVER
(1) —— CATEGORY

LOCATION			SIZE		SPAN			REINFORCEMENT								SIDE BAR	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	SPAN								(EACH FACE)						
								T1	T2	T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	
THB4	1	–	200	750	–	6750	–	3T20	2T12	3T20	3T20	–	3T16	–	2T12	–	T8–175	T8–200	T8–175	–	1	–
THB5	1	–	200	600	–	1800	–	2T12	–	2T12	2T12	–	2T20	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB6	1	–	200	750	–	5200	–	2T20	2T20	2T20	2T20	–	2T20	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
THB8	2	–	200	750	2400	5700	–	2T25	2T20	2T25	2T25	–	2T20	–	2T20	–	T8–150	T8–200	T8–150	T12–100	1	–
THB9	1	–	300	600	–	6750	–	2T16	–	2T16	2T16	–	2T25	–	2T25	–	T8–150	T8–200	T8–150	–	1	–
THB13	1	–	200	600	–	2650	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB14	1	–	200	600	–	2875	–	2T20	2T20	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB21	1	–	200	600	–	1900	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO THB27
THB22	1	–	200	600	–	2400	–	2T20	2T16	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO THB24
THB23	1	–	200	600	–	1200	–	2T12	–	2T12	2T12	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	SIMILAR TO THB26
THB38	2	–	300	750	1700	–	1250	2T20	2T12	2T20	2T20	2T12	2T16	–	–	–	T8–100	T8–100	T8–100	T10–100	1	–
THB41	1	–	200	750	–	4800	–	2T20	–	2T20	2T20	–	2T20	–	–	–	T8–125	T8–200	T8–125	–	1	–
THB42	2	–	200	750	–	6550	1500	2T25	–	2T25	2T25	2T20	2T20	–	2T12	–	T8–150	T8–200	T8–150	T10–100	1	–
TVB3	1	–	200	750	–	5050	–	2T16	–	2T16	2T16	–	2T16	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
TVB9	1	–	200	600	–	5050	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
TVB11	1	–	400	600	–	6150	–	4T20	2T20	4T20	4T20	3T20	4T20	–	–	–	T12–100	T12–175	T12–100	–	5	–
TVB19	1	–	200	600	–	4250	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–200	T8–200	T8–200	–	1	–
TVB20	1	–	300	600/750	–	6700	–	3T12	–	3T12	3T12	–	3T25	–	3T20	–	T8–200	T8–200	T8–200	–	1	–
TVB21	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
TVB22	1	–	200	600	–	4800	–	2T12	–	2T12	2T12	–	2T20	–	2T16	–	T8–125	T8–200	T8–125	–	1	–
TVB23	1	–	200	600	–	2000	–	2T20	–	2T20	2T20	2T12	2T20	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB30	1	–	600	500/425	–	6750	–	6T12	–	6T12	6T12	–	6T20	–	4T20	–	T10–150	T10–200	T10–150	–	1a	–
TVB35	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T12	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
TVB36	1	–	400	600	–	2300	–	2T16	–	2T16	2T16	–	2T16	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
TVB36a	1	–	200	600	–	3825	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	SPAN								SIDE BAR	STIRRUPS					REMARKS
								T1	T2	T3	T4	T5	B1	B2	B3	SB	S1	S2	S3	S4	TYPE	
LOCATION			SIZE		SPAN			REINFORCEMENT														



ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

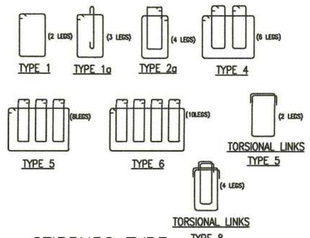
NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN

LAP/SPLICE IN BEAM

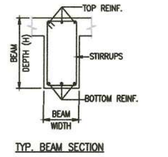
NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION

NOTES :

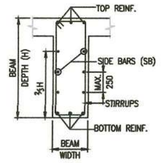
1. FOR GENERAL NOTES REFER TO DWG. NO. BEI312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BEI312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE



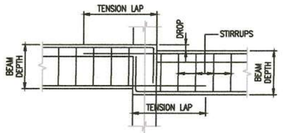
STIRRUPS TYPE



TYP. BEAM SECTION

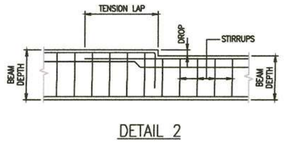


TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

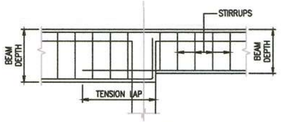


DETAIL 1

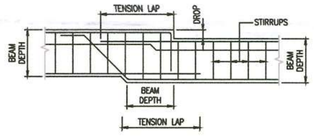
Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued



DETAIL 2



DETAIL 3



DETAIL 4

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

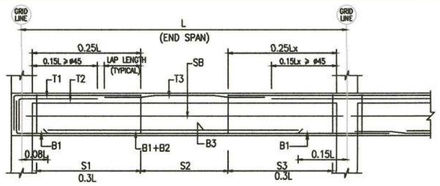
drawing title

TYPICAL FLOOR (1ST TO 7TH) BEAM SCHEDULE

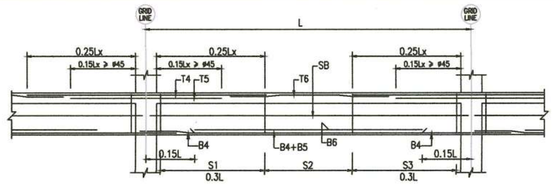
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BEI698_/S-/BM/T/--/03	revision	–

THIS DRAWING IS COPYRIGHT

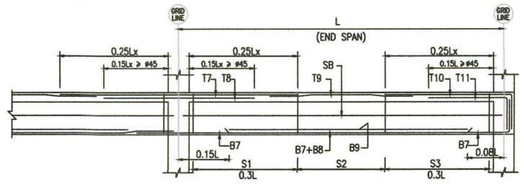
CAD FILE NAME: BEI698_S-BMT--03_.dwg



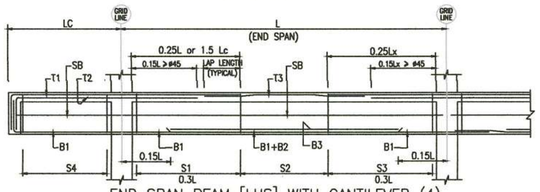
END SPAN BEAM [LHS] (1)



INTERMEDIATE SPAN BEAM (2)



END SPAN BEAM [RHS] (3)

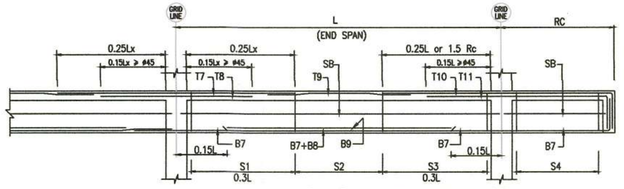


END SPAN BEAM [LHS] WITH CANTILEVER (4)

LEGEND

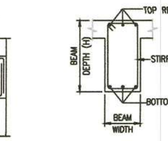
L -----LENGTH OF SPAN UNDER CONSIDERATION
La-----LENGTH OF ADJACENT SPAN TO THE SPAN UNDER CONSIDERATION
Lc-----LENGTH OF LEFT END CANTILEVER
Rc-----LENGTH OF RIGHT END CANTILEVER
(1)----CATEGORY

Lx = Length of span under consideration or Length of adjacent span whichever is greater

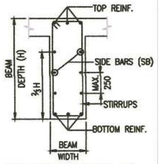


END SPAN BEAM [RHS] WITH CANTILEVER (5)

LOCATION			SIZE		SPAN			REINFORCEMENT																		SIDE BAR (EACH FACE)	STIRRUPS					REMARKS
								LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN												
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB	S1	S2	S3	S4	TYPE	
TVB6	1	–	200	600	–	4550	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB10	3	–	200	600	–	6700	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB12	1	–	200	750	–	1750	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB13	3	–	200	750	–	4900	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T16	–	2T12	–	T8-200	T8-200	T8-200	–	1	–
TVB14	1	–	300	750	–	1475	–	3T25	2T20	3T25	3T25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T12-100	T12-100	T12-100	–	1a	–
TVB15	3	–	200	750	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3T25	2T16	3T25	3T25	–	3T20	–	3T16	–	T8-150	T8-200	T8-150	–	1	–
TVB16	1	–	200	600	–	1700	–	2T16	–	2T16	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO TVB26
TVB17	2	–	200	600	–	3200	–	–	–	–	–	–	–	2T16	2T12	2T16	2T12	–	2T12	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO TVB27
TVB18	3	–	200	600	–	1700	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	SIMILAT TO TVB28
TVB25	1	–	200	750	–	2175	–	2T20	2T12	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB26	3	–	200	600	–	3400	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T16	–	2T12	–	T8-200	T8-200	T8-200	–	1	–
TVB29	1	–	200	750	–	4800	–	2T16	–	2T16	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB29a	3	–	200	600	–	1750	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB31	1	–	200	600	–	3800	–	2T12	–	2T12	2T12	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB32	2	–	200	600	–	2175	–	–	–	–	–	–	–	2T12	2T12	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB33	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T12	–	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB34	3	–	200	600	–	2150	–	–	–	–	–	–	–	–	–	–	–	–	–	2T12	2T12	2T12	2T12	2T12	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB37	1	–	200	600	–	4000	–	2T16	2T12	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB38	3	–	200	600	–	2175	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TVB44	1	–	200	750	–	5650	–	2T16	–	2T16	2T25	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB45	2	–	200	600	–	2000	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB46	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB47	2	–	200	600	–	2300	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB48	3	–	200	600	–	3800	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	2T12	2T16	2T16	–	2T16	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB51	1	–	200	600	–	2300	–	2T12	–	2T12	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB52	3	–	200	600	–	2300	–	–	–	–	–	–	–	–	–	–	–	–	–	2T1	–	2T12	2T12	–	2T12	–	–	–	T8-200	T8-200	T8-200	–	1	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TVB57	1	–	200	600	–	6400	–	2T20	–	2T20	2T20	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-125	T8-200	T8-125	–	1	–
TVB58	3	–	200	600	–	5000	–	–	–	–	–	–	–	–	–	–	–	–	–	2T25	2T20	2T25	2T25	2T16	2T25	–	–	–	T8-175	T8-175	T8-175	–	1	–
TVB59	1	–	200	750	–	4500	–	2T20	2T16	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB60	2	–	200	750	–	5800	–	–	–	–	–	–	–	2T20	2T12	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB61	2	–	200	750	–	7200	–	–	–	–	–	–	–	2T20	–	2T20	2T16	–	2T16	–	–	–	–	–	–	–	–	–	T8-200	T8-200	T8-200	–	1	–
TVB62	2	–	200	750	–	4350	–	–	–	–	–	–	–	2T20	2T20	2T20	2T25	–	–	–	–	–	–	–	–	–	–	–	T8-125	T8-125	T8-125	–	1	–
TVB63	3	–	200	750	–	5200	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T20	2T20	2T16	2T25	–	–	–	T8-200	T8-200	T8-200	–	1	–



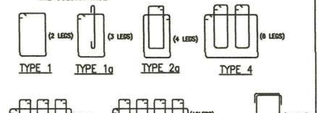
TYP. BEAM SECTION



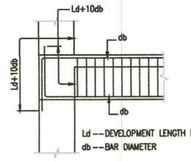
TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

NOTES :

1. FOR GENERAL NOTES REFER TO DWG. NO. BE3312_S-/NT/---/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BE3312_S-/SD/---/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE

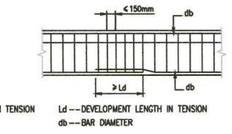


STIRRUPS TYPE



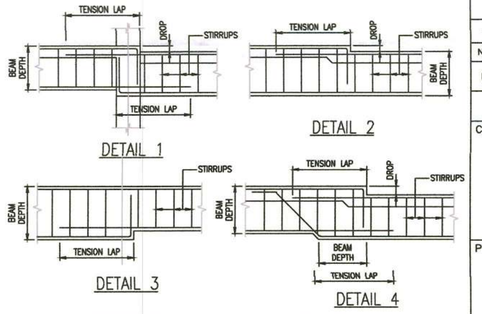
ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN



LAP/SPLICE IN BEAM

NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION



Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

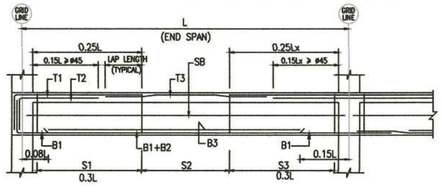
drawing title

TYPICAL FLOOR (1ST TO 7TH) BEAM SCHEDULE

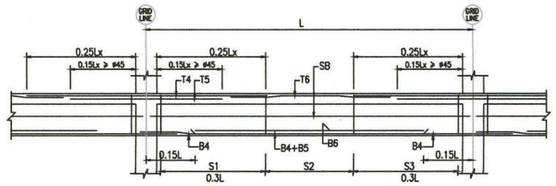
scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BE1698_/S-/BM/T/--/02	revision	–

THIS DRAWING IS COPYRIGHT

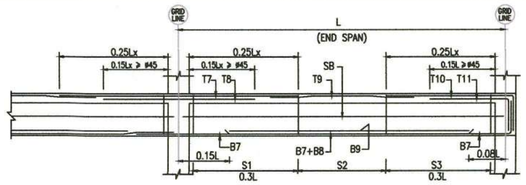
CAD FILE NAME: BE1698_S-BMT--02_.dwg



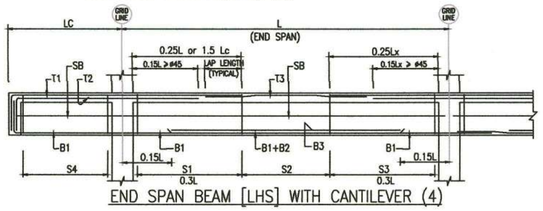
END SPAN BEAM [LHS] (1)



INTERMEDIATE SPAN BEAM (2)



END SPAN BEAM [RHS] (3)

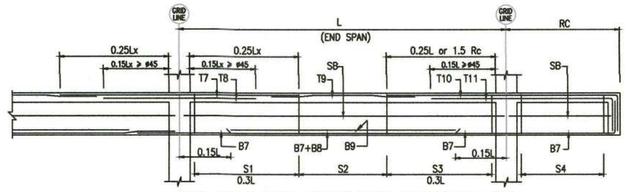


END SPAN BEAM [LHS] WITH CANTILEVER (4)

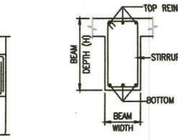
LEGEND

L -----LENGTH OF SPAN UNDER CONSIDERATION
La-----LENGTH OF ADJACENT SPAN TO THE SPAN UNDER CONSIDERATION
Lc-----LENGTH OF LEFT END CANTILEVER
Rc-----LENGTH OF RIGHT END CANTILEVER
(1)----CATEGORY

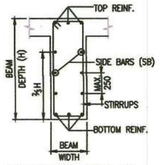
Lx = Length of span under consideration or Length of adjacent span whichever is greater



END SPAN BEAM [RHS] WITH CANTILEVER (5)



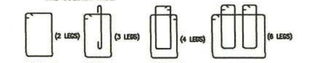
TYP. BEAM SECTION



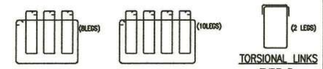
TYP. SIDE BARS DETAIL FOR BEAM DEPTH > 750

NOTES :

1. FOR GENERAL NOTES REFER TO DWG. NO. BE1312_S-/NT/--/01
2. FOR STANDARD DETAILS REFER TO DWG. NO. BE1312_S-/SD/--/01
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE KEY PLAN AND ALL OTHER RELEVANT DRAWINGS.
4. IF THE REINFORCEMENT IS PROVIDED IN TWO LAYERS OR MORE, THEN SPACER BARS BETWEEN THE LAYERS NEED TO BE PROVIDED
5. SPACER BARS TO BE Y25 OR MAIN BAR SIZE (WHICHEVER IS GREATER) AT 900c/c BETWEEN EACH LAYER OF MAIN STEEL.
6. THE SPAN LENGTH INDICATED ARE NOT TO BE USED FOR SETTING OUT OR MEASUREMENT.
7. IF SAME SIZE OF THE REINFORCEMENT BARS IS INDICATED THROUGHOUT FOR BOTTOM OR TOP REINFORCEMENT, THE LAP PROVIDED FOR THE REINFORCEMENT CAN BE OMITTED BY PROVIDING STRAIGHT BARS FOR THE WHOLE LENGTH OF THE BEAM
8. LAP LENGTH FOR BARS SHOULD BE SAME AS TENSION ANCHORAGE LENGTH BASED UPON THE LARGER BAR DIAMETER FOR UNEQUAL SIZE OF BARS
9. FIRST STIRRUP OF BEAM SHOULD BE 50mm (MAXIMUM) FROM THE COLUMN FACE

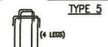


TYPE 1 TYPE 1a TYPE 2a TYPE 4

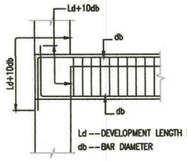


TYPE 5 TYPE 6 TORSIONAL LINKS TYPE 5

STIRRUPS TYPE

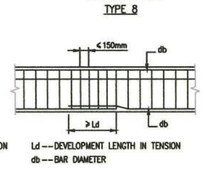


TORSIONAL LINKS TYPE 8



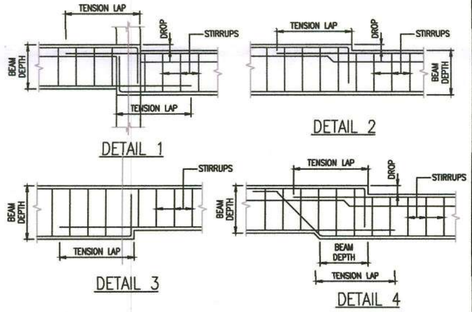
ANCHORAGE OF BEAM BARS AT BEAM AND COLUMN JUNCTION (EXTERNAL JOINT)

NOTE:
IN AN INTERNAL JOINT, BOTH TOP & BOTTOM BARS OF THE BEAM SHALL BE TAKEN CONTINUOUSLY THROUGH THE COLUMN



LAP/SPLICE IN BEAM

NOTE:
NOT MORE THAN 50 PERCENT OF THE BARS SHALL BE SPLICED AT ONE SECTION



Wherever the drop is less than or equivalent to 50
The reinforcement bars can be bent at 1:10 and continued

LOCATION			SIZE		SPAN			REINFORCEMENT																						SIDE BAR (EACH FACE)	STIRRUPS					REMARKS
BEAM MARKING	CATEGORY	GRID LINE OR BEAM MARK	WIDTH (mm)	DEPTH (mm)	LEFT END CANTILEVER Lc	SPAN (APPROX) L	RIGHT END CANTILEVER Rc	LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN													S1	S2	S3	S4	TYPE	
								T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB						
THB1	4	–	200	750	1400	5900	–	2T25	2T20	2T25	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–200	T8–100	T12–100	1	–
THB2	2	–	300	750	–	6075	–	–	–	–	–	–	–	3T20	3T16	3T20	3T16	–	2T16	–	–	–	–	–	–	–	–	–	T8–100	T8–150	T8–100	–	1	–
THB3	3	–	300	750	–	6900	–	–	–	–	–	–	–	–	–	–	–	–	–	3T20	3T16	3T20	3T20	2T16	3T20	–	2T20	–	T8–100	T8–200	T8–100	–	1	–
THB7	1	–	200	750	–	6250	–	2T16	–	2T16	2T20	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB7a	5	–	200	750	–	5000	–	–	–	–	–	–	–	–	–	–	–	–	–	2T16	–	2T16	2T16	–	2T20	–	2T12	–	T8–200	T8–200	T8–200	–	1	–
THB10	–	–	200	750	–	6075	–	2T20	–	2T20	2T25	–	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–100	T8–100	–	1	–
THB11	2	–	200	750	–	7050	–	–	–	–	–	–	–	2T25	2T25	2T25	2T20	–	2T16	–	–	–	–	–	–	–	–	–	T10–125	T10–175	T10–125	–	1	–
THB12	5	–	200	750	–	5750	1850	–	–	–	–	–	–	–	–	–	–	–	–	2T25	2T16	2T20	2T20	2T20	2T20	–	2T12	–	T8–125	T8–200	T8–125	T12–100	1	–
THB15	4	–	300	750	1785	5700	–	2T25	2T20	2T25	2T20	–	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–150	T8–200	T8–150	T10–100	1	–
THB16	2	–	200	750	–	5675	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB17	2	–	200	750	–	7450	–	–	–	–	–	–	–	2T20	2T12	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB18	3	–	200	750	–	3900	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB19	1	–	200	750	–	4525	–	2T20	2T12	2T20	2T16	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB20	3	–	200	750	–	1850	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T12	2T20	2T20	–	2T12	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB28	4	–	300	900	2700	4275	–	2T25	2T20	2T20	2T25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3T8	T8–200	T8–200	T8–200	T10–100	1	–
THB29	2	–	200	750	–	7150	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB30	2	–	200	750	–	3600	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB31	2	–	200	750	–	6400	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	2T16	–	–	–	–	–	–	–	–	–	T8–150	T8–175	T8–150	–	1	–
THB32	2	–	200	750	–	4400	–	–	–	–	–	–	–	2T20	2T16	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	T8–175	T8–200	T8–175	–	1	–
THB33	3	–	200	750	–	1550	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	–	2T20	2T20	–	2T16	–	–	–	T8–175	T8–175	T8–175	–	1	–
THB34	1	–	200	750	–	6050	–	2T16	–	2T16	2T16	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	M	1	–
THB35	3	–	200	600	–	4150	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T16	2T16	2T16	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB36	1	–	200	750	–	2350	–	2T20	–	2T20	2T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–175	T8–175	T8–175	–	1	–
THB37	3	–	300	750	–	6950	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T16	2T16	–	2T25	–	2T16	–	T8–125	T8–200	T8–125	–	1	–
THB39	1	–	300	750	–	6325	–	3T20	–	3T20	3T20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–100	T8–200	T8–100	–	1	–
THB40	3	–	300	750	–	6300	–	–	–	–	–	–	–	–	–	–	–	–	–	3T20	3T20	3T20	3T20	–	3T25	–	2T12	–	T10–125	T10–200	T10–125	–	1	–
THB43	1	–	200	750	–	6225	–	2T16	–	2T16	2T20	–	2T12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
THB44	3	–	200	750	–	6450	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T16	2T16	2T16	–	2T20	–	2T12	–	T8–175	T8–200	T8–175	–	1	–
TVB1	1	–	200	600	–	5550	–	2T20	–	2T20	2T16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	T8–200	T8–200	T8–200	–	1	–
TVB2	3	–	200	600	–	6400	–	–	–	–	–	–	–	–	–	–	–	–	–	2T20	2T20	2T20	2T20	–	2T16	–	–	–	T8–200	T8–200	T8–200	–	1	–
MARKING BEAM	CATEGORY	BEAM MARK OR GRID LINE	(mm) WIDTH	(mm) DEPTH	Lc CANTILEVER LEFT END	L (APPROX) SPAN	Rc CANTILEVER RIGHT END	T1	T2	T3	B1	B2	B3	T4	T5	T6	B4	B5	B6	T7	T8	T9	T10	T11	B7	B8	B9	SB	S1	S2	S3	S4	TYPE	REMARKS
LOCATION			SIZE		SPAN			LEFT END SPAN						INTERMEDIATE SPAN						RIGHT END SPAN								SIDE BAR	STIRRUPS					
								REINFORCEMENT																										

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

drawing title

TYPICAL FLOOR (1ST TO 7TH) BEAM SCHEDULE

scale	NTS	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUN 2021	approved by	P.J
drawing no.	BE1698_/S-/BM/T/--/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BE1698_S-BMT--01_.dwg

TERRACE TO OHT & LMR													
4TH TO TERRACE	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM		
	LINKS	Z1 MAIN LINK	Z1 OTHERS	Z2 LINKS	MAIN LINKS	OTHER LINKS	Z2 LINKS	MAIN LINKS	OTHER LINKS	MAIN LINKS	OTHER LINKS	Z2 LINKS
	T8 @ 200	T8 @ 175	T8 @ 175	T8 @ 175	T8 @ 100	T8@ 100	T8 @ 100	T8 @ 100	T8@ 100	T8 @ 100	T8@ 100	T8 @ 100
	400 750 ●T16	300 750 ○T12			200 1000 ●T16 ○T12			300 400 300 200 1000 ●T10		200 1000 ○T12		
	18–T16	16–T12			4–T16 + 16–T12			12–T10 + 2–T10		20–T12		
1ST TO 4TH	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM			M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM		
	LINKS	Z1 MAIN LINK	Z1 OTHERS	Z2 LINKS	MAIN LINKS	OTHER LINKS	Z2 LINKS	MAIN LINKS	OTHER LINKS	MAIN LINKS	OTHER LINKS	Z2 LINKS
	T8 @ 200	T8 @ 175	T8 @ 175	T8 @ 175	T8 @ 100	T8@ 100	T8 @ 100	T8 @ 100	T8@ 100	T8 @ 100	T8@ 100	T8 @ 100
	400 750 ●T20 ●T16	300 750 ○T12			200 1000 ●T16			300 400 300 200 1000 ●T16		200 1000 ○T12		
	8–T20 + 10–T16	16–T12			20–T16			12–T16 + 2–T16		20–T12		
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM			M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM		
	LINKS	Z1 MAIN LINK	Z1 OTHERS	Z2 LINKS	Z1 MAIN LINK	Z1 OTHERS	Z2 LINKS	LINKS		Z1 MAIN LINK	Z1 OTHERS	Z2 LINKS
	T8 @ 200	T8 @ 175	T8 @ 175	T8 @ 175	T8 @ 100	T8 @ 100	T8 @ 100	T8 @ 100		T8 @ 100	T8 @ 100	T8 @ 100
	400 750 ●T20	300 750 ○T12			300 1000 ●T20 ●T16			300 1000 ●T16 ○T12		300 1000 ○T12		
	18–T20	16–T12			14–T20 + 8–T16			4–T16 + 16–T12		22–T12		
COLUMN MARKED	C7	C9			V19			V15, V16		V17		

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/10	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-10_.dwg

TERRACE TO OHT & LMR	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 200 × 800 ○T12			
	16–T12			
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 200 × 800 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100 300 × 1000 ⊛T16 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 175 / Z1 OTHERS: T8 @ 175 / Z2 LINKS: T8 @ 175 300 × 800 ⊛T16 ○T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 300 × 1200 ○T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200 300 + 1300 + 300 × 200 × 1900 ⊛T20 ⊛T16
	16–T12	4–T16 + 18–T12	4–T16 + 14–T12	26–T12	12–T20 + 12–T16
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 200 × 800 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100 300 × 1000 ⊛T16 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 175 / Z1 OTHERS: T8 @ 175 / Z2 LINKS: T8 @ 175 300 × 800 ⊛T16 ○T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 300 × 1200 ⊛T16 ○T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 200 × 1900 ⊛T20
	16–T12	4–T16 + 18–T12	4–T16 + 14–T12	10–T16 + 16–T12	38–T20
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100 300 × 800 ⊛T16 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100 300 × 1000 ⊛T16 ○T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM Z1 MAIN LINK: T8 @ 175 / Z1 OTHERS: T8 @ 175 / Z2 LINKS: T8 @ 175 300 × 800 ⊛T16 ○T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 300 × 1200 ⊛T20 ⊛T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100 300 × 1200 ⊛T20
	4–T16 + 14–T12	4–T16 + 18–T12	4–T16 + 14–T12	6–T20 + 20–T16	26–T20
COLUMN MARKED	H18	V11, H13	C3	V13	H21

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91-9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

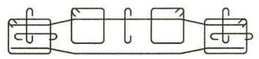
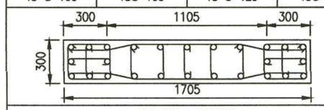
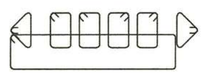
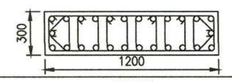
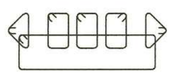
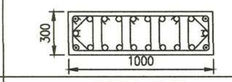
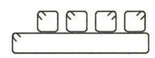
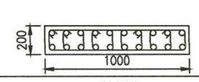
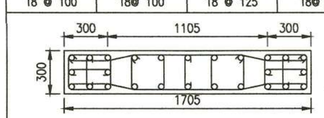
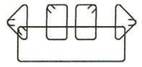
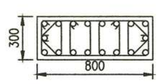
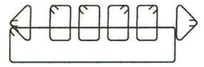
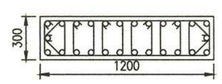
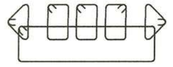
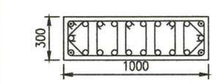
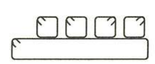
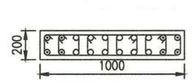
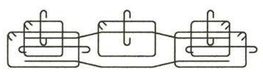
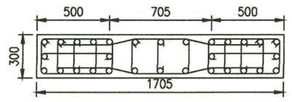
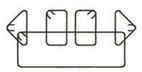
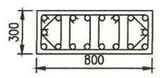
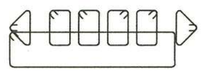
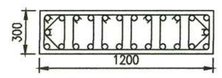
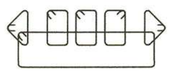
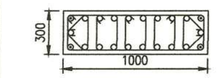
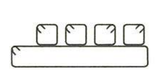
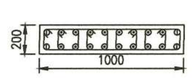
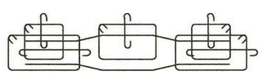
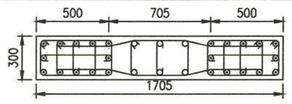
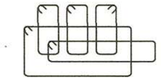
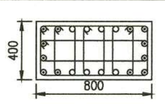
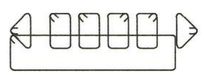
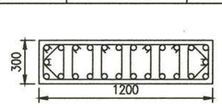
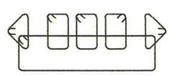
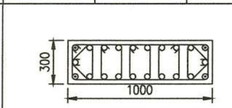
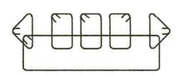
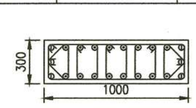
drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/09	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-09_.dwg

TERRACE TO OHT & LMR	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200  16–T12 + 10–T12		M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100  26–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100  4–T16 + 18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  20–T12
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200  16–T12 + 10–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  LINKS: T8 @ 175  18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  26–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100  4–T16 + 18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  8–T16 + 12–T12
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200  24–T12 + 6–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  LINKS: T8 @ 175  18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  26–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100  4–T16 + 18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  4–T20 + 16–T16
BASE TO 1ST	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200  24–T16 + 6–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  LINKS: T8 @ 175  12–T16 + 8–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100  26–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100  4–T16 + 18–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM  Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100  6–T20 + 16–T16
COLUMN MARKED	V21	C5	H8	H9, H10	H11

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/08	revision	–

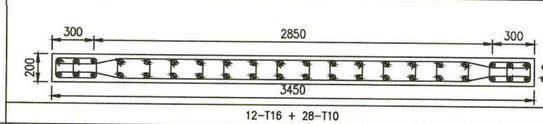
THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-08_.dwg

TERRACE TO OHT & LMR	SAME AS BELOW	SAME AS BELOW
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
BASE TO 1ST	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
COLUMN MARKED	CW1–H2	H6

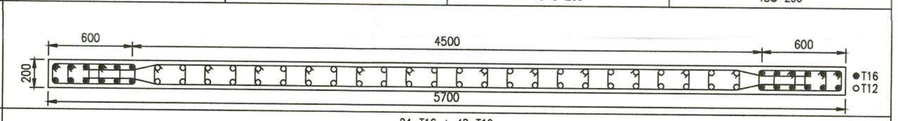
4TH TO TERRACE

BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 200	T8@ 200



12–T16 + 28–T10

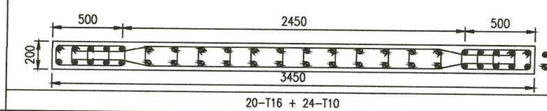
BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 200	T8@ 200



24–T16 + 48–T12

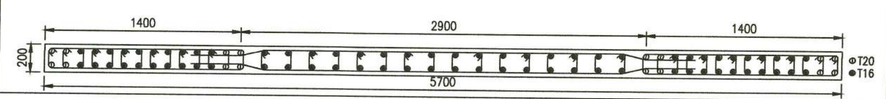
1ST TO 4TH

BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 200	T8@ 200



20–T16 + 24–T10

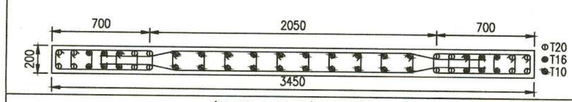
BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 100	T8@ 200



(16–T20 + 40–T16) + 32–T16

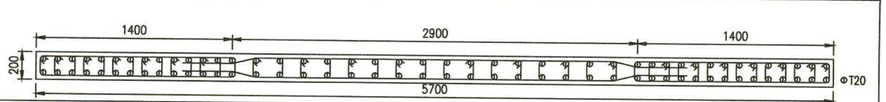
BASE TO 1ST

BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 200	T8@ 200



(16–T20 + 12–T16) + 20–T10

BE MAIN LINK	BE OTHERS	MID MAIN LINKS	MID OTHERS
T8 @ 100	T8@ 100	T8 @ 125	T8@ 200



56–T20 + 32–T20

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

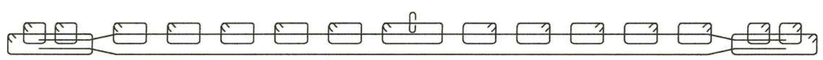
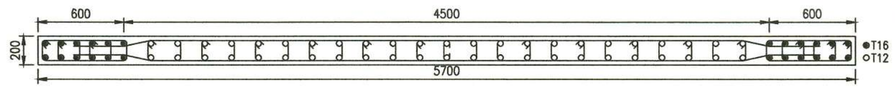
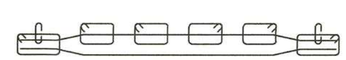
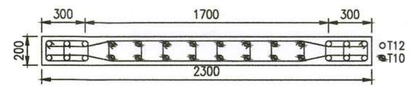
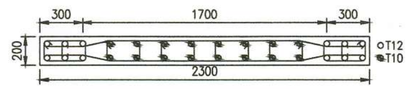
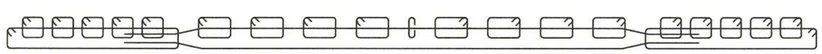
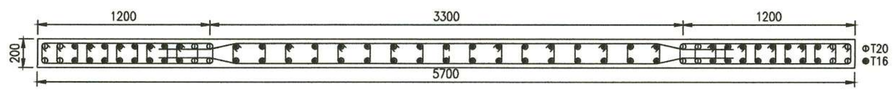
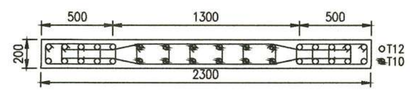
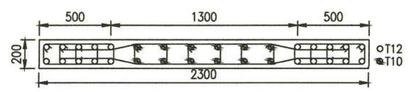
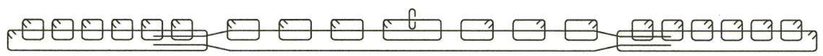
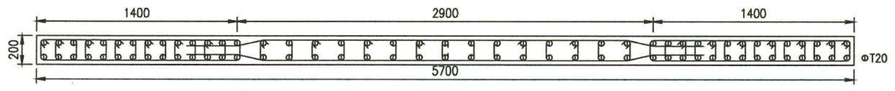
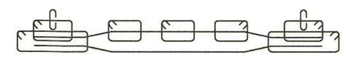
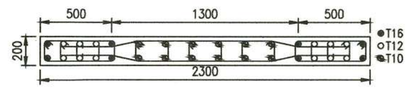
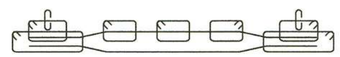
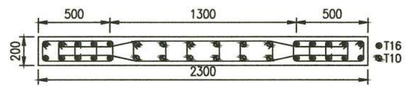
drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/07	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-07_.dwg

TERRACE TO OHT & LMR	SAME AS BELOW	SAME AS BELOW	SAME AS BELOW
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  24–T16 + 46–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  12–T12 + 16–T10	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  12–T12 + 16–T10
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 100 | MID OTHERS: T8@ 200  (16–T20 + 32–T16) + 34–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  20–T12 + 12–T10	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  20–T12 + 12–T10
BASE TO 1ST	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200  56–T20 + 30–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  (8–T16 + 12–T12) + 12–T10	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM  BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200  20–T16 + 12–T10
COLUMN MARKED	H5	H3	H4

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/06	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-06_.dwg

TERRACE TO OHT & LMR	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	SAME AS BELOW	SAME AS BELOW
	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	MAIN LINKS: T8 @ 200 / OTHER LINKS: T8@ 200		
	300 400 300; 200; 1000; ○T12 ●T10	300 1700 300; 200; 2300; ●T16 ○T12		
	12–T12 + 4–T10	12–T16 + 18–T12		
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200
	300 400 300; 200; 1000; ●T16 ○T12	300 1700 300; 200; 2300; ●T16 ○T12	300 1300 300; 300; 1900; ○T12	300 2850 300; 200; 3450; ●T16 ●T10
	12–T16 + 4–T12	12–T16 + 18–T12	16–T12 + 14–T12	12–T16 + 28–T10
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200
	300 400 300; 200; 1000; ●T20 ●T16	600 1100 600; 200; 2300; ●T16 ○T12	600 700 600; 300; 1900; ●T16 ○T12	700 2050 700; 200; 3450; ●T16 ●T10
	12–T20 + 4–T16	24–T16 + 10–T12	(12–T16 + 16–T12) + 6–T12	28–T16 + 20–T10
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
	Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200
	300; 1000; ●T20	600 1100 600; 200; 2300; ●T20 ○T12	600 700 600; 300; 1900; ●T16 ○T12	700 2050 700; 200; 3450; ●T20 ●T10
	20–T20	24–T20 + 10–T12	28–T16 + 6–T16	28–T20 + 20–T10
COLUMN MARKED	H2	CW2–H1	V20	CW1–H1

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/05	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-05_.dwg

TERRACE TO OHT & LMR		M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 400 300 / 200 / 1000 ○T12 ●T10 12–T12 + 4–T10	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 200 | OTHER LINKS: T8@ 200 300 1700 300 / 200 / 2300 ●T16 ○T12 12–T16 + 18–T12	SAME AS BELOW	
4TH TO TERRACE	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 175 300 / 800 ●T16 ○T12 6–T16 + 12–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 400 300 / 200 / 1000 ●T16 ○T12 12–T16 + 4–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 1700 300 / 200 / 2300 ●T16 ○T12 12–T16 + 18–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200 300 1105 300 / 300 / 1705 ○T12 16–T12 + 12–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 175 300 / 800 ●T16 ○T12 6–T16 + 12–T12
1ST TO 4TH	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 200 300 / 800 ●T16 18–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 400 300 / 200 / 1000 ●T20 ●T16 12–T20 + 4–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 600 1100 600 / 200 / 2300 ●T16 ○T12 24–T16 + 10–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200 600 505 600 / 300 / 1705 ●T16 ○T12 (12–T16 + 16–T12) + 4–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 200 300 / 800 ●T16 18–T16
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 200 300 / 800 ●T20 ●T16 10–T20 + 8–T16	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM CONFINING ZONE = 1000 MM Z1 MAIN LINK: T8 @ 100 | Z1 OTHERS: T8 @ 100 | Z2 LINKS: T8 @ 100 300 / 1000 ●T20 20–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 600 1100 600 / 200 / 2300 ●T20 ○T12 24–T20 + 10–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200 600 505 600 / 300 / 1705 ●T16 ○T12 28–T16 + 4–T12	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM LINKS: T8 @ 200 300 / 800 ●T20 ●T16 10–T20 + 8–T16
COLUMN MARKED	C16	H2	CW2–H1	V20	C16

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/04	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-04_.dwg

TERRACE TO OHT & LMR		M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 | OTHER LINKS: T8@ 100 | Z2 LINKS: T8 @ 100 200 × 1000 — ⊙T16 20–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | MID LINK: T8 @ 200 | OTHER LINKS: T8@ 200 400 + 1350 + 400; 200 × 2150 — ⊙T16 ○T12 16–T16 + 12–T12	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 + 800 + 300; 200 × 1400 — ○T12 ◀T10 12–T12 + 8–T10
4TH TO TERRACE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK & BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200 500 + 1200 + 500; 200 × 2200 — ⊙T20 ⊙T16 20–T20 + 10–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 600 + 2800 + 600; 200 × 4000 — ⊙T20 ⊙T16 (8–T20 + 16–T16) + 40–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 | MID LINKS: T8 @ 200 | OTHER LINKS: T8@ 200 400 + 1350 + 400; 200 × 2150 — ⊙T20 ⊙T16 16–T20 + 12–T16	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 200 | MID OTHERS: T8@ 200 300 + 800 + 300; 200 × 1400 — ⊙T16 ○T12 12–T16 + 8–T12
1ST TO 4TH	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 200 | OTHER LINKS: T8@ 200 200 × 2200 — ⊙T25 ⊙T20 16–T25 + 28–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 100 | MID OTHERS: T8@ 200 1200 + 1600 + 1200; 200 × 4000 — ⊙T20 48–T20 + 20–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 100 | OTHER LINKS: T8@ 100 200 × 2150 — ⊙T25 ⊙T20 16–T25 + 26–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 175 | MID OTHERS: T8@ 200 500 + 400 + 500; 200 × 1400 — ⊙T16 ○T12 20–T16 + 4–T12
BASE TO 1ST	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T8 @ 125 | OTHER LINKS: T8@ 125 300 × 2200 — ⊙T25 ⊙T20 22–T25 + 24–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T10 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T10 @ 125 | MID OTHERS: T8@ 200 1200 + 1600 + 1200; 300 × 4000 — ⊙T25 ⊙T20 (20–T25 + 32–T20) + 20–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM MAIN LINKS: T10 @ 100 | OTHER LINKS: T8@ 100 300 × 2150 — ⊙T25 ⊙T20 22–T25 + 22–T20	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM BE MAIN LINK: T8 @ 100 | BE OTHERS: T8@ 100 | MID MAIN LINKS: T8 @ 125 | MID OTHERS: T8@ 200 500 + 400 + 500; 300 × 1400 — ⊙T20 ○T12 24–T20 + 4–T12
COLUMN MARKED	V5	V6	V8	V10

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/03	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-03_.dwg

TERRACE					
TO					
OHT & LMR					
4TH	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM CONFINING ZONE = 750 MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM
TO	Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100	LINKS: T8 @ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	LINKS: T8 @ 200	LINKS: T8 @ 200
TERRACE	400 × 750 ⊙T32 ⊙T25	300 × 800 ⊙T20	200 × 1500 (500 + 500 + 500) ⊙T16 ⊙T12	400 × 750 ⊙T25 ⊙T20	300 × 800 ⊙T20 ⊙T16
	4–T32 + 14–T25	18–T20	20–T16 + 4–T12	12–T25 + 6–T20	10–T20 + 8–T16
1ST	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM
TO	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	LINKS: T8 @ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 200 / MID OTHERS: T8@ 200	LINKS: T8 @ 200	LINKS: T8 @ 200
4TH	300 × 1905 (600 + 705 + 600) ⊙T12	300 × 800 ⊙T25 ⊙T20	200 × 1500 (500 + 500 + 500) ⊙T20 ⊙T16 ⊙T12	400 × 750 ⊙T32 ⊙T25	300 × 800 ⊙T25 ⊙T20
	28–T12 + 6–T12	10–T25 + 8–T20	(8–T20 + 12–T16) + 4–T12	8–T32 + 10–T25	6–T25 + 12–T20
BASE	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM
TO	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	LINKS: T8 @ 200	BE MAIN LINK: T8 @ 100 / BE OTHERS: T8@ 100 / MID MAIN LINKS: T8 @ 125 / MID OTHERS: T8@ 200	LINKS: T8 @ 200	LINKS: T8 @ 200
1ST	300 × 1900 (600 + 700 + 600) ⊙T16 ⊙T12	300 × 800 ⊙T32 ⊙T25	300 × 1500 (500 + 500 + 500) ⊙T20 ⊙T12	400 × 750 ⊙T32 ⊙T25	300 × 800 ⊙T25
	(20–T16 + 8–T12) + 6–T12	4–T32 + 14–T25	24–T20 + 4–T12	8–T32 + 10–T25	18–T25
COLUMN MARKED	H19	C1	V3	C20	C13

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/02	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-02_.dwg

TERRACE TO OHT & LMR					
4TH TO TERRACE	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM FULL HEIGHT OF COLUMN	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
	LINKS: T8 @ 175	MAIN LINK: T8 @ 175 / OTHERS: T8 @ 175	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 200	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100
	300 × 600 ⊛T16 ○T12	400 × 800 ⊛T20 ⊛T16	200 × 1200 ⊛T16 ○T12	200 × 1000 ⊛T20 ⊛T16	200 × 1000 ○T12
	4–T16 + 8–T12	4–T20 + 14–T16	12–T16 + 12–T12	12–T20 + 8–T16	20–T12
1ST TO 4TH	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM FULL HEIGHT OF COLUMN	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM
	LINKS: T8 @ 175	MAIN LINK: T8 @ 175 / OTHERS: T8 @ 175	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 200	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100
	300 × 600 ⊛T16 ○T12	400 × 800 ⊛T20 ⊛T16	200 × 1200 ⊛T20 ⊛T16	200 × 1000 ⊛T25 ⊛T20	200 × 1000 ○T12
	4–T16 + 8–T12	12–T20 + 6–T16	8–T20 + 16–T16	4–T25 + 16–T20	20–T12
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM FULL HEIGHT OF COLUMN	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM CONFINING ZONE = 1000 MM
	LINKS: T8 @ 175	MAIN LINK: T8 @ 175 / OTHERS: T8 @ 175	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 125	LINKS: T8 @ 100	Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100
	300 × 600 ⊛T16 ○T12	400 × 800 ⊛T20 ⊛T16	300 × 1200 ⊛T20 ⊛T16	300 × 1000 ⊛T25 ⊛T20	300 × 1000 ⊛T16 ○T12
	4–T16 + 8–T12	12–T20 + 6–T16	10–T20 + 16–T16	6–T25 + 16–T20	10–T16 + 12–T12
COLUMN MARKED	C2	C15	H20	H15	V2

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545831

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

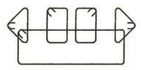
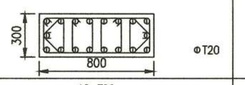
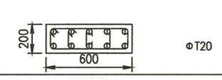
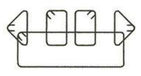
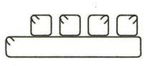
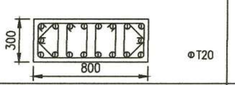
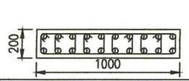
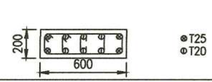
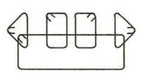
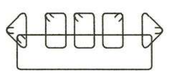
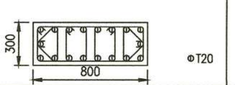
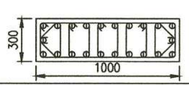
drawing title

COLUMN SCHEDULE

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2014	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/01	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-CLSH-01_.dwg

TERRACE TO OHT & LMR				
4TH TO TERRACE	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM 	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 	
	LINKS: T8 @ 200	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100	LINKS: T8 @ 200	
				
	18–T20	4–T20 + 16–T16	10–T20	
1ST TO 4TH	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 	M35 : Fe550 (MAIN) : Fe415 (SHEAR) , COVER = 30MM 	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 	
	LINKS: T8 @ 200	MAIN LINKS: T8 @ 100 / OTHER LINKS: T8@ 100 / Z2 LINKS: T8 @ 100	LINKS: T8 @ 200	
				
	18–T20	20–T20	4–T25 + 6–T20	
BASE TO 1ST	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 	M35 : Fe550 (M) : Fe415 (S) , COVER = 30MM 		
	LINKS: T8 @ 200	Z1 MAIN LINK: T8 @ 100 / Z1 OTHERS: T8 @ 100 / Z2 LINKS: T8 @ 100		
				
	18–T20	22–T20		
COLUMN MARKED	C8	H14	C23	

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/CR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

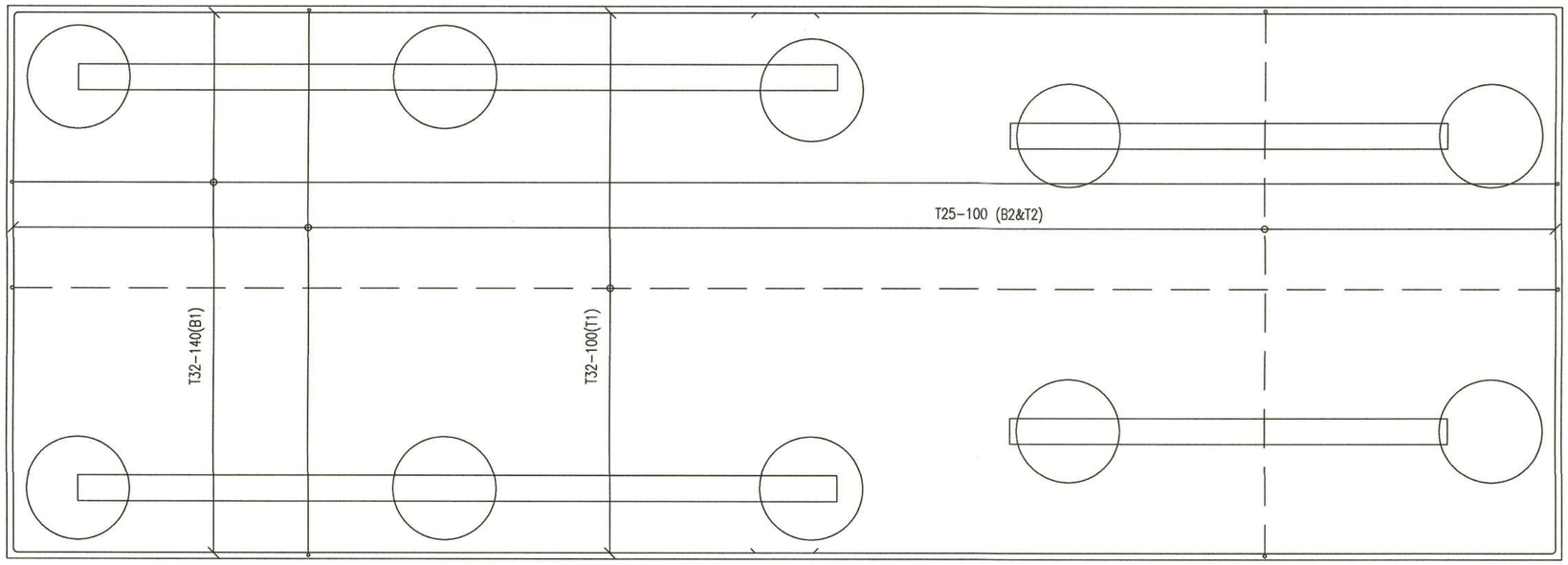
drawing title

COLUMN SCHEDULE

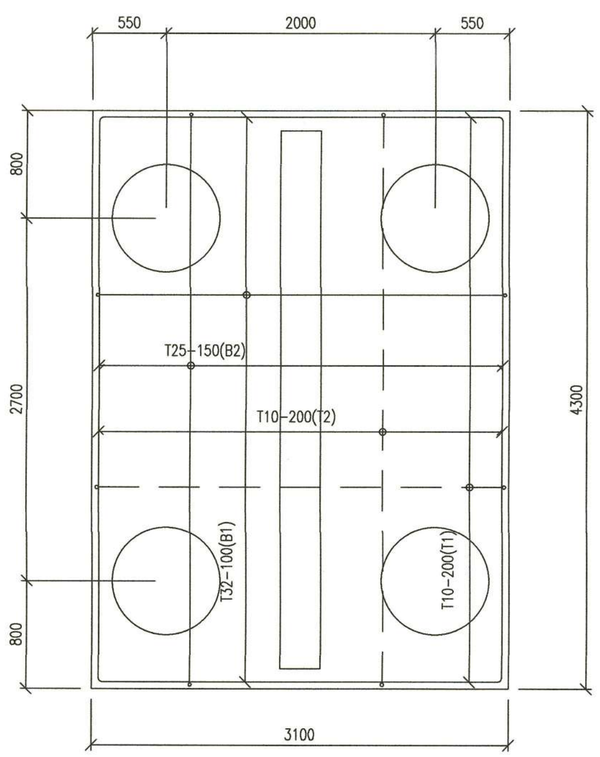
scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	SIVA
date	JUNE 2024	approved by	P.J
drawing no.	BEI689_/S-/CL/SH/11	revision	–

THIS DRAWING IS COPYRIGHT

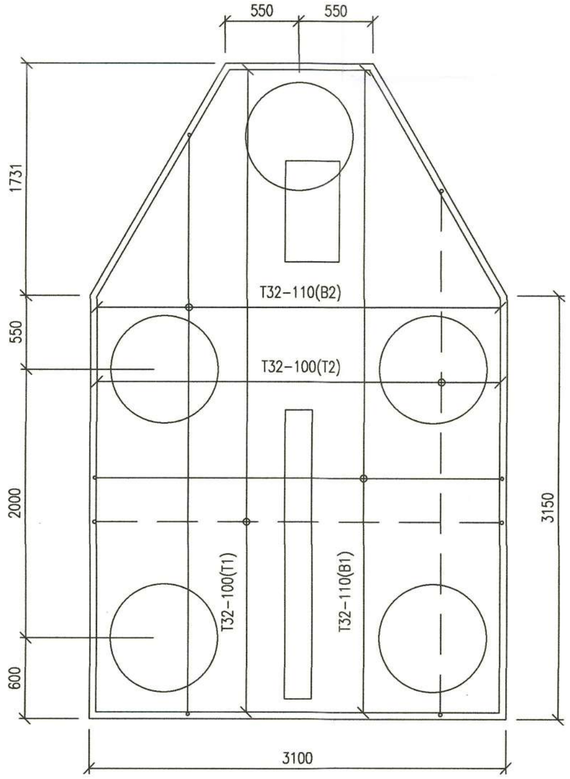
CAD FILE NAME: BEI689_S-CLSH-11_.dwg



PLAN OF TEN-PILE GROUP
SCALE N.T.S



PLAN OF FOUR-PILE GROUP
SCALE N.T.S



PLAN OF FIVE-PILE GROUP
SCALE N.T.S

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
-	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

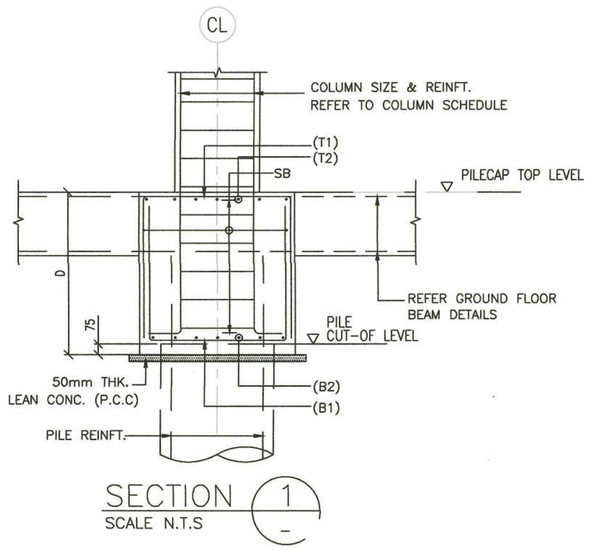
drawing title

PILECAP DETAILS

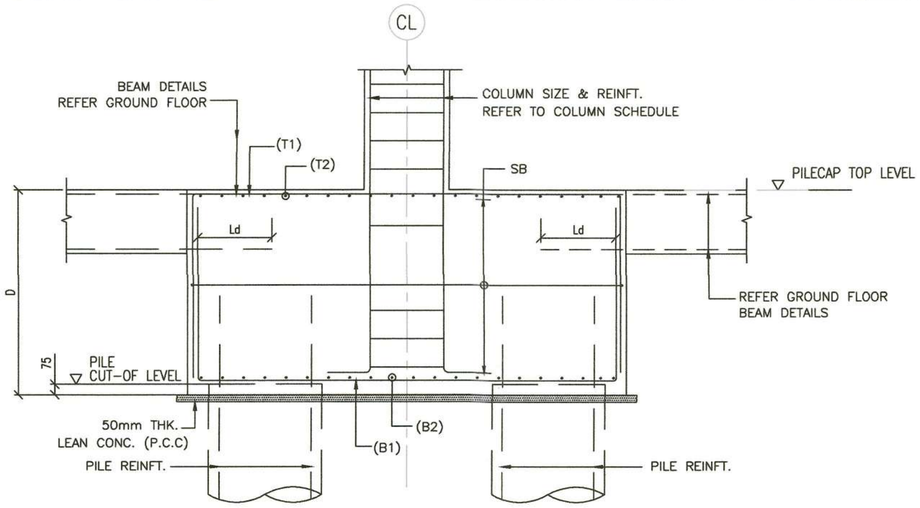
scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	JOSHI
date	MAY 2009	approved by	PJ
drawing no.	BEI689_/S-/PC/DT/02	revision	-

THIS DRAWING IS COPYRIGHT

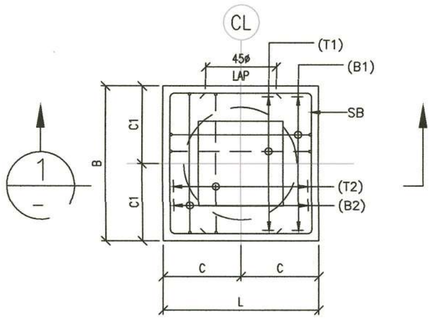
CAD FILE NAME: BEI689_S-PCDT-02_.dwg



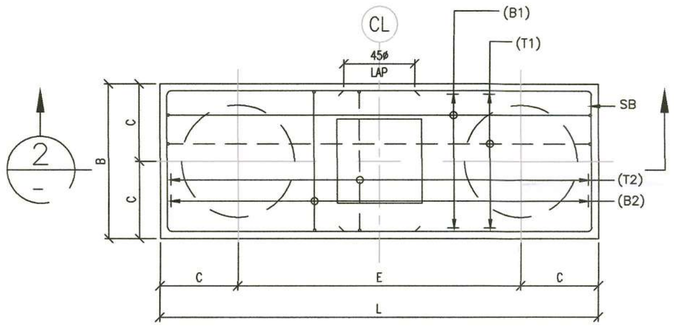
SECTION 1
SCALE N.T.S



SECTION 2
SCALE N.T.S



PLAN OF ONE-PILE GROUP
SCALE N.T.S



PLAN OF TWO-PILE GROUP
SCALE N.T.S

PILE CAP REINFORCEMENT DETAILS

TYPE OF PILE	TYPE OF PILE CAP	PILECAP DIMENSIONS									PILECAP REINFORCEMENTS					REMARKS
		L	B	D	C	C1	E	F	G	H	B1	B2	T1	T2	SB	
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)						
ONE PILE GROUP																
BP1A	PC1A	900	900	800	450	450	–	–	–	–	T20-125	T20-125	T10-200	T10-200	T10-200	–
BP1A	PC1A/1	1050	900	800	550	450	–	–	–	–	T20-125	T20-125	T10-200	T10-200	T10-200	–
BP1B	PC1B	1100	1100	1000	550	550	–	–	–	–	T20-125	T20-125	T10-200	T10-200	T10-200	–
BP1B	PC1B/1	1300	1100	1000	650	550	–	–	–	–	T20-125	T20-125	T10-200	T10-200	T10-200	–
TWO PILE GROUP																
BP2A	PC2A	2400	900	1200	450	450	1500	–	–	–	T25-100	T20-125	T10-200	T10-200	T10-200	–
BP2A	PC2A/1	2800	900	1600	650	450	1500	–	–	–	T25-100	T20-125	T10-200	T10-200	T10-200	–
BP2B	PC2B	3100	1100	1600	550	550	2000	–	–	–	T25-100	T20-125	T10-200	T10-200	T10-200	–

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/CR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING
STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street,Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ
JEYPORE COLONY APARTMENTS

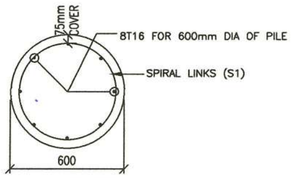
drawing title

PILECAP DETAILS

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	JOSHI
date	MAY 2009	approved by	PJ
drawing no.	BEI689_/S-/PC/DT/01	revision	–

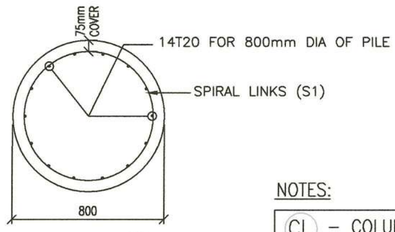
THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S-PCDT-01_.dwg



SECTION 1
SCALE 1:40

C/S OF BORED PILE

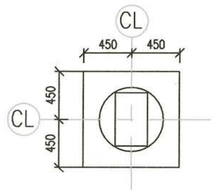


SECTION 1
SCALE 1:40

C/S OF BORED PILE

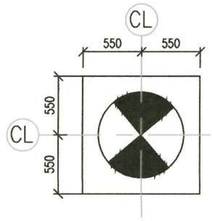
NOTES:

CL – COLUMN CENTER LINE
REFER PILE/PILE CAP LAYOUT PLAN FOR
FOR OTHER PILE CAP DIMENSIONS



TYPICAL PLAN OF
SINGLE–PILE GROUP (600mm DIA)

SCALE N.T.S

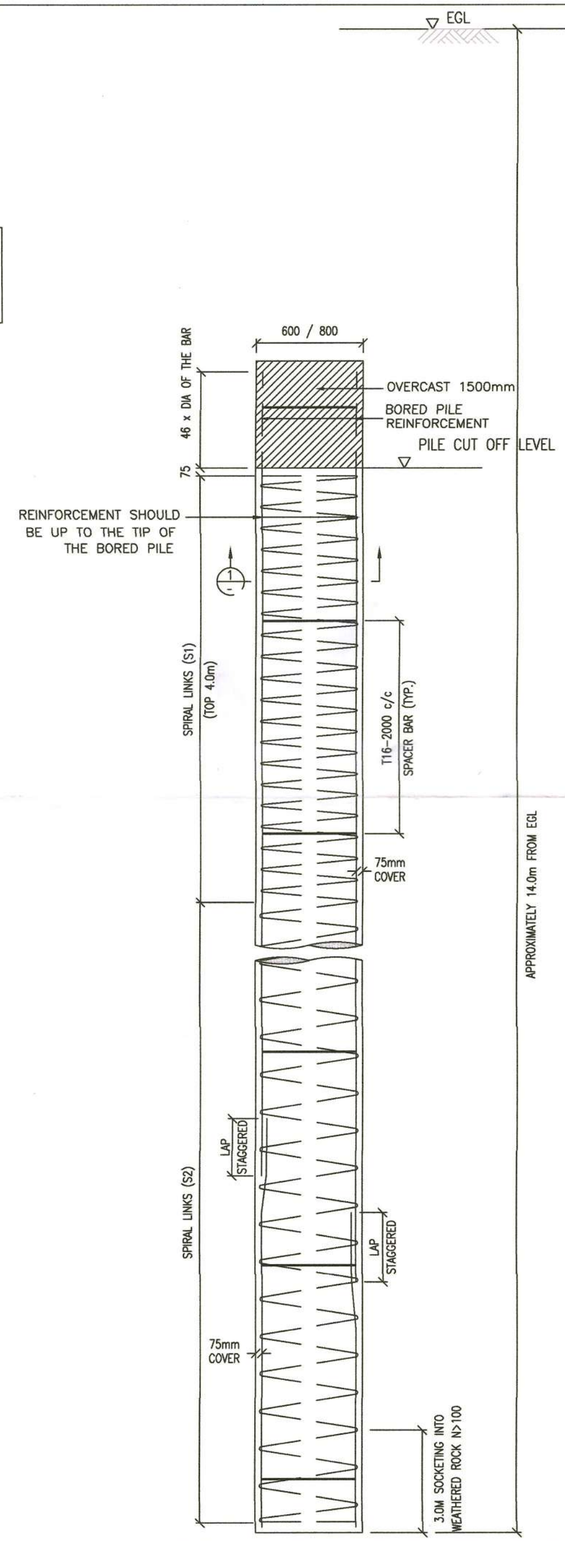


TYPICAL PLAN OF
SINGLE–PILE GROUP (800mm DIA)

SCALE N.T.S

GENERAL NOTES FOR PILING WORKS

1. The contractor shall verify all dimensions and levels on site and resolve any discrepancy with the Architect or Engineer before commencement of work.
2. A copy of pile setting out plan prepared by a Licensed Surveyor shall be submitted by the contractor to Architect and Engineer prior to the commencement of the work.
3. Grade of concrete for pile shall be M30 (fck = 30 N/mm2)
4. Reinforcement shall be high strength deformed bars (fy = 550 N/mm2)
   a) Longitudinal reinforcement shall be extended up to the tip of the pile (Base of the pile)
   b) any additional reinforcement bars required to stiffen the reinforcement cage shall be provided.
5. All piles shall be installed to have an ultimate capacity of not less than 2.5 times the specified working capacity of pile.
6. The maximum permissible deviation of the centre of each pile at cut–off level in a group from the correct centre point as approved by the engineer shall be 75mm(3") in any direction. Allowable deviation of the centre of piles for any single pile or single line of piles carrying structural load shall not be more than 40mm laterally from its correct position. All piles shall be installed using rotary piling rig only.
7. The format of the piling record shall be submitted to the Engineer's approval before commencement of work. Complete piling records shall be kept by the contractor during the installation of pile. The contractor shall submit the records of all piles as the work proceeds.
8. After the completion of the piling work, the contractor shall submit as–built drawing prepared by a Registered Licensed Surveyor which includes the size and type of piles, eccentricities and penetration depth from cutoff level. Eccentricity of pile is to be taken at cutoff level for the pile.
9. The stripping and cutting of pile to the required cutoff level is to be carried out by the piling contractor, when the excavation for construction of pilecap is completed by the other contractor. The contractor shall allow in his tender for the same.
10. Distance between centre to centre of the pile in a pile group shall be 2.5 times the diameter of the pile.
11. The contractor shall ensure and provide necessary protection, that the adjacent buildings are not affected and damaged during the installation of bored piles
12. Routine load test to be carried out to a load of 1.5 times specified working capacity of pile.
13. The contractor shall visit and familiar himself with the site condition. The existing ground at the site is slopping. The contractor shall allow in his tender for the cutting of the existing ground and/or providing necessary temporary platform to facilitate installation of piles at the proposed locations.
14. The contractor shall propose the location of initial pile load test based on the site condition for the approval of the engineer. The contractor shall submit method statement and load test arrangement for the approval of the engineer before commencement of piling work.



TYPICAL DETAIL OF BORED PILE

SCALE 1:40

P. JEGATHEESAN, M.E., (Struct.)
REGISTERED STRUCTURAL ENGINEER
CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
REGISTRATION No.SE/GR-I/19/03/027
NEW No.31 (OLD No.14), BESANT AVENUE,
ADYAR, CHENNAI - 600 020.
E-Mail : jegatheesan@buroengineers.in
Mobile : +91 9962545631

NO.	AMENDMENTS	BY	DATE
–	ISSUE FOR CONSTRUCTION	SATHYA	25/09/24

CONSTRUCTION DRAWING

STRUCTURAL

Client

ASTA CONSTRUCTION

Principal Architects

ED+ ARCHITECTURE
'Kailash', 6/25, Cenotaph Road,
First Street, Teynampet, Chennai - 600 018.
Tel : 24357906, 24362396, 24362397
E-mail : contact@edarch.in

Civil & Structural Consultant :

BURO ENGINEERS (I) PRIVATE LTD.,
New no. 31, Old no 14, Besant Avenue Road,
Adyar, Chennai - 600 020.
Tel: 044 24912755
e-mail ID: buroindia@buroengineers.in.

Project Managers & Q.S.

project title

HAJ

JEYPORE COLONY APARTMENTS

drawing title

PILE SECTION DETAILS

scale	AS SHOWN	design by	ASHFAQ
drawn by	SATHYA	checked by	JOSHI
date	APR 2024	approved by	PJ
drawing no.	BEI689_/S–/PL/––/02	revision	–

THIS DRAWING IS COPYRIGHT

CAD FILE NAME: BEI689_S–PL––02_.dwg



our services doesn't just end there

Buying & Selling Services

Property Buying Assistance, Property Selling Support, Market Price Analysis, Owner Outreach and Negotiation.

Legal & Documentation Services

Certified EC, Patta, legal opinions, property verification, due diligence, litigation solutions, and legal heir certificates.

Property Development & Approvals

Building plan approvals, construction, layout and sub-division approvals, zone conversion, and occupancy certification.

NRI & Investment Services

Escrow Services, Rentals, Litigation Solutions, Property Valuation and Property Management

Compliance & Special Services

Demolition, Vaasthu checks, regularization of unauthorized buildings, and office space solutions.



empowering your real estate decisions with smart tools

Property Valuation & Cost Estimation

Guideline Value, Apartment Composite Value, Stamp Duty & Registration Fees Calculator, Building Value Calculator, Capital Gains Calculator, Area Unit Converter, Length Unit Converter

Ownership, Compliance & Legal Verification

Encumbrance Certificate (EC) Search, Find Your SRO, Temple Property Check, WAQF Property Check, View Patta/Chitta, View FMB, Patta Analyzer, EC Analyzer

Zoning & Land Use Analysis

Land Use Zone Finder, CRZ Zone Check, Aquifer Zone Check, CBA Check, EWS Check, Road Width Check, Proposed Road Widening Check, FSI Calculator

Property Documentation & Workflow Tools

Forms & Templates, Document Generator, Document Translation, Dictionary

Vastu & Property Management Tools

Home Vastu Shastra, Plot Vastu Shastra, Property Management

Verified RealEstate™

We're honored to be part of your real estate journey

3/350/2 Mettukuppam,
OMR Thoraipakkam,
Chennai, India

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