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SB CONSULTANTS
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Email : m_shankarengineer@yahoo.co.in
structuralshankar@gmail.com

Date:19.4.2025

Er. M.SHANKAR, M.Tech(Struct), MIE, MISSE, FMACCE (I) .

Chartered/ Structural engineer Grade-I (SE-I)

STABILITY CERTIFICATE

(To be furnished while filing application for registration of building)
The detailed engineering and structure design of the proposed building comprising of STILT+ 5 floors at **PLOT NO. 31 & 32, OLD DOOR NO. 02, NEW DOOR NO. 03, 18TH MAIN ROAD AND 3RD MAIN ROAD, NCBS COLONY, NANGANALLUR, CHENNAI 600061 AND COMPRISED IN OLD S.NO. 21/3A (Part), AS PER PATTA NEW T.S. NO. 70 & 71, BLOCK NO. 22, WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKS** has been done by me/us based on the report of geotechnical investigation (soil test) done By T.J. ENGINEERS and considering the functional requirement of the building.

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

3.1/We.further certify that:
(i) The minimum grade of concrete is M25

(ii)The design and analysis has been done using the code of practice for plain

and reinforced concrete as per IS 456, design loads as per IS Codes No IS-875 and

design of earthquake resistant structure as per IS Code No 1893-2002

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

designed.

Stamp and Signature
Encl.: Structural Design Calculation

Er.M. SHANKAR, M.Tech(Struct),MIE, MISSE, FMACCE
CMDA Regd. Structural Engineer GR-I (SE-I)
Reg No. SE/I/2024/4/0037
SB CONSULTANTS
No.11, Theradi Street, Pallikaranai, Chennai-600 100.
Cell: 9282102586 / 9952050643
Email: structshankar97@yahoo.com

CHENNAI METROPOLITAN DEVELOPMENT AUTHORITY
Thalamuthu Natarajan Building, No.1, Gandhi Irwin Road, Egmore,
Chennai - 600 008
Phone : 28414855 Fax: 91-044-28548416
E-mail: mscmda@tn.gov.in
Web site: www.cmdachennai.gov.in.

PROFESSIONAL REGISTRATION CERTIFICATE

This is to certify that the Thiru / Tmt. / M/s. **M.SHANKAR** has enrolled as **Registered Structural Engineer Grade-I(SE)** with Chennai Metropolitan Development Authority (CMDA) who has the qualification of **M.E Structures** and experience in the relevant field for 7 years.

He/She has been given the Registration No. **SE/I/2024/4/0037** on **12-Apr-2024** He/She shall be required to comply with the duties and responsibilities prescribed by the Government of Tamil Nadu in Part V, "Registration of Professionals", Tamil Nadu Combined Development and Building Rules, 2019 approved vide G.O.(ms) No.18 MAWS (MA1) Dept. Dated. 04.02.2019.

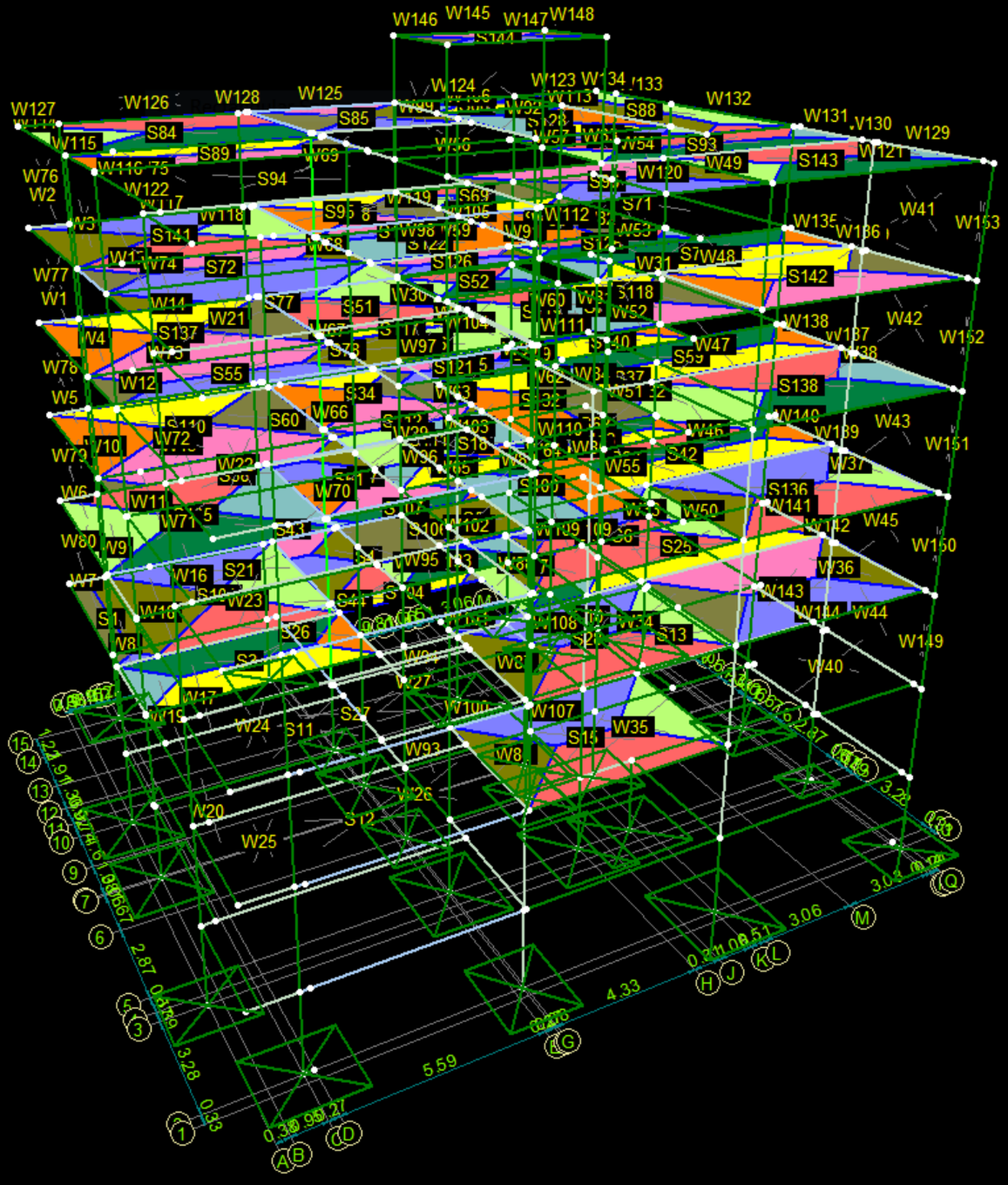
This Registration is valid upto **11-Apr-2029**.

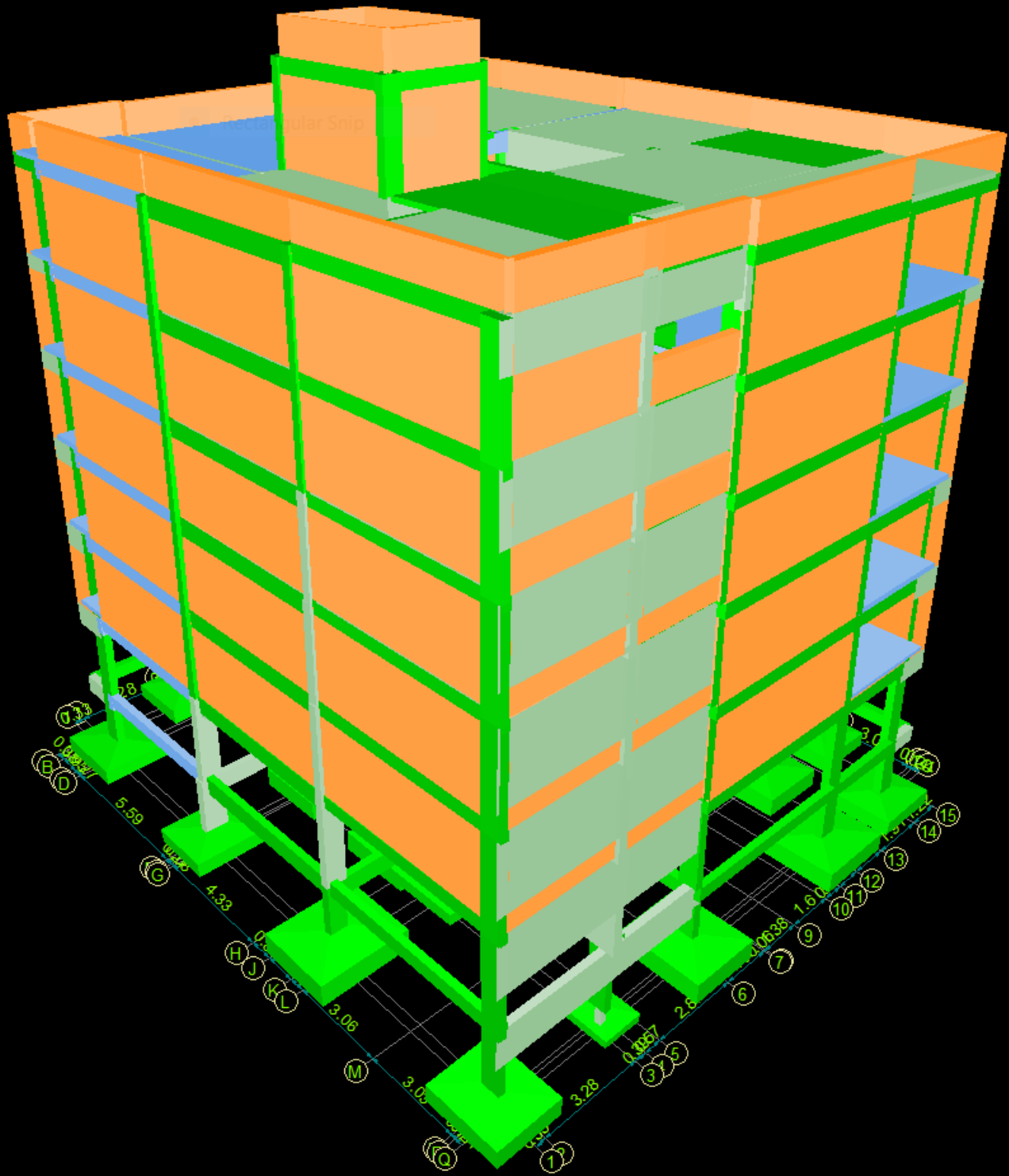
Signature valid
Name :A Meganathan
Designation :Superintendent
Date :04/12/2024 3:58:02 PM



A Meganathan

Superintendent


W146 W145 W147 W148
W127 W126 W128 W125 W124 W123 W134 W133 W132 W131 W130 W129
S84 S85 S88 S89 S93 S94 S143
W115 W116 W122 W120 W49 W121
W76 W2 W3 W41 W153
S141 S72 S71 S142
W77 W1 W21 W42 W152
S137 S55 S51 S52 S138
W4 W78 W12 W5 W43 W151
S110 S60 W66 S34 W72 W10 W79 W22 W70 W6 W11 W71 W80 W9 W7 W16 S21 W23 W18 S1 W8 S26 S43 W95 W107 S15 W35 W36 W143 W44 W149 W40 W45 W150 W141 S136 W37 W55 S42 W46 W139 W138 W47 S59 W31 S118 W48 W135 W136
W17 W24 W25 W20 S12 W26 W93 S11 S27 W100 W8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D G H J K L M Q
5.59 4.33 3.06 2.87 3.28 0.33


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1.6

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Design Data Report :

Footing Data:

Soil Parameters :

SBC of soil	=300.00 kN/m²
SBC Increment Factor for Seismic Load	= 1.500
SBC Increment Factor for Wind Load	= 1.500
Angle of friction,(phi)	= 30.00 degrees
Cohesion	= 60.00
Permissible factor of safty	= 1.400
Depth From Ground	= 2500 mm

Material Properties :

fck	= 25.00 N/mm²
fy	= 500.00 N/mm²

Footing Parameters :

Minimum steel Percentage	= 0.12
Minimum spacing between bars	= 100 mm
Maximum spacing between bars	= 200 mm
Diameters of selected bars	= 10 mm , 12 mm .
Bottom Cover	= 50 mm
End Cover	= 50 mm

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Minimum Footing Depth	= 150 mm
Top Offset	= 50 mm
Bottom PCCOffset	= 150 mm
Bottom PCCDepth	= 150 mm
Pedestal Offset	= 150 mm
Pedestal Depth	= 150 mm
Size RoundingFactor	= 25 mm
Depth RoundingFactor	= 25 mm
Number of Steps	= 1
Minimum Step Depth	= 150 mm

Column Data:

Material Properties :

fck	= 25.00 N/mm²
fy	= 500.00 N/mm²
fy - Stirrups	= 500.00 N/mm²

Column Parameters :

Effective Length Factor (X - Axis)	= 1.00
Effective Length Factor (Y - Axis)	= 1.00
Minimum Eccentricity @ X-Axis	= 20 mm
Minimum Eccentricity @ Y-Axis	= 20 mm
Clear Cover	= 40 mm

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Design Considerations :

Design is done as per IS 456.

Detailing is done as per IS 13920.

Confinement reinforcement is provided.

Live Load reduction is considered.

Minimum steel percentage is based on provided section.

Reinforcement Details :

Steel Ratio(AstX/AstY)	= 1.00
ReinForcement Placing (on two sides or on four sides)	= 2
Minimum steel Percentage	= 0.80
Maximum steel Percentage	= 4.00
Minimum spacing between main bars	= 25 mm
Maximum spacing between main bars	= 300 mm
Minimum spacing between Stirrups	= 150 mm
Diameters of selected bars	= 12 mm , 16 mm , 20 mm , 25 mm , 32 mm .

Slab Data: Use Bent-up bars for steel detailing.

Material Properties :

RCC Grade	= M20
Main Steel Grade	= Fe415
Distribution Steel Grade	= Fe415

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Slab Parameters :

Effective Cover	= 25 mm
Minimum spacing between Main bars	= 75 mm
Maximum spacing between Main bars	= 200 mm
Minimum spacing between Dist.bars	= 75 mm
Maximum spacing between Dist.bars	= 300 mm
Maximum Main/Dist. bar Diameter	= 32 mm
Minimum Main bar Diameter	= 8 mm
Minimum Dist.bar Diameter	= 8 mm
Maximum Dimension to be used for Trapizoidal Slab	= Average of two parellel sides
Maximum Dimension to be used for General Slab	= Maximum of two parellel sides

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Beam Data:

Shear Design Data :

Minimun Stirrup Dia	= 8 mm
Stirrup Legs	= 2
Minimum Stirrups Spacing	= 100 mm
Stirrups Steel Grade Name	= Fe500

Effect of Concrete in shear considered

Beam Covers :

Tension Cover = 33 mm

Compression Cover = 33 mm

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Side Cover = 25 mm

Beam sections are designed as Doubly Reinforced Section

Main Bars Detailing Straight + Curtailed

Detailing provision As per IS 13920 is followed

End Moments are calcultaed at c/c distance of the beam span for design

Torsion Moments are considered in beam design

Anchor bar Dia	= 8 mm
Main Steel Grade	= Fe500
No. of division of the beam	= 10
Max. Aggregate size	= 20

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Annexure – XIV

[See rule 51 (3)]

Form 1

Structural Design Basis Report

(1) This report to accompany the application for Building Developments

Part1	**General Data**		
S.No.	**Description**	**Information**	**Notes**
1.	Site Address		
2	Name of Owner		
3	Name of Registered Developer along with the Registration Number		
4	Name of Registered Architect/Engineer along with the Registration Number		
5	Name of Registered Structural engineer along with the Registration Number	SE/-I2024/4/0037	
6	Use of the building	RESIDENTIAL	
7	Number of stories above ground level (including storeys to be added later, if any)	STILT+5FLOORS	
8	Number of basements below ground level	**NIL**	

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

9	Type of structure Load bearing walls R.C.C. frame R.C.C. frame and Shear Walls Steel frame	**RC FRAME**	
10	Soil data Type of soil Design safe bearing capacity	INDIVIDUAL ISOLATED FOOTING WITH SBC 330KN/SQ.M	IS:1893 C1.6.3.5.2 IS: 1904 IS: 1892 IS: 2131 IS: 2720
11	Dead loads (unit weight adopted) • Earth: 18KN/CUM • Water: 10KN/CUM • Brick masonry:19.2KN/CUM • Plain cement concrete 24KN/CUM • Reinforced cement concrete:25 KN/CUM • Floor finish 50KG/SQM • Other fill materials		IS: 875 Part 1
12	Imposed (live) loads Floor loads Roof loads	4KN/SQM 1.5KN/SQM	IS: 875 Part 2
13	Cyclone/Wind • Speed • Design pressure intensity	N/A	IS: 875 Part 3

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

14	Seismic zone	III	IS: 1893 (2002)
15	Importance factor	1	IS:1893(2002) Table 6
16	Seismic zone factor (Z)	0.16	IS:1893 Table 2
17	Response reduction factor		IS:1893 Table 7
18	Fundamental natural period – approx.	**0.29SEC**	IS:1893 C1.7.6
19	Design horizontal acceleration spectrum value (A_h)		IS: 1893 C1.6.4.2
20	♥ Expansion/Separation Joints	**N/A**	
21	Building is regular/irregular	REGULAR	IS 1893

♥ Enclose detailed drawings drawn to scale for each floor

♦ In case terrace garden is provided, indicate additional fill load and live load along with the detailed drawings drawn to scale

Part 2	**Load bearing masonry buildings**		
Sl.No.	**Description**	**Information**	**Notes**
1	Building category	N/A	IS: 4326 C1.7 Read with IS:1893 Zone II III IV V Bldg. Ordinary B C D E Important C D E E
2	Basement Provided	N/A	
3	Number of floors including Ground Floor (all floors including stepped floors in hill slopes)	N/A	
4	Type of wall masonry	N/A	

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

5	Type and mix of Mortar	N/A	IS: 4326 C1.8.1.2
6	Re: size and position of openings (See note No.[i]) • Minimum distance (b5) • Ratio $(b_1+b_2+b_3)/1_1$ or $(b_6+b_7)/1_2$ • Minimum pier width between consequent opening (b_4) • Vertical distance (h_3) • Ratio of wall height to thickness 4 Ratio of wall length between cross wall to thickness	N/A	IS: 4326 Table 4, Fig.7
7	Horizontal seismic band • at plinth level **N/A** • at window sill level **N/A** • at lintel level **N/A** • at ceiling level **N/A**	P IP NA › › › › › › › › › › › ›	(see note No.2) IS:4326 C1 8.4.6 IS: 4326 C1 8.3 IS: 4326 C1 8.4.2 IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.3
	• at eave level of sloping roof N/A • at top of gable walls N/A • at top of ridge walls N/A	› › › › › › › › ›	IS: 4326 C1 8.4.3 IS: 4326 C1 8.4.4
8	Vertical reinforcing bar N/A at corners and T junction of walls at jambs of doors and window	› › › › › ›	IS: 4326 C1 8.4.8. IS: 4326 C1 8.4.9

	openings N/A		
9	Integration of prefab roofing/flooring elements through reinforced concrete screed. N/A	} } }	IS:4326 C1 9.1.4
10	Horizontal bracings in pitched truss in horizontal plane at the level of ties in the slopes of pitched roofs N/A	} } } } } }	

Notes: (i) Information in Item 6 should be given on separate A4 sheets for all walls with large number of openings

(ii) IP indicated “Information Provided”

IP indicates “Information to be provided” NA indicates “Not Applicable”

Tick mark one box

Part 3	**Reinforced concrete framed buildings**		
Sl. No.	**Description**	**Information**	**Notes**

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

1	Type of building • Regular frames • Regular frames with Shear Walls • Irregular frames • Irregular frames with Shear Walls • Soft storey	REGULAR FRAMES	IS: 1893 C1 7.1
2	Number of basements	NIL	
3	Number of floors including ground floor	S+5	
4	Horizontal floor system • Beams and slabs • Waffles • Ribbed floor • Flat slab with drops • Flat plate without drops	BEAM AND SLAB	
5	Soil data • Type of soil • Recommended type of foundation -Independent footings -Raft -Piles • Recommended bearing capacity of soil	MEDIUM SOIL WITH ISOLATED FOOTING	IS: 1498

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

	• Recommended type, length, diameter and load capacity of piles • Depth of water table • Chemical analysis of ground water • Chemical analysis of soil		
6	Foundations Depth below ground level Type Independent Interconnected Raft Piles	INDIVIDUAL ISOLATED FOOTING	
7	System of interconnecting foundations Plinth beams Foundation beams	PLINTH BEAM	IS: 1893 C1 7.12.1
8	Grades if concrete used in different parts of building	**M25 FOR COLUMNS& M20 FOR REST**	
9	Method of analysis used	FEM	
10	Computer software used	**SCADDS NUCLEUS 2022 VERSION**	
11	Torsion included	INCLUDED	IS: 1893 C1 7.9

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

12	Base shear a. Based on approximate fundamental period b. Based on dynamic analysis c. Ratio of a/b	BASED ON APPROXIMATE FUNDAMENTAL PERIOD	IS: 1893 Cl. 7.5.3
13	Distribution of seismic forces along the height of the building.	REFER SESIMIC JUSTIFICATION	IS:1893 Cl.7.7 (Provide sketch)
14	The Column of soft ground storey specially designed.	**YES**	IS: 1893 Cl.7.10
15	Clear minimum cover provided in • Footing 50MM • Column 40MM • Beams 25MM • Slabs 20MM • Walls		IS: 456 Cl. 26.4

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

16	Ductile detailing of RC frame • Type of reinforcement used Fe 500D • Minimum dimension of beams 230MM • Minimum dimension of columns **230MM** • Minimum percentage of reinforcement of beams at any cross section 0.20% • Maximum percentage of reinforcement at any section of beam 4% • Spacing of transverse reinforcement in 2-d length of beams near the ends **100MM** • Ratio of capacity of beams in shear to capacity of beams in flexure <1 • Maximum percentage of reinforcement in column 4%		IS: 456 Cl. 5.6 IS: 13920 Cl.6.1 IS: 13920 Cl.7.1.2 IS: 456 Cl.26.5.1(a) IS: 13920 Cl.6.2.1 IS: 456 Cl.26.5.1.1(b) IS: 13920 Cl.6.2.2 IS: 13920 Cl.6.3.5 IS: 456 Cl.26.5.3.1 IS: 13920 Cl. 7.4
	• Confining stirrups near ends of columns and in beam-column joints Diameter **8mm** Spacing **100MM** • Ratio of shear capacity of columns to maximum seismic shear in the storey. <1		

17	Does the features require clearance by SDRP Example: High rise building Prefab building Building in hazard prone areas	**N/A**	

Foundation

i. In case raft foundation has been adopted, indicate K value used for analysis ofthe raft.

ii. Incase pile foundations have been used, give full particulars of the piles, type, dia, length, capacity

iii. In case of high water table, indicate system of countering water pressure, and indicate the existing water table, and that assumed to design foundations.

Idealization for Earthquake analysis

i. In case of composite system of shear walls and rigid frames, give distribution of base shear in the two systems on the basis of analysis, and that used for design of each system

ii. Indicate the idealization of frames and shear walls adopted in the analysis with the help of sketches.

iii. Submit framing plans of each floor

iv. In case of basements, indicate the system used to contain earth pressures.

Part 4	**Buildings in structural steel**		
1	Adopted method of design	o Simple o Semi-rigid o Rigid	IS:800 Cl 3.4.4 IS:800 Cl.3.4.5 IS:800 Cl.3.5.6

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

2	Design based on	o Elastic analysis o Plastic analysis	IS: 800 Section-9 SP;6 (6)
3	Floor construction	o Composite o Non composite o Boarded	
4	Roof construction	o Composite o Non composite o Metal o Any other	
5	Horizontal force resisting system adopted	Frames Braced frames Frames & shear walls	Note: Seismic force As per IS:1893 Would depend on system
6	Slenderness ratios maintained	Members defined in Table 3.1, IS:800	IS 800; Cl.3.7
7	Member deflection	Beams, Rafters	IS:800 Cl.3.13
	limited to	Crane Girders, Purlins Top of columns	
8	Structural members	o Encased in concrete Not encased	IS: 800 Section-10
9	Proposed material	o General weld-able o High strength o Cold formed o Tubular	IS: 2062 IS: 8500 IS: 801, 811 IS: 806
10.	Minimum metal thickness Specified for corrosion protection	o Hot rolled sections o Cold formed sections o Tubes	IS: 800, Cl.3.8 Cl.3.8.1 to Cl.3.8.4 Cl.3.8.5

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

11	Structural connections	o Rivets o CT Bolts o S H F G Bolts o Black Bolts o Welding field Shop (Specify welding type proposed) Composite	IS: 800, Section-8 IS: 1929, 2155, 1149 IS 6639, 1367 IS 3757, 4000 IS: 1363, 1367 IS: 816, 814,1395, 7280, 3613, 6419, 6560, 813, 9595
12	Minimum Fire rating proposed, with method	o Rating..... hours o Method proposed. -In tumescent painting -Spraying -Quilting -Fire retardant boarding	IS: 1641, 1642, 1643

STRUCTURAL ENGINEER

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SCADDS/Nucleus 2022: RC-Footing Designer
Limit State Design of Wall Footings for
Axial Load & Uniaxial Bending,
Isolated Flat/Sloped Rectangular/Circular Footings
with or without Pedestals
for Axial Load, Uniaxial & Biaxial Bending,
Combined Rectangular/Trapezoidal Footings
with or without Pedestals
for Axial Load & Uniaxial Bending
in accordance with IS:456-2000 and IS:6403-1981

Introduction:-

This Report contains the detailed solution for the
Reinforced Concrete Footing Design problem.

The given Footing is considered for flexural
the output contains the following portions:

1. Footing Input Data
2. Flexural Design Output for Footing
3. Flexural Design Output for Pedestal, if
4. One Way Shear Check Output
5. Two Way Shear Check Output
6. Development Length / Bond Design Output

While detailed design will be carried out for
and Bond, only checks for stresses are made for

Global Material Data			
Concrete Clear Cover	=	50	mm.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Strength of Main Steel	=	500	N/sq.mm.
Main Rod Size-1	=	10	mm.
Main Rod Size-2	=	12	mm.
Yield Strength of Distribution Steel	=	500	N/sq.mm.
Distbn. Rod Size-1	=	10	mm.
Distbn. Rod Size-2	=	12	mm.
Yield Strength of Dowel/Pedestal Steel	=	500	N/sq.mm.
Dowel/Pedestal Rod Size-1	=	12	mm.
Dowel/Pedestal Rod Size-2	=	16	mm.
Factor of Safety for Load	=	1	
Partial Safety Factor for Concrete	=	1.5	
Partial Safety Factor for Steel	=	1.15	
Max. Strain in Concrete	=	0.0035	mm./mm.
Max. Strain in Steel	=	0.0055	mm./mm.
Young's Modulus of Concrete	=	25000	N/sq.mm.
Young's Modulus of Steel	=	200000	N/sq.mm.

Bond / Development Length Output

Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Yield Stress of Secondary Steel	=	500	N/sq.mm.
Yield Stress of Dowel/Pedestal Steel	=	500	N/sq.mm.
As Per IS:456-2000, Clause 26.2.1.1,			
Design Bond Stress for Main Rods	=	2.24	N/sq.mm.
Design Bond Stress for Secondary Rods	=	2.24	N/sq.mm.
Design Bond Stress for Dowel/Pedestal Rods	=	2.24	N/sq.mm.
Rods in Tension:-			
Main Rod Diameter-1	=	10	mm.
Corresponding Development Length	=	485.491	mm.
Main Rod Diameter-2	=	12	mm.
Corresponding Development Length	=	582.589	mm.
Secondary Rod Diameter-1	=	10	mm.
Corresponding Development Length	=	485.491	mm.
Secondary Rod Diameter-2	=	12	mm.
Corresponding Development Length	=	582.589	mm.
Rods in Compression:-			
Dowel/Pedestal Rod Diameter-1	=	12	mm.
Corresponding Development Length	=	582.589	mm.
Dowel/Pedestal Rod Diameter-2	=	16	mm.
Corresponding Development Length	=	776.786	mm.

F01 : Global Input Data (LC No. : 13)

The footing is to be designed as an Isolated Footing.

Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.

The footing is subjected to Axial Load & Biaxial

Working Axial Load	=	1409.585	KN.
Working Moment about ZZ-axis	=	33.279	KN m.
Working Moment about XX-axis	=	10.145	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 13)

Working Axial Load on Footing	=	1409.585	KN.
Factored Axial Load on Footing	=	1409.585	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	140.958	KN.
Total Factored Axial Load on Footing	=	1550.543	KN.
Working Moment about ZZ-axis	=	33.279	KN m.
Factored Moment about ZZ-axis	=	33.279	KN m.
Working Moment about XX-axis	=	10.145	KN m.
Factored Moment about XX-axis	=	10.145	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	3.732	sq.m.

Equal Projections were intially assumed from the
to arrive at the Footing Size.

Width of Footing Required	=	1.756	m.
Length of Footing Required	=	2.126	m.
Width of Footing Provided	=	1.775	m.
Length of Footing Provided	=	2.15	m.

Actual Bearing Area Provided	=	3.816	sq.m.
Max. Bearing Pressure at the Base	=	439.622	KN/sq.m.
Min. Bearing Pressure at the Base	=	372.978	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	402.686	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	354.014	KN/sq.m.
Net Bearing Pressure at the Column Face	=	385.141	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	396.89	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	775	mm.
Design Bending Moment	=	211.536	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	357.061	mm.
Effective Depth Provided	=	519	mm.

Hence SAFE.

Percentage of Steel Required	=	0.104	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1105.47	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	126.108	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	181.595	mm.
Max. Spacing allowed (Rounded off)	=	175	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	402.686	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	384.713	KN/sq.m.
Net Bearing Pressure at the Column Face	=	394.864	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	400.119	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	772.5	mm.
Design Bending Moment	=	256.655	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	297.877	mm.
Effective Depth Provided	=	507	mm.

Hence SAFE.

Percentage of Steel Required	=	0.109	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1308.06	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	129.092	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	185.893	mm.
Max. Spacing allowed (Rounded off)	=	175	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be
so that a SAFE design is arrived at from both
considerations.

Note (4):- Spacing of Rods are also controlled by

Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 13)

Factored Axial Load on Column	=	1409.585	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	1.775	m.
Length of Footing	=	2.15	m.
Area of Footing	=	3.816	sq.m.

As Per IS:456-2000, Clause

Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	10.214	N/sq.mm.

As Per IS:456-2000, Clause 34.4.3,
Reinforcement is NOT required. However,

Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only
However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 13)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	181.664	KN.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Depth of Footing at Critical Section	=	418.548	mm.

Projection of Footing from Critical Section	=	256	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.245	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.264	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about ZZ-axis.

Design Shear Force about Width	=	218.774	KN.
Depth of Footing at Critical Section	=	406.223	mm.
Projection of Footing from Critical Section	=	253.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.25	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.267	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about XX-axis.

F01 : Punching Shear Output (LC No. : 13)

As Per IS:456-2000, Clause
the critical section for Shear Force is at a
the Half the Effective Depth of the Footing, from
the Column.

Length of Footing at Critical Section	=	1.107	m.
Width of Footing at Critical Section	=	0.737	m.
Ratio of Width to Length at Critical Section	=	0.666	
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Depth of Footing at Critical Section	=	462.774	mm.
Design Shear Force	=	1100.009	KN.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.645	N/sq.mm.
As Per IS:456-2000, Clause			
Coefficient, ks	=	1	

Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 14)

The footing is to be designed as an Isolated Footing.

Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.

The footing is subjected to Axial Load & Biaxial

Working Axial Load	=	1249.667	KN.
Working Moment about ZZ-axis	=	27.102	KN m.
Working Moment about XX-axis	=	9.897	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 14)

Working Axial Load on Footing	=	1249.667	KN.
Factored Axial Load on Footing	=	1249.667	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	124.967	KN.
Total Factored Axial Load on Footing	=	1374.634	KN.
Working Moment about ZZ-axis	=	27.102	KN m.
Factored Moment about ZZ-axis	=	27.102	KN m.
Working Moment about XX-axis	=	9.897	KN m.
Factored Moment about XX-axis	=	9.897	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	3.315	sq.m.

Equal Projections were intially assumed from the
to arrive at the Footing Size.

Width of Footing Required	=	1.645	m.
Length of Footing Required	=	2.015	m.
Width of Footing Provided	=	1.65	m.
Length of Footing Provided	=	2.025	m.

Actual Bearing Area Provided	=	3.341	sq.m.
Max. Bearing Pressure at the Base	=	446.218	KN/sq.m.
Min. Bearing Pressure at the Base	=	376.609	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	408.817	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	360.75	KN/sq.m.
Net Bearing Pressure at the Column Face	=	391.904	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	403.037	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	712.5	mm.
Design Bending Moment	=	168.858	KN m.
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Effective Depth Required	=	326.207	mm.
Effective Depth Provided	=	469	mm.

Hence SAFE.

Percentage of Steel Required	=	0.109	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	928.62	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	139.552	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	200.955	mm.
Max. Spacing allowed (Rounded off)	=	200	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	408.817	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	387.274	KN/sq.m.
Net Bearing Pressure at the Column Face	=	399.547	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	405.67	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	710	mm.
Design Bending Moment	=	207.083	KN m.
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Effective Depth Required	=	270.978	mm.
Effective Depth Provided	=	457	mm.

Hence SAFE.

Percentage of Steel Required	=	0.115	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1110.51	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	143.216	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	206.231	mm.
Max. Spacing allowed (Rounded off)	=	200	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be
so that a SAFE design is arrived at from both
considerations.

Note (4):- Spacing of Rods are also controlled by
Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 14)

Factored Axial Load on Column	=	1249.667	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	1.65	m.
Length of Footing	=	2.025	m.
Area of Footing	=	3.341	sq.m.

As Per IS:456-2000, Clause

Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	9.056	N/sq.mm.

As Per IS:456-2000, Clause 34.4.3,
Reinforcement is NOT required. However,

Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only
However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 14)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	163.091	KN.
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.

Depth of Footing at Critical Section	=	370.263	mm.
Projection of Footing from Critical Section	=	243.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.267	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.277	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about ZZ-axis.

Design Shear Force about Width	=	198.745	KN.
Depth of Footing at Critical Section	=	357.915	mm.
Projection of Footing from Critical Section	=	241	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.274	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.28	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about XX-axis.

F01 : Punching Shear Output (LC No. : 14)

As Per IS:456-2000, Clause
the critical section for Shear Force is at a
the Half the Effective Depth of the Footing, from
the Column.

Length of Footing at Critical Section	=	1.057	m.
Width of Footing at Critical Section	=	0.687	m.
Ratio of Width to Length at Critical Section	=	0.65	
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Depth of Footing at Critical Section	=	413.632	mm.
Design Shear Force	=	970.194	KN.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.672	N/sq.mm.
As Per IS:456-2000, Clause			
Coefficient, ks	=	1	

Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 19)

The footing is to be designed as an Isolated

Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.

The footing is subjected to Axial Load & Biaxial

Working Axial Load	=	1357.047	KN.
Working Moment about ZZ-axis	=	45.276	KN m.
Working Moment about XX-axis	=	25.867	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 19)

Working Axial Load on Footing	=	1357.047	KN.
Factored Axial Load on Footing	=	1357.047	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	135.705	KN.
Total Factored Axial Load on Footing	=	1492.751	KN.
Working Moment about ZZ-axis	=	45.276	KN m.
Factored Moment about ZZ-axis	=	45.276	KN m.
Working Moment about XX-axis	=	25.867	KN m.
Factored Moment about XX-axis	=	25.867	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	3.794	sq.m.

Equal Projections were intially assumed from the to arrive at the Footing Size.

Width of Footing Required	=	1.772	m.
Length of Footing Required	=	2.142	m.
Width of Footing Provided	=	1.775	m.

Length of Footing Provided	=	2.15	m.
Actual Bearing Area Provided	=	3.816	sq.m.
Max. Bearing Pressure at the Base	=	447.177	KN/sq.m.
Min. Bearing Pressure at the Base	=	335.136	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	411.618	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	345.4	KN/sq.m.
Net Bearing Pressure at the Column Face	=	387.749	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	403.733	KN/sq.m.

As Per IS:456-2000, Clause 34.2.3,
the critical section for Bending Moment is at the Face of the Column.

Projection of Footing from Critical Section	=	775	mm.
Design Bending Moment	=	215.174	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	360.118	mm.
Effective Depth Provided	=	519	mm.

Hence SAFE.

Percentage of Steel Required	=	0.106	%

As Per IS:456-2000, Clause 26.5.2.1,
the required percentage of Steel is less than the to be provided. Hence, Minimum Steel is provided.

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1105.47	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	126.108	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	181.595	mm.
Max. Spacing allowed (Rounded off)	=	175	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total

Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	411.618	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	365.793	KN/sq.m.
Net Bearing Pressure at the Column Face	=	391.674	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	405.073	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	772.5	mm.
Design Bending Moment	=	259.793	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	299.692	mm.
Effective Depth Provided	=	507	mm.

Hence SAFE.

Percentage of Steel Required	=	0.111	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1308.06	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	129.092	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	185.893	mm.
Max. Spacing allowed (Rounded off)	=	175	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be
so that a SAFE design is arrived at from both
considerations.

Note (4):- Spacing of Rods are also controlled by
Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 19)

Factored Axial Load on Column	=	1357.047	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	1.775	m.
Length of Footing	=	2.15	m.
Area of Footing	=	3.816	sq.m.

As Per IS:456-2000, Clause

Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	9.834	N/sq.mm.

As Per IS:456-2000, Clause 34.4.3,
Reinforcement is NOT required. However,

Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only
However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 19)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	185.248	KN.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.

Depth of Footing at Critical Section	=	418.548	mm.
Projection of Footing from Critical Section	=	256	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.249	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.264	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about ZZ-axis.

Design Shear Force about Width	=	222.558	KN.
Depth of Footing at Critical Section	=	406.223	mm.
Projection of Footing from Critical Section	=	253.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.255	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.267	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about XX-axis.

F01 : Punching Shear Output (LC No. : 19)

As Per IS:456-2000, Clause
the critical section for Shear Force is at a
the Half the Effective Depth of the Footing, from
the Column.

Length of Footing at Critical Section	=	1.107	m.
Width of Footing at Critical Section	=	0.737	m.
Ratio of Width to Length at Critical Section	=	0.666	
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Depth of Footing at Critical Section	=	462.774	mm.
Design Shear Force	=	1059.01	KN.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.62	N/sq.mm.

As Per IS:456-2000, Clause

Coefficient, ks	=	1	
Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 20)

The footing is to be designed as an Isolated			
Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.
The footing is subjected to Axial Load & Biaxial			
Working Axial Load	=	1186.838	KN.
Working Moment about ZZ-axis	=	21.831	KN m.
Working Moment about XX-axis	=	32.543	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 20)

Working Axial Load on Footing	=	1186.838	KN.
Factored Axial Load on Footing	=	1186.838	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	118.684	KN.
Total Factored Axial Load on Footing	=	1305.522	KN.
Working Moment about ZZ-axis	=	21.831	KN m.
Factored Moment about ZZ-axis	=	21.831	KN m.
Working Moment about XX-axis	=	32.543	KN m.
Factored Moment about XX-axis	=	32.543	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	3.31	sq.m.
Equal Projections were intially assumed from the to arrive at the Footing Size.			
Width of Footing Required	=	1.644	m.
Length of Footing Required	=	2.014	m.

Width of Footing Provided	=	1.65	m.
Length of Footing Provided	=	2.025	m.
Actual Bearing Area Provided	=	3.341	sq.m.
Max. Bearing Pressure at the Base	=	445.505	KN/sq.m.
Min. Bearing Pressure at the Base	=	335.952	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	409.984	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	371.266	KN/sq.m.
Net Bearing Pressure at the Column Face	=	396.361	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	405.328	KN/sq.m.

As Per IS:456-2000, Clause 34.2.3,
the critical section for Bending Moment is at the Face of the Column.

Projection of Footing from Critical Section	=	712.5	mm.
Design Bending Moment	=	169.806	KN m.
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Effective Depth Required	=	327.122	mm.
Effective Depth Provided	=	469	mm.

Hence SAFE.

Percentage of Steel Required	=	0.11	%

As Per IS:456-2000, Clause 26.5.2.1,
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is provided.

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	928.62	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	139.552	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	200.955	mm.
Max. Spacing allowed (Rounded off)	=	200	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	409.984	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	339.15	KN/sq.m.
Net Bearing Pressure at the Column Face	=	379.504	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	399.638	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	710	mm.
Design Bending Moment	=	204.071	KN m.
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Effective Depth Required	=	269	mm.
Effective Depth Provided	=	457	mm.

Hence SAFE.

Percentage of Steel Required	=	0.114	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1110.51	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	143.216	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	206.231	mm.
Max. Spacing allowed (Rounded off)	=	200	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be

so that a SAFE design is arrived at from both considerations.

Note (4):- Spacing of Rods are also controlled by Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 20)

Factored Axial Load on Column	=	1186.838	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	1.65	m.
Length of Footing	=	2.025	m.
Area of Footing	=	3.341	sq.m.
As Per IS:456-2000, Clause			
Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	8.6	N/sq.mm.
As Per IS:456-2000, Clause 34.4.3,			
Reinforcement is NOT required. However,			
Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 20)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	163.786	KN.

Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Depth of Footing at Critical Section	=	370.263	mm.
Projection of Footing from Critical Section	=	243.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.268	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.277	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about ZZ-axis.

Design Shear Force about Width	=	197.558	KN.
Depth of Footing at Critical Section	=	357.915	mm.
Projection of Footing from Critical Section	=	241	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.273	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.28	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about XX-axis.

F01 : Punching Shear Output (LC No. : 20)

As Per IS:456-2000, Clause
the critical section for Shear Force is at a
the Half the Effective Depth of the Footing, from
the Column.

Length of Footing at Critical Section	=	1.057	m.
Width of Footing at Critical Section	=	0.687	m.
Ratio of Width to Length at Critical Section	=	0.65	
Modified Depth of Footing at the Face of Wall	=	525	mm.
Modified Depth of Footing at the End	=	375	mm.
Depth of Footing at Critical Section	=	413.632	mm.
Design Shear Force	=	921.416	KN.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.639	N/sq.mm.

As Per IS:456-2000, Clause			
Coefficient, ks	=	1	
Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 21)

The footing is to be designed as an Isolated			
Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.
The footing is subjected to Axial Load & Biaxial			
Working Axial Load	=	1472.509	KN.
Working Moment about ZZ-axis	=	336.707	KN m.
Working Moment about XX-axis	=	17.634	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 21)

Working Axial Load on Footing	=	1472.509	KN.
Factored Axial Load on Footing	=	1472.509	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	147.251	KN.
Total Factored Axial Load on Footing	=	1619.76	KN.
Working Moment about ZZ-axis	=	336.707	KN m.
Factored Moment about ZZ-axis	=	336.707	KN m.
Working Moment about XX-axis	=	17.634	KN m.
Factored Moment about XX-axis	=	17.634	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	5.48	sq.m.
Equal Projections were intially assumed from the to arrive at the Footing Size.			
Width of Footing Required	=	2.163	m.

Length of Footing Required	=	2.533	m.
Width of Footing Provided	=	2.175	m.
Length of Footing Provided	=	2.55	m.
Actual Bearing Area Provided	=	5.546	sq.m.
Max. Bearing Pressure at the Base	=	443.661	KN/sq.m.
Min. Bearing Pressure at the Base	=	140.431	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	417.112	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	131.422	KN/sq.m.
Net Bearing Pressure at the Column Face	=	307.878	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	380.028	KN/sq.m.

As Per IS:456-2000, Clause 34.2.3,
the critical section for Bending Moment is at the Face of the Column.

Projection of Footing from Critical Section	=	975	mm.
Design Bending Moment	=	393.57	KN m.
Modified Depth of Footing at the Face of Wall	=	700	mm.
Modified Depth of Footing at the End	=	550	mm.
Effective Depth Required	=	456.241	mm.
Effective Depth Provided	=	644	mm.

Hence SAFE.

Percentage of Steel Required	=	0.102	%

As Per IS:456-2000, Clause 26.5.2.1,
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is provided.

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1680.84	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	101.63	mm.
Max. Spacing allowed (Rounded off)	=	100	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	146.347	mm.
Max. Spacing allowed (Rounded off)	=	150	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	417.112	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	399.57	KN/sq.m.
Net Bearing Pressure at the Column Face	=	409.269	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	414.462	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	972.5	mm.
Design Bending Moment	=	499.817	KN m.
Modified Depth of Footing at the Face of Wall	=	700	mm.
Modified Depth of Footing at the End	=	550	mm.
Effective Depth Required	=	399.986	mm.
Effective Depth Provided	=	632	mm.

Hence SAFE.

Percentage of Steel Required	=	0.116	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1933.92	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	103.56	mm.
Max. Spacing allowed (Rounded off)	=	100	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	149.126	mm.
Max. Spacing allowed (Rounded off)	=	150	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be so that a SAFE design is arrived at from both considerations.

Note (4):- Spacing of Rods are also controlled by Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 21)

Factored Axial Load on Column	=	1472.509	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	2.175	m.
Length of Footing	=	2.55	m.
Area of Footing	=	5.546	sq.m.
As Per IS:456-2000, Clause			
Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	10.67	N/sq.mm.
As Per IS:456-2000, Clause 34.4.3,			
Reinforcement is NOT required. However,			
Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 21)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	286.94	KN.

Modified Depth of Footing at the Face of Wall	=	700	mm.
Modified Depth of Footing at the End	=	550	mm.
Depth of Footing at Critical Section	=	544.923	mm.
Projection of Footing from Critical Section	=	331	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.242	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.265	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about ZZ-axis.

Design Shear Force about Width	=	348.294	KN.
Depth of Footing at Critical Section	=	532.668	mm.
Projection of Footing from Critical Section	=	328.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.256	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.267	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

The section is SAFE in Shear, about XX-axis.

F01 : Punching Shear Output (LC No. : 21)

As Per IS:456-2000, Clause
the critical section for Shear Force is at a
the Half the Effective Depth of the Footing, from
the Column.

Length of Footing at Critical Section	=	1.232	m.
Width of Footing at Critical Section	=	0.862	m.
Ratio of Width to Length at Critical Section	=	0.7	
Modified Depth of Footing at the Face of Wall	=	700	mm.
Modified Depth of Footing at the End	=	550	mm.
Depth of Footing at Critical Section	=	588.462	mm.
Design Shear Force	=	1183.847	KN.

As Per IS:456-2000, Clause

Actual Shear Stress	=	0.48	N/sq.mm.
As Per IS:456-2000, Clause			
Coefficient, ks	=	1	
Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 22)

The footing is to be designed as an Isolated			
Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.
The footing is subjected to Axial Load & Biaxial			
Working Axial Load	=	1031.289	KN.
Working Moment about ZZ-axis	=	282.283	KN m.
Working Moment about XX-axis	=	0.998	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 22)

Working Axial Load on Footing	=	1031.289	KN.
Factored Axial Load on Footing	=	1031.289	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	103.129	KN.
Total Factored Axial Load on Footing	=	1134.418	KN.
Working Moment about ZZ-axis	=	282.283	KN m.
Factored Moment about ZZ-axis	=	282.283	KN m.
Working Moment about XX-axis	=	0.998	KN m.
Factored Moment about XX-axis	=	0.998	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations, Area of Footing Required	=	4.205	sq.m.

Equal Projections were intially assumed from the
to arrive at the Footing Size.

Width of Footing Required	=	1.874	m.
Length of Footing Required	=	2.244	m.
Width of Footing Provided	=	1.875	m.
Length of Footing Provided	=	2.25	m.
Actual Bearing Area Provided	=	4.219	sq.m.
Max. Bearing Pressure at the Base	=	448.087	KN/sq.m.
Min. Bearing Pressure at the Base	=	89.712	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	423.641	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	66.78	KN/sq.m.
Net Bearing Pressure at the Column Face	=	292.792	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	383.039	KN/sq.m.

As Per IS:456-2000, Clause 34.2.3,
the critical section for Bending Moment is at the Face of the Column.

Projection of Footing from Critical Section	=	825	mm.
Design Bending Moment	=	242.489	KN m.
Modified Depth of Footing at the Face of Wall	=	625	mm.
Modified Depth of Footing at the End	=	475	mm.
Effective Depth Required	=	375.793	mm.
Effective Depth Provided	=	569	mm.

Hence SAFE.

Percentage of Steel Required	=	0.094	%

As Per IS:456-2000, Clause 26.5.2.1,
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is provided.

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1280.25	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	115.026	mm.
Max. Spacing allowed (Rounded off)	=	100	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	165.638	mm.
Max. Spacing allowed (Rounded off)	=	150	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	423.641	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	422.128	KN/sq.m.
Net Bearing Pressure at the Column Face	=	422.977	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	423.437	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	822.5	mm.
Design Bending Moment	=	322.252	KN m.
Modified Depth of Footing at the Face of Wall	=	625	mm.
Modified Depth of Footing at the End	=	475	mm.
Effective Depth Required	=	330.488	mm.
Effective Depth Provided	=	557	mm.

Hence SAFE.

Percentage of Steel Required	=	0.109	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1503.9	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	117.504	mm.
Max. Spacing allowed (Rounded off)	=	100	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	169.206	mm.
Max. Spacing allowed (Rounded off)	=	150	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing
1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be so that a SAFE design is arrived at from both considerations.

Note (4):- Spacing of Rods are also controlled by Value, User-defined Minimum and Maximum

F01 : Dowel Bars Output (LC No. : 22)

Factored Axial Load on Column	=	1031.289	KN.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Pedestal Steel	=	500	N/sq.mm.
Width of Column Section	=	230	mm.
Depth of Column Section	=	600	mm.
Area of Column Section	=	138000	sq.mm.
Width of Footing	=	1.875	m.
Length of Footing	=	2.25	m.
Area of Footing	=	4.219	sq.m.
As Per IS:456-2000, Clause			
Basic Permissible Bearing Stress	=	11.25	N/sq.mm.
Max. Bearing Stress based on Area Ratio	=	22.5	N/sq.mm.
Actual Bearing Stress	=	7.473	N/sq.mm.
As Per IS:456-2000, Clause 34.4.3,			
Reinforcement is NOT required. However,			
Percentage of Steel Required	=	0.5	%
Area of Steel Provided	=	690	sq.mm.
Dowel Rod Size-1	=	12	mm.
No. of Rods to be Provided	=	6	Nos.
Corresponding Steel Area	=	678.584	sq.mm.
Dowel Rod Size-2	=	16	mm.
No. of Rods to be Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Note :- Calculation for Dowel Rods is only However, Dowel Rods may not be required in all

F01 : One Way Shear Output (LC No. : 22)

As Per IS:456-2000, Clause 34.2.4,
the critical section for Shear Force is at a
the Effective Depth of the Footing, from the Face

Design Shear Force about Length	=	193.603	KN.
Modified Depth of Footing at the Face of Wall	=	625	mm.
Modified Depth of Footing at the End	=	475	mm.
Depth of Footing at Critical Section	=	465.545	mm.
Projection of Footing from Critical Section	=	256	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.222	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.28	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
The section is SAFE in Shear, about ZZ-axis.			
Design Shear Force about Width	=	241.576	KN.
Depth of Footing at Critical Section	=	453.231	mm.
Projection of Footing from Critical Section	=	253.5	mm.
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.237	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.283	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
The section is SAFE in Shear, about XX-axis.			

F01 : Punching Shear Output (LC No. : 22)

As Per IS:456-2000, Clause			
the critical section for Shear Force is at a the Half the Effective Depth of the Footing, from the Column.			
Length of Footing at Critical Section	=	1.157	m.
Width of Footing at Critical Section	=	0.787	m.
Ratio of Width to Length at Critical Section	=	0.68	
Modified Depth of Footing at the Face of Wall	=	625	mm.
Modified Depth of Footing at the End	=	475	mm.
Depth of Footing at Critical Section	=	511.273	mm.
Design Shear Force	=	802.962	KN.

As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.404	N/sq.mm.
As Per IS:456-2000, Clause			
Coefficient, ks	=	1	
Max. Permissible Shear Stress	=	1.25	N/sq.mm.

The section is SAFE in Shear.

F01 : Global Input Data (LC No. : 23)

The footing is to be designed as an Isolated			
Width of Column	=	230	mm.
Length of Column	=	600	mm.
Footing Shape	=	Rectangular	
Initial Depth at the Face of Wall/Column	=	300	mm.
Initial Depth at the End	=	150	mm.
The footing is subjected to Axial Load & Biaxial			
Working Axial Load	=	1406.412	KN.
Working Moment about ZZ-axis	=	26.606	KN m.
Working Moment about XX-axis	=	35.058	KN m.
Safe Bearing Capacity of Soil	=	300	KN/sq.m.
Factor of Safety for Safe Bearing Capacity	=	1.5	

F01 : Flexure Output (LC No. : 23)

Working Axial Load on Footing	=	1406.412	KN.
Factored Axial Load on Footing	=	1406.412	KN.
Percentage Factor for Self Weight of Footing	=	10	%
Factored Self Weight of Footing	=	140.641	KN.
Total Factored Axial Load on Footing	=	1547.053	KN.
Working Moment about ZZ-axis	=	26.606	KN m.
Factored Moment about ZZ-axis	=	26.606	KN m.
Working Moment about XX-axis	=	35.058	KN m.
Factored Moment about XX-axis	=	35.058	KN m.
Ultimate Bearing Capacity of Soil	=	450	KN/sq.m.
From Vertical Load and Bending considerations,			
Area of Footing Required	=	3.864	sq.m.
Equal Projections were intially assumed from the			
to arrive at the Footing Size.			

Width of Footing Required	=	1.789	m.
Length of Footing Required	=	2.159	m.
Width of Footing Provided	=	1.8	m.
Length of Footing Provided	=	2.175	m.
Actual Bearing Area Provided	=	3.915	sq.m.
Max. Bearing Pressure at the Base	=	443.757	KN/sq.m.
Min. Bearing Pressure at the Base	=	346.564	KN/sq.m.

Bending about ZZ-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about ZZ-axis will be in

Net Bearing Pressure at the Base - Right End	=	407.833	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	370.339	KN/sq.m.
Net Bearing Pressure at the Column Face	=	394.258	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	403.205	KN/sq.m.

As Per IS:456-2000, Clause 34.2.3,
the critical section for Bending Moment is at the Face of the Column.

Projection of Footing from Critical Section	=	787.5	mm.
Design Bending Moment	=	225.103	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	366.737	mm.
Effective Depth Provided	=	519	mm.

Hence SAFE.

Percentage of Steel Required	=	0.109	%

As Per IS:456-2000, Clause 26.5.2.1,
the required percentage of Steel is less than the to be provided. Hence, Minimum Steel is provided.

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1121.04	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	126.108	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	181.595	mm.

Max. Spacing allowed (Rounded off)	=	175	mm.

Bending about XX-axis:-

Load Eccentricity lies within the limit causing total
Hence, the Footing Base about XX-axis will be in

Net Bearing Pressure at the Base - Right End	=	407.833	KN/sq.m.
Net Bearing Pressure at the Base - Left End	=	348.135	KN/sq.m.
Net Bearing Pressure at the Column Face	=	381.798	KN/sq.m.
Net Bearing Pressure - 'd' from Face	=	399.011	KN/sq.m.

As Per IS:456-2000, Clause
the critical section for Bending Moment is at the
of the Column.

Projection of Footing from Critical Section	=	785	mm.
Design Bending Moment	=	267.492	KN m.
Modified Depth of Footing at the Face of Wall	=	575	mm.
Modified Depth of Footing at the End	=	425	mm.
Effective Depth Required	=	303.342	mm.
Effective Depth Provided	=	507	mm.

Hence SAFE.

Percentage of Steel Required	=	0.113	%

As Per IS:456-2000, Clause
the required percentage of Steel is less than the
to be provided. Hence, Minimum Steel is

Percentage of Main Steel Provided	=	0.12	%
Area of Steel Provided	=	1323.27	sq.mm.
Dia. of Rod-1 in Central Band	=	10	mm.
Required Spacing of Rods	=	129.092	mm.
Max. Spacing allowed (Rounded off)	=	125	mm.
Dia. of Rod-2 in Central Band	=	12	mm.
Required Spacing of Rods	=	185.893	mm.
Max. Spacing allowed (Rounded off)	=	175	mm.

Note (1):- The required Spacing of Main Rods will
300 mm. or 3d (300 mm. or 5d for Dist. Rods)
If the required spacing exceeds this limit, the least
will be automatically provided. This is done in
IS:456-2000 Clause 26.3.3.

Note (2):- The required minimum area of
as per IS:456-2000, Clause 34.5.2, if the Footing

1000 mm. This minimum area is 360.0 sq.mm. for

Note (3):- The assumed Depth of Footing will be so that a SAFE design is arrived at from both considerations.

Note (4):- Spacing of Rods are also controlled by Value, User-defined Minimum and Maximum

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

SCADDS/RC-Beam Designer 2022 [Release: 4.01.3010]

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SCADDS/Nucleus 2022: RC-Beam Designer
Limit State Design of Singly/Doubly Reinforced
Rectangular/Tee/Ell Beam Sections
subjected to Moment/Torsion/Shear
as per IS:456-2000 upto Amendment 5 (Reaffirmed 2021)

Introduction:-

This Report contains the detailed solution for the Reinforced Concrete Beam Design problem.

The given Beam Section is considered for flexural design and the output contains the following

1. Global Input Data
2. Development Length Output
3. Flexural Design Output
4. Shear Design Output
5. Side Face Steel Output
6. Deflection Check Output
7. Slender Beam Check Output
8. Deep Beam Check Output

While detailed design will be carried out for
and Side Face Steel, only checks are made for

Global Material Data			
Concrete Clear Cover	=	25	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Strength of Main Steel	=	500	N/sq.mm.
Main Rod Size-1	=	16	mm.
Yield Strength of Tie Steel	=	500	N/sq.mm.
Stirrup Rod Size-1	=	8	mm.
Stirrup Rod Size-2	=	10	mm.
Factor of Safety for Load	=	1	
Partial Safety Factor for Concrete	=	1.5	
Partial Safety Factor for Steel	=	1.15	
Max. Strain in Concrete	=	0.0035	mm./mm.
Max. Strain in Steel	=	0.0055	mm./mm.
Young's Modulus of Concrete	=	25000	N/sq.mm.
Young's Modulus of Steel	=	200000	N/sq.mm.

Bond / Development Length Output

Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
As Per IS:456-2000, Clause 26.2.1.1,			
Design Bond Stress for Main Rods	=	2.24	N/sq.mm.
Rods in Tension:-			
Main Rod Diameter-1	=	16	mm.
Corresponding Development Length	=	776.786	mm.
Rods in Compression:-			
Main Rod Diameter-1	=	16	mm.

Corresponding Development Length	=	621.429	mm.

B117 : Global Input Data			
Effective Span	=	4.33	m.
Section Type	=	Rectangular	
Width of Web	=	230	mm.
Overall Depth	=	450	mm.
Effective Cover at Top	=	55	mm.
Effective Cover at Bottom	=	55	mm.
Number of Stirrup Legs	=	2	Nos.
Max. Bending Moment at End-1	=	142.061	KN m.
Min. Bending Moment at End-1	=	-89.69	KN m.
Max. Bending Moment at End-2	=	110.409	KN m.
Min. Bending Moment at End-2	=	-55.08	KN m.
Max. Bending Moment at Middle	=	51.613	KN m.
Min. Bending Moment at Middle	=	-74.273	KN m.
Max. Shear Force at Left	=	90.282	KN.
Max. Shear Force at Right	=	91.022	KN.
Max. Torsional Moment	=	0	KN m.
Torsion, as per Analysis Results, is partially			
Ignore Torsion Limit	=	10	%

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

If Torsion is less than the above % of the Max.
it will be ignored. Otherwise, the Beam is

B117 : End-1 Max - Flexure Output

Bending Moment	=	142.061	KN m.
Factored Moment	=	142.061	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	142.061	KN m.
Moment for Compression Steel	=	22.706	KN m.
Depth of Neutral Axis	=	180.14	mm.
Tensile Reinforcement Required	=	1.113	%
Compression Reinforcement Required.	=	0.19	%
As Per IS:456-2000, Clause 26.5.1.1.a, Min. Tensile Reinforcement Percentage	=	0.17	%
As Per IS:456-2000, Clause 26.5.1.1.b, Max. Reinforcement Percentage	=	4	%

Area of Tensile Reinforcement	=	1010.814	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.027	Nos.
No. of Rods Provided	=	5	Nos.
Corresponding Steel Area	=	1005.31	sq.mm.
Area of Compression Reinforcement	=	172.364	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	0.857	Nos.
No. of Rods Provided	=	1	Nos.
Corresponding Steel Area	=	201.062	sq.mm.

Note:- Please note that the minimum number of should be always TWO, even if the number of ONE or less. This is to be done during detailing.

B117 : End-1 Max - Shear Output

Shear Force	=	90.282	KN.
Factored Shear	=	90.282	KN.
As Per IS:456-2000, Clause 40.1,			
Actual Shear Stress	=	0.994	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.666	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
Stirrups have to be Designed for Shear.			
Shear for which Stirrups are Provided	=	29.785	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.

Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.

As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.

B117 : End-1 Min - Flexure Output

Bending Moment	=	89.69	KN m.
Factored Moment	=	89.69	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	89.69	KN m.
Depth of Neutral Axis	=	126.552	mm.
Tensile Reinforcement Required	=	0.663	%
Compression Reinforcement is NOT Necessary.			
As Per IS:456-2000, Clause			
Min. Tensile Reinforcement Percentage	=	0.17	%
As Per IS:456-2000, Clause			
Max. Reinforcement Percentage	=	4	%

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Area of Tensile Reinforcement	=	602.214	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	2.995	Nos.
No. of Rods Provided	=	3	Nos.
Corresponding Steel Area	=	603.186	sq.mm.
Compression Steel is NOT required. However, 2 are provided, irrespective of the size, for holding			
Main Rod Size-1	=	16	mm.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.
Note:- Please note that the minimum number of should be always TWO, even if the number of ONE or less. This is to be done during detailing.			

B117 : End-1 Min - Shear Output

Shear Force	=	90.282	KN.
Factored Shear	=	90.282	KN.

As Per IS:456-2000, Clause 40.1,			
Actual Shear Stress	=	0.994	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.548	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
Stirrups have to be Designed for Shear.			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Shear for which Stirrups are Provided	=	40.502	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.
Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.

As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.

B117 : End-2 Max - Flexure Output

Bending Moment	=	110.409	KN m.
Factored Moment	=	110.409	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	110.409	KN m.
Depth of Neutral Axis	=	163.007	mm.
Tensile Reinforcement Required	=	0.854	%

Compression Reinforcement is NOT Necessary.

As Per IS:456-2000, Clause

Min. Tensile Reinforcement Percentage	=	0.17	%

As Per IS:456-2000, Clause

Max. Reinforcement Percentage	=	4	%
Area of Tensile Reinforcement	=	775.69	sq.mm.

Main Rod Size-1	=	16	mm.
No. of Rods Required	=	3.858	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	804.248	sq.mm.

Compression Steel is NOT required. However, 2 are provided, irrespective of the size, for holding

Main Rod Size-1	=	16	mm.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.

Note:- Please note that the minimum number of should be always TWO, even if the number of ONE or less. This is to be done during detailing.

B117 : End-2 Max - Shear Output

Shear Force	=	91.022	KN.
Factored Shear	=	91.022	KN.
As Per IS:456-2000, Clause 40.1,			
Actual Shear Stress	=	1.002	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.613	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

Stirrups have to be Designed for Shear.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Shear for which Stirrups are Provided	=	35.365	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.
Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.

As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.

B117 : End-2 Min - Flexure Output

Bending Moment	=	55.08	KN m.
Factored Moment	=	55.08	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	55.08	KN m.
Depth of Neutral Axis	=	72.968	mm.
Tensile Reinforcement Required	=	0.382	%

Compression Reinforcement is NOT Necessary.

As Per IS:456-2000, Clause			
Min. Tensile Reinforcement Percentage	=	0.17	%
As Per IS:456-2000, Clause			
Max. Reinforcement Percentage	=	4	%
Area of Tensile Reinforcement	=	347.228	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	1.727	Nos.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.

Compression Steel is NOT required. However, 2 are provided, irrespective of the size, for holding

Main Rod Size-1	=	16	mm.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.

Note:- Please note that the minimum number of should be always TWO, even if the number of ONE or less. This is to be done during detailing.

B117 : End-2 Min - Shear Output

Shear Force	=	91.022	KN.
Factored Shear	=	91.022	KN.
As Per IS:456-2000, Clause 40.1,			
Actual Shear Stress	=	1.002	N/sq.mm.
As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.465	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.

Stirrups have to be Designed for Shear.			
Shear for which Stirrups are Provided	=	48.78	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.
Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.
As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.			

B117 : Mid. Max - Flexure Output

Bending Moment	=	74.273	KN m.
Factored Moment	=	74.273	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	74.273	KN m.
Depth of Neutral Axis	=	101.732	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Tensile Reinforcement Required	=	0.533	%
Compression Reinforcement is NOT Necessary.			
As Per IS:456-2000, Clause			
Min. Tensile Reinforcement Percentage	=	0.17	%
As Per IS:456-2000, Clause			
Max. Reinforcement Percentage	=	4	%
Area of Tensile Reinforcement	=	484.102	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	2.408	Nos.
No. of Rods Provided	=	3	Nos.
Corresponding Steel Area	=	603.186	sq.mm.
Compression Steel is NOT required. However, 2 are provided, irrespective of the size, for holding			
Main Rod Size-1	=	16	mm.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.
Note:- Please note that the minimum number of should be always TWO, even if the number of			

ONE or less. This is to be done during detailing.

B117 : Mid. Max - Shear Output

Shear Force	=	67.123	KN.
Factored Shear	=	67.123	KN.
As Per IS:456-2000, Clause 40.1,			
Actual Shear Stress	=	0.739	N/sq.mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

As Per IS:456-2000, Table 19,			
Design Shear Strength of Concrete	=	0.548	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
Stirrups have to be Designed for Shear.			
Shear for which Stirrups are Provided	=	17.343	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.
Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.
As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.			

B117 : Mid. Min - Flexure Output

Bending Moment	=	51.613	KN m.
Factored Moment	=	51.613	KN m.
Overall Depth of Section	=	450	mm.
Bottom Effective Cover	=	55	mm.
Effective Depth	=	395	mm.
Maximum N.A. Ratio	=	0.456	
Total Limiting Moment	=	119.356	KN m.
Total Design Moment	=	51.613	KN m.
Depth of Neutral Axis	=	67.989	mm.

Tensile Reinforcement Required	=	0.356	%
Compression Reinforcement is NOT Necessary.			
As Per IS:456-2000, Clause			

Min. Tensile Reinforcement Percentage	=	0.17	%
As Per IS:456-2000, Clause			
Max. Reinforcement Percentage	=	4	%
Area of Tensile Reinforcement	=	323.534	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	1.609	Nos.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.
Compression Steel is NOT required. However, 2 are provided, irrespective of the size, for holding			
Main Rod Size-1	=	16	mm.
No. of Rods Provided	=	2	Nos.
Corresponding Steel Area	=	402.124	sq.mm.
Note:- Please note that the minimum number of should be always TWO, even if the number of ONE or less. This is to be done during detailing.			

B117 : Mid. Min - Shear Output

Shear Force	=	67.123	KN.
Factored Shear	=	67.123	KN.
As Per IS:456-2000, Clause 40.1,			

Actual Shear Stress	=	0.739	N/sq.mm.
As Per IS:456-2000, Table 19, Design Shear Strength of Concrete	=	0.465	N/sq.mm.
As Per IS:456-2000, Table 20, Max. Permissible Shear Stress	=	3.124	N/sq.mm.
Stirrups have to be Designed for Shear.			
Shear for which Stirrups are Provided	=	24.882	KN.
Stirrup Steel Yield Strength	=	500	N/sq.mm.
No. of Stirrup Legs	=	2	Nos.
Stirrup Rod Diameter-1	=	8	mm.
Spacing of Stirrups Required	=	300	mm.
Stirrup Rod Diameter-2	=	10	mm.
Spacing of Stirrups Required	=	300	mm.
As per IS:456-2000 Clause 26.5.1.5, if the stirrup exceeds 0.75d or 300 mm., whichever is less, the value will be provided as the Spacing of Stirrups.			

B117 : Side Face Steel Output

Overall Depth of Section	=	450	mm.
As Per IS:456-2000, Clauses 26.5.1.3, 26.5.1.7, Side Face Reinforcement is NOT Required.			

B117 : Deflection Check Output

Type of Beam	=	Ends	Fixed or Continuous

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

Effective Span of Beam	=	4.33	m.
Effective Depth of Beam	=	395	mm.
Actual Span to Depth Ratio	=	10.962	
As Per IS:456-2000, Clause 23.2.1.a,			
Factor Alpha	=	26	
As Per IS:456-2000, Clause 23.2.1.b,			
Factor Zigma	=	1	
As Per IS:456-2000, Clause 23.2.1.c,			
Factor Gamma	=	1.067	
As Per IS:456-2000, Clause 23.2.1.d,			
Factor Delta	=	1	
As Per IS:456-2000, Clause 23.2.1.e,			
Factor Lamda	=	1	
Allowable Span to Depth Ratio	=	27.731	
Deflection Requirements are O.K.			

B117 : Deep Beam Check Output

Effective Span of Beam	=	4.33	m.
Overall Depth	=	450	mm.
Effective Span to Depth Ratio	=	9.622	
Minimum Value for the above	=	2.5	
As Per IS:456-2000, Clause 29.1,			
this Beam is NOT a Deep Beam.			

B117 : Slender Beam Check Output

Clear Distance between Lateral Restraints	=	4.33	m.
Allowable Value for the above	=	13.8	m.
As Per IS:456-2000, Clause 23.3,			

this Beam is NOT a Slender Beam.

Note :-
Actually, the clear distance between lateral
taken as against the effective span. But, the
taken for simplifying the calculations. In fact, it's
to consider the effective span rather than the

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

SCADDS/RC-Column Designer 2022 [Release: 4.01.3010]

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SCADDS/Nucleus 2022: RC-Column Designer
Limit State Design of Braced/Unbraced Short/Long
Rectangular/Circular Cracked/Uncracked Column Sections
Subjected to Axial Load/Uni-axial & Bi-axial Bending
as per IS:456-2000 upto Amendment 5 (Reaffirmed 2021)

Introduction:-

This Report contains the detailed solution for the Reinforced Concrete Column Design problem.

The given Column Section is considered for Design and the output contains the following

1. Global Input Data
2. Development Length Output
3. Slenderness & Eccentricity Output
4. Flexural Design Output
5. Tie Design Output

While detailed design will be carried out for design for Axial Tension and Shear is not

Global Material Data			
Concrete Clear Cover	=	40	mm.
Char. Comp. Strength of Concrete	=	30	N/sq.mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Yield Strength of Main Steel	=	500	N/sq.mm.
Main Rod Size-1	=	16	mm.
Main Rod Size-2	=	20	mm.
Yield Strength of Tie Steel	=	500	N/sq.mm.
Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Factor of Safety for Load	=	1	
Partial Safety Factor for Concrete	=	1.5	
Partial Safety Factor for Steel	=	1.15	
Max. Strain in Concrete	=	0.0035	mm./mm.
Max. Strain in Steel	=	0.0055	mm./mm.
Young's Modulus of Concrete	=	27386.128	N/sq.mm.
Young's Modulus of Steel	=	200000	N/sq.mm.

Bond / Development Length Output

Char. Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
As Per IS:456-2000, Clause			
Design Bond Stress for Main Rods	=	3	N/sq.mm.
Rods in Compression:-			
Main Rod Diameter-1	=	16	mm.
Corresponding Development Length	=	580	mm.
Main Rod Diameter-2	=	20	mm.
Corresponding Development Length	=	725	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

C1 : Global Input Data (LC No. : 13)			
Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1408.329	KN.
Working Moment about ZZ-axis at Top	=	33.279	KN m.
Working Moment about YY-axis at Top	=	-9.938	KN m.
Working Moment about ZZ-axis at Bottom	=	25.269	KN m.
Working Moment about YY-axis at Bottom	=	-15.582	KN m.
C1 : Slenderness & Eccentricity Output (LC No. : 13)			
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Slenderness Ratio about YY-axis	=	2.378	
The Column is Short about the YY-axis.			
As Per IS:456-2000, 25.4,			
Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	23.63	mm.
Actual Eccentricity about YY due to Moment-YY	=	11.064	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	24.1	mm.
Design Eccentricity about YY due to Moment-YY	=	20	mm.

As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is not more than the			
Hence, the Column carries only Axial Load about			
Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	28.167	KN m.

C1 : Flexural Design Output (LC No. : 13)

Axial Load on Column	=	1408.329	KN.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Factored Axial Load	=	1408.329	KN.
Revised Design Moment about YY axis	=	28.167	KN m.
The Column is subjected to Axial Load & Uni-axial			
Main Reinforcement is provided along all the			
Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis	=	6	mm.
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	0.8	%
Area of Longitudinal Reinforcement Required	=	1104	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.
No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 13)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.

Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.
Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum			

C1 : Global Input Data (LC No. : 14)

Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1248.411	KN.
Working Moment about ZZ-axis at Top	=	27.102	KN m.
Working Moment about YY-axis at Top	=	-9.69	KN m.
Working Moment about ZZ-axis at Bottom	=	22.19	KN m.
Working Moment about YY-axis at Bottom	=	-14.607	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 14)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			
Slenderness Ratio about YY-axis	=	2.378	

The Column is Short about the YY-axis.

As Per IS:456-2000, 25.4,

Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.

As Per IS:456-2000, 39.3,

0.05 times D (Limiting Value about ZZ)	=	30	mm.

0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	21.709	mm.
Actual Eccentricity about YY due to Moment-YY	=	11.701	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	24.1	mm.
Design Eccentricity about YY due to Moment-YY	=	20	mm.
As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is not more than the			
Hence, the Column carries only Axial Load about			
Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	24.968	KN m.

C1 : Flexural Design Output (LC No. : 14)

Axial Load on Column	=	1248.411	KN.
Factored Axial Load	=	1248.411	KN.
Revised Design Moment about YY axis	=	24.968	KN m.
The Column is subjected to Axial Load & Uni-axial			
Main Reinforcement is provided along all the			
Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis	=	6	mm.
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.

Percentage of Reinforcement to be Provided	=	0.8	%
Area of Longitudinal Reinforcement Required	=	1104	sq.mm.

Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.
No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 14)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.

As Per IS:456-2000,

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.

Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum

C1 : Global Input Data (LC No. : 19)

Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.

The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D

Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1355.791	KN.
Working Moment about ZZ-axis at Top	=	45.276	KN m.
Working Moment about YY-axis at Top	=	26.074	KN m.
Working Moment about ZZ-axis at Bottom	=	20.073	KN m.
Working Moment about YY-axis at Bottom	=	9.03	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 19)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			
Slenderness Ratio about YY-axis	=	2.378	
The Column is Short about the YY-axis.			
As Per IS:456-2000, 25.4,			
Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	33.394	mm.
Actual Eccentricity about YY due to Moment-YY	=	19.232	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	33.394	mm.
Design Eccentricity about YY due to Moment-YY	=	20	mm.
As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about ZZ	=	45.276	KN m.
Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	27.116	KN m.

C1 : Flexural Design Output (LC No. : 19)

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Axial Load on Column	=	1355.791	KN.
Factored Axial Load	=	1355.791	KN.
Revised Design Moment about ZZ axis	=	45.276	KN m.
Revised Design Moment about YY axis	=	27.116	KN m.

The Column is subjected to Axial Load & Bi-axial

Main Reinforcement is provided along all the

Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Percentage of Reinforcement Required	=	0.001	%

As Per IS:456-2000,
the required percentage of Reinforcement is less the Minimum value to be provided. Therefore, Reinforcement will be provided.

Depth of Neutral Axis about ZZ-axis	=	545.4	mm.
Depth of Neutral Axis about YY-axis	=	545.4	mm.
Ultimate Axial Load, Puz	=	1863.499	KN.
Ratio of Pu/Puz	=	0.728	
Value of Coefficient, Alpha-n	=	1.879	
Ultimate Moment Capacity about ZZ-axis	=	99.102	KN m.
Ultimate Moment Capacity about YY-axis	=	37.982	KN m.
Ratio of Actual to Ultimate Moment, Mux/Mux1	=	0.457	

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Ratio of Actual to Ultimate Moment, Muy/Muy1	=	0.714	
Sum of above Ratios, applied with Alpha-n	=	0.76	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	0.8	%
Area of Longitudinal Reinforcement Required	=	1104	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.
No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns

Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 19)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.

As Per IS:456-2000,

Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.
Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum			

C1 : Global Input Data (LC No. : 20)

Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1185.582	KN.
Working Moment about ZZ-axis at Top	=	21.831	KN m.
Working Moment about YY-axis at Top	=	-32.336	KN m.
Working Moment about ZZ-axis at Bottom	=	20.13	KN m.

Working Moment about YY-axis at Bottom	=	-23.027	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 20)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			
Slenderness Ratio about YY-axis	=	2.378	
The Column is Short about the YY-axis.			
As Per IS:456-2000, 25.4,			
Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	18.414	mm.
Actual Eccentricity about YY due to Moment-YY	=	27.274	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	24.1	mm.
Design Eccentricity about YY due to Moment-YY	=	27.274	mm.
As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is not more than the			
Hence, the Column carries only Axial Load about			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	32.336	KN m.

C1 : Flexural Design Output (LC No. : 20)

Axial Load on Column	=	1185.582	KN.
Factored Axial Load	=	1185.582	KN.
Revised Design Moment about YY axis	=	32.336	KN m.
The Column is subjected to Axial Load & Uni-axial			
Main Reinforcement is provided along all the			
Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis	=	6	mm.
Width of Column	=	230	mm.
Depth of Column	=	600	mm.

Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	0.8	%
Area of Longitudinal Reinforcement Required	=	1104	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.

No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 20)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.

Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum

C1 : Global Input Data (LC No. : 21)

Column Section	=	Rectangular

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Width of Column	=	230	mm.
Depth of Column	=	600	mm.

The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D

Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1471.253	KN.
Working Moment about ZZ-axis at Top	=	336.707	KN m.
Working Moment about YY-axis at Top	=	-17.426	KN m.
Working Moment about ZZ-axis at Bottom	=	-70.189	KN m.
Working Moment about YY-axis at Bottom	=	-17.477	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 21)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			
Slenderness Ratio about YY-axis	=	2.378	
The Column is Short about the YY-axis.			
As Per IS:456-2000, 25.4,			
Minimum Eccentricity	=	20	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	228.857	mm.
Actual Eccentricity about YY due to Moment-YY	=	11.879	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	228.857	mm.
Design Eccentricity about YY due to Moment-YY	=	20	mm.
As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about ZZ	=	336.707	KN m.
Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	29.425	KN m.

C1 : Flexural Design Output (LC No. : 21)			
Axial Load on Column	=	1471.253	KN.
Factored Axial Load	=	1471.253	KN.
Revised Design Moment about ZZ axis	=	336.707	KN m.
Revised Design Moment about YY axis	=	29.425	KN m.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

The Column is subjected to Axial Load & Bi-axial

Main Reinforcement is provided along all the

Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis about ZZ-axis	=	402	mm.
Depth of Neutral Axis about YY-axis	=	380.4	mm.
Ultimate Axial Load, Puz	=	3439.928	KN.
Ratio of Pu/Puz	=	0.428	
Value of Coefficient, Alpha-n	=	1.379	
Ultimate Moment Capacity about ZZ-axis	=	385.811	KN m.
Ultimate Moment Capacity about YY-axis	=	105.797	KN m.
Ratio of Actual to Ultimate Moment, Mux/Mux1	=	0.873	
Ratio of Actual to Ultimate Moment, Muy/Muy1	=	0.278	
Sum of above Ratios, applied with Alpha-n	=	1	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	3.161	%
Area of Longitudinal Reinforcement Required	=	4362.18	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	21.696	Nos.
No. of Rods Provided	=	22	Nos.
Corresponding Steel Area	=	4423.362	sq.mm.
Main Rod Size-2	=	20	mm.

No. of Rods Required	=	13.885	Nos.
No. of Rods Provided	=	14	Nos.
Corresponding Steel Area	=	4398.23	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns

Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 21)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.

Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

C1 : Global Input Data (LC No. : 22)			
Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1030.033	KN.
Working Moment about ZZ-axis at Top	=	-282.283	KN m.
Working Moment about YY-axis at Top	=	-0.791	KN m.
Working Moment about ZZ-axis at Bottom	=	114.421	KN m.
Working Moment about YY-axis at Bottom	=	-11.267	KN m.
C1 : Slenderness & Eccentricity Output (LC No. : 22)			
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis The Column is Short about the ZZ-axis.	=	8.875	
Slenderness Ratio about YY-axis	=	2.378	

The Column is Short about the YY-axis.

As Per IS:456-2000, 25.4,

Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.

As Per IS:456-2000, 39.3,

0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	274.052	mm.
Actual Eccentricity about YY due to Moment-YY	=	10.939	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	274.052	mm.
Design Eccentricity about YY due to Moment-YY	=	20	mm.

As Per IS:456-2000, 39.3,

Design Eccentricity about ZZ is more than the
Hence, the Column has Axial Load & Bending

Revised Design Bending Moment about ZZ	=	282.283	KN m.

Design Eccentricity about YY is more than the
Hence, the Column has Axial Load & Bending

Revised Design Bending Moment about YY	=	20.601	KN m.

C1 : Flexural Design Output (LC No. : 22)

Axial Load on Column	=	1030.033	KN.
Factored Axial Load	=	1030.033	KN.
Revised Design Moment about ZZ axis	=	282.283	KN m.
Revised Design Moment about YY axis	=	20.601	KN m.

The Column is subjected to Axial Load & Bi-axial

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Main Reinforcement is provided along all the			
Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis about ZZ-axis	=	356.4	mm.
Depth of Neutral Axis about YY-axis	=	342	mm.
Ultimate Axial Load, Puz	=	2871.216	KN.
Ratio of Pu/Puz	=	0.359	
Value of Coefficient, Alpha-n	=	1.265	
Ultimate Moment Capacity about ZZ-axis	=	322.205	KN m.
Ultimate Moment Capacity about YY-axis	=	91.676	KN m.
Ratio of Actual to Ultimate Moment, Mux/Mux1	=	0.876	
Ratio of Actual to Ultimate Moment, Muy/Muy1	=	0.225	
Sum of above Ratios, applied with Alpha-n	=	0.997	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	2.021	%
Area of Longitudinal Reinforcement Required	=	2788.98	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	13.871	Nos.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

No. of Rods Provided	=	14	Nos.
Corresponding Steel Area	=	2814.867	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	8.878	Nos.
No. of Rods Provided	=	9	Nos.
Corresponding Steel Area	=	2827.433	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 22)

Tie Rod Size-1	=	8	mm.
Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.

16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum

C1 : Global Input Data (LC No. : 23)

Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Working Axial Load on Column	=	1405.156	KN.
Working Moment about ZZ-axis at Top	=	26.606	KN m.
Working Moment about YY-axis at Top	=	35.265	KN m.
Working Moment about ZZ-axis at Bottom	=	28.147	KN m.
Working Moment about YY-axis at Bottom	=	7.856	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 23)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.
Slenderness Ratio about ZZ-axis The Column is Short about the ZZ-axis.	=	8.875	
Slenderness Ratio about YY-axis The Column is Short about the YY-axis.	=	2.378	
As Per IS:456-2000, 25.4, Minimum Eccentricity	=	20	mm.

Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.

Actual Eccentricity about ZZ due to Moment-ZZ	=	20.031	mm.
Actual Eccentricity about YY due to Moment-YY	=	25.097	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	24.1	mm.
Design Eccentricity about YY due to Moment-YY	=	25.097	mm.
As Per IS:456-2000, 39.3,			
Design Eccentricity about ZZ is not more than the			
Hence, the Column carries only Axial Load about			
Design Eccentricity about YY is more than the			
Hence, the Column has Axial Load & Bending			
Revised Design Bending Moment about YY	=	35.265	KN m.

C1 : Flexural Design Output (LC No. : 23)

Axial Load on Column	=	1405.156	KN.
Factored Axial Load	=	1405.156	KN.
Revised Design Moment about YY axis	=	35.265	KN m.
The Column is subjected to Axial Load & Uni-axial			
Main Reinforcement is provided along all the			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis	=	6	mm.
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	0.8	%
Area of Longitudinal Reinforcement Required	=	1104	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.
No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

C1 : Tie Pitch Output (LC No. : 23)

Tie Rod Size-1	=	8	mm.

Tie Rod Size-2	=	10	mm.
Main Rod Size-1	=	16	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	256	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 16# Rods	=	225	mm.
Main Rod Size-2	=	20	mm.
As Per IS:456-2000,			
Least Lateral Dimension	=	230	mm.
16 times dia. of Main Rod	=	320	mm.
Maximum allowable value as per Code	=	300	mm.
Minimum of the above values for 20# Rods	=	225	mm.
Spacing of Rods are also controlled by User-Value, User-defined Minimum and Maximum			

C1 : Global Input Data (LC No. : 24)

Column Section	=	Rectangular	
Width of Column	=	230	mm.
Depth of Column	=	600	mm.
The Effective Lengths about ZZ and YY axes were based on actual framing conditions from the 3D			
Effective Length Coeff. about ZZ axis	=	0.696	
Effective Length Coeff. about YY axis	=	0.817	
Unsupported Length-ZZ of Column	=	2.05	m.
Unsupported Length-YY of Column	=	2.5	m.
Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Working Axial Load on Column	=	1096.131	KN.
Working Moment about ZZ-axis at Top	=	27.818	KN m.
Working Moment about YY-axis at Top	=	-53.482	KN m.
Working Moment about ZZ-axis at Bottom	=	16.086	KN m.
Working Moment about YY-axis at Bottom	=	-36.6	KN m.

C1 : Slenderness & Eccentricity Output (LC No. : 24)

Effective Length-ZZ of Column	=	1.427	m.
Effective Length-YY of Column	=	2.041	m.

Slenderness Ratio about ZZ-axis	=	8.875	
The Column is Short about the ZZ-axis.			
Slenderness Ratio about YY-axis	=	2.378	
The Column is Short about the YY-axis.			
As Per IS:456-2000, 25.4,			
Minimum Eccentricity	=	20	mm.
Lo/500 + b/30	=	12.667	mm.
Lo/500 + D/30	=	24.1	mm.
Actual Minimum Eccentricity about ZZ	=	24.1	mm.
Actual Minimum Eccentricity about YY	=	20	mm.
As Per IS:456-2000, 39.3,			
0.05 times D (Limiting Value about ZZ)	=	30	mm.
0.05 times b (Limiting Value about YY)	=	11.5	mm.
Actual Eccentricity about ZZ due to Moment-ZZ	=	25.379	mm.
Actual Eccentricity about YY due to Moment-YY	=	48.792	mm.
Design Eccentricity about ZZ due to Moment-ZZ	=	25.379	mm.
Design Eccentricity about YY due to Moment-YY	=	48.792	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

As Per IS:456-2000, 39.3,
Design Eccentricity about ZZ is not more than the
Hence, the Column carries only Axial Load about

Design Eccentricity about YY is more than the
Hence, the Column has Axial Load & Bending

Revised Design Bending Moment about YY	=	53.482	KN m.

C1 : Flexural Design Output (LC No. : 24)

Axial Load on Column	=	1096.131	KN.
Factored Axial Load	=	1096.131	KN.
Revised Design Moment about YY axis	=	53.482	KN m.

The Column is subjected to Axial Load & Uni-axial

Main Reinforcement is provided along all the

Characteristic Comp. Strength of Concrete	=	30	N/sq.mm.
Yield Stress of Main Steel	=	500	N/sq.mm.
Min. Percentage of Reinforcement Required	=	0.8	%
Max. Percentage of Reinforcement Allowed	=	6	%
Depth of Neutral Axis	=	6	mm.
Width of Column	=	230	mm.
Depth of Column	=	600	mm.

Gross Sectional Area	=	138000	sq.mm.
Percentage of Reinforcement to be Provided	=	0.8	%

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Area of Longitudinal Reinforcement Required	=	1104	sq.mm.
Main Rod Size-1	=	16	mm.
No. of Rods Required	=	5.491	Nos.
No. of Rods Provided	=	6	Nos.
Corresponding Steel Area	=	1206.372	sq.mm.
Main Rod Size-2	=	20	mm.
No. of Rods Required	=	3.514	Nos.
No. of Rods Provided	=	4	Nos.
Corresponding Steel Area	=	1256.637	sq.mm.

Note:- Please note that the minimum number of will be always FOUR for Rectangular Columns Columns, as per IS:456-2000 Clause 26.5.3.1.(c)

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

SCADDS/RC-Slab Designer 2022 [Release: 4.01.3010]

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SCADDS/Nucleus 2022: RC-Slab Designer
Limit State Design of R.C.C. One Way/Two Way
Rectangular/Square Slabs & Trapezoidal/Triangular Slabs
and Circular/Hexagonal/Octagonal Slabs
with Simple/Fixed/Continuous/Cantilever Supports
as per IS:456-2000 upto Amendment 5 (Reaffirmed 2021)
and IS:875-1987(Part-2)

INTRODUCTION

This Report contains detailed design solutions for

The R.C.C. Slabs are considered for Flexural
the output contains the following portions:

1. Global Input Data
2. Flexural Design Output
3. Shear Check Output
4. Deflection Check Output
5. Development Length / Bond Design Output

While detailed design is carried out for Flexure,
only checks are made for items 3 and 4.

GLOBAL MATERIAL DATA

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Concrete Clear Cover	=	20	mm.
Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Density of Concrete	=	24.517	KN/cu.m.
Yield Strength of Main Steel	=	550	N/sq.mm.
Main Rod Size-0	=	8	mm.
Main Rod Size-1	=	10	mm.
Yield Strength of Secondary Steel	=	550	N/sq.mm.
Secondary Rod Size-0	=	8	mm.
Secondary Rod Size-1	=	10	mm.
Yield Strength of Torsion Steel	=	550	N/sq.mm.
Torsion Rod Size-0	=	8	mm.
Torsion Rod Size-1	=	10	mm.
Factor of Safety for Load	=	1.5	
Partial Safety Factor for Concrete	=	1.5	

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Partial Safety Factor for Steel	=	1.15	
Max. Strain in Concrete	=	0.0035	mm./mm.
Max. Strain in Steel	=	0.0055	mm./mm.
Young's Modulus of Concrete	=	22360.68	N/sq.mm.
Young's Modulus of Steel	=	200000	N/sq.mm.
Total Number of Slab Panels	=	1	

BOND / DEVELOPMENT LENGTH OUTPUT

Char. Comp. Strength of Concrete	=	25	N/sq.mm.
Yield Stress of Main Steel	=	550	N/sq.mm.
Yield Stress of Secondary Steel	=	550	N/sq.mm.
As Per IS:456-2000, Clause 26.2.1.1,			
Design Bond Stress for Main Rods	=	2.24	N/sq.mm.
Design Bond Stress for Secondary Rods	=	2.24	N/sq.mm.
Rods in Tension			
Main Rod Diameter-1	=	8	mm.
Corresponding Development Length	=	427.232	mm.
Main Rod Diameter-2	=	10	mm.
Corresponding Development Length	=	534.04	mm.
Secondary Rod Diameter-1	=	8	mm.
Corresponding Development Length	=	427.232	mm.
Secondary Rod Diameter-2	=	10	mm.
Corresponding Development Length	=	534.04	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

S001 - PANEL INPUT			
Slab Number	=	S001	
Slab Shape	=	Rectangular	
Centre to Centre Short Span	=	1.22	m.
Centre to Centre Long Span	=	6.15	m.
Effective Short Span	=	0.99	m.
Support Type : Continuous Supports **It is a One way Slab.**			
Initial Thickness of Slab	=	125	mm.
Type of Building is "Residential Building"			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Type of Floor is "All Rooms and Kitchens"			
Live Load	=	2	KN/sq.m.
Floor Finish Load	=	1	KN/sq.m.
Partition Load	=	1	KN/sq.m.
Miscellaneous Load	=	NIL	

S001 - FLEXURE OUTPUT

Slab Identification Number	**=**	**S001**	
Effective Short Span	=	0.99	m.
Effective Long Span	=	5.995	m.
Long Span to Short Span Ratio	=	6.056	
It is a One way Slab.			
Thickness of Slab Provided	**=**	**125**	**mm.**
Concrete Clear Cover	=	20	mm.
Density of Reinforced Concrete	=	24.517	KN/cu.m.
Dead Weight of Slab	**=**	**2.819**	**KN/sq.m.**
Loads on the Slab Panel			
Live Load	=	2	KN/sq.m.
Floor Finish Load	=	1	KN/sq.m.
Partition Load	=	1	KN/sq.m.
Miscellaneous Load	=	NIL	
Total Dead Load on Slab Panel	**=**	**4.819**	**KN/sq.m.**
Total Load on Slab Panel	**=**	**6.819**	**KN/sq.m.**

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Safety Factor for Load	=	1.5	
Total Factored Load on Slab Panel	**=**	**10.229**	**KN/sq.m.**
Effective Depth Required	=	18.068	mm.
Effective Depth Provided	=	90	mm.
Hence SAFE.			
Short Span Reinforcement over Centre			
Short Span Positive Moment	=	0.884	KN m.
Short Span Positive Steel	**=**	**108**	**sq.mm.**
Dia. of Rod-1 along Short Span	=	8	mm.
Required Spacing along Short Span (+)	=	465.421	mm.
Max. Spacing allowed (Rounded off) (+)	**=**	**275**	**mm.**
Dia. of Rod-2 along Short Span	=	10	mm.
Required Spacing along Short Span (+)	=	727.221	mm.

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Max. Spacing allowed (Rounded off) (+)	**=**	**275**	**mm.**
Short Span Reinforcement over Support			
Short Span Negative Moment	=	1.035	KN m.
Short Span Negative Steel	**=**	**108**	**sq.mm.**
Dia. of Rod-1 along Short Span	=	8	mm.
Required Spacing along Short Span (-)	=	465.421	mm.
Max. Spacing allowed (Rounded off) (-)	**=**	**275**	**mm.**
Dia. of Rod-2 along Short Span	=	10	mm.
Required Spacing along Short Span (-)	=	727.221	mm.
Max. Spacing allowed (Rounded off) (-)	**=**	**275**	**mm.**
Distribution Reinforcement			
Distribution Steel Percentage	=	0.12	%
Long Span Distribution Steel	**=**	**138**	**sq.mm.**
Spacing of Rod-1 along Long Span (+)	=	364.243	mm.
Max. Spacing allowed (Rounded off) (+)	**=**	**300**	**mm.**
Spacing of Rod-2 along Long Span (+)	=	569.129	mm.
Max. Spacing allowed (Rounded off) (+)	**=**	**300**	**mm.**

Note:- The required Spacing of Main Rods will be 300 mm. (11.811") or 3d whichever is less. If the this limit, the least value will be automatically This is done in accordance with IS:456-2000

Similarly, the required Spacing of Dist. Rods will 300 mm. (11.811") or 5d whichever is less. If the this limit, the least value will be automatically This is done in accordance with IS:456-2000

If the User has fixed Minimum and Maximum

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

practical considerations, those values will be
and implemented in the Drawings and Quantity

S001 - SHEAR CHECK

Effective Short Span	=	0.99	m.
Effective Long Span	=	5.995	m.
Total Factored Load per Unit Length	**=**	**10.229**	**KN/m.**
Shear Coeff. for Continuous Edge-X	=	0.6	
Corresponding Design Shear	=	6.076	KN.
Shear Coeff. for Discontinuous Edge-X	=	0	
Corresponding Design Shear	=	0	KN.
Shear Coeff. for Continuous Edge-Y	=	0.6	
Corresponding Design Shear	=	6.076	KN.

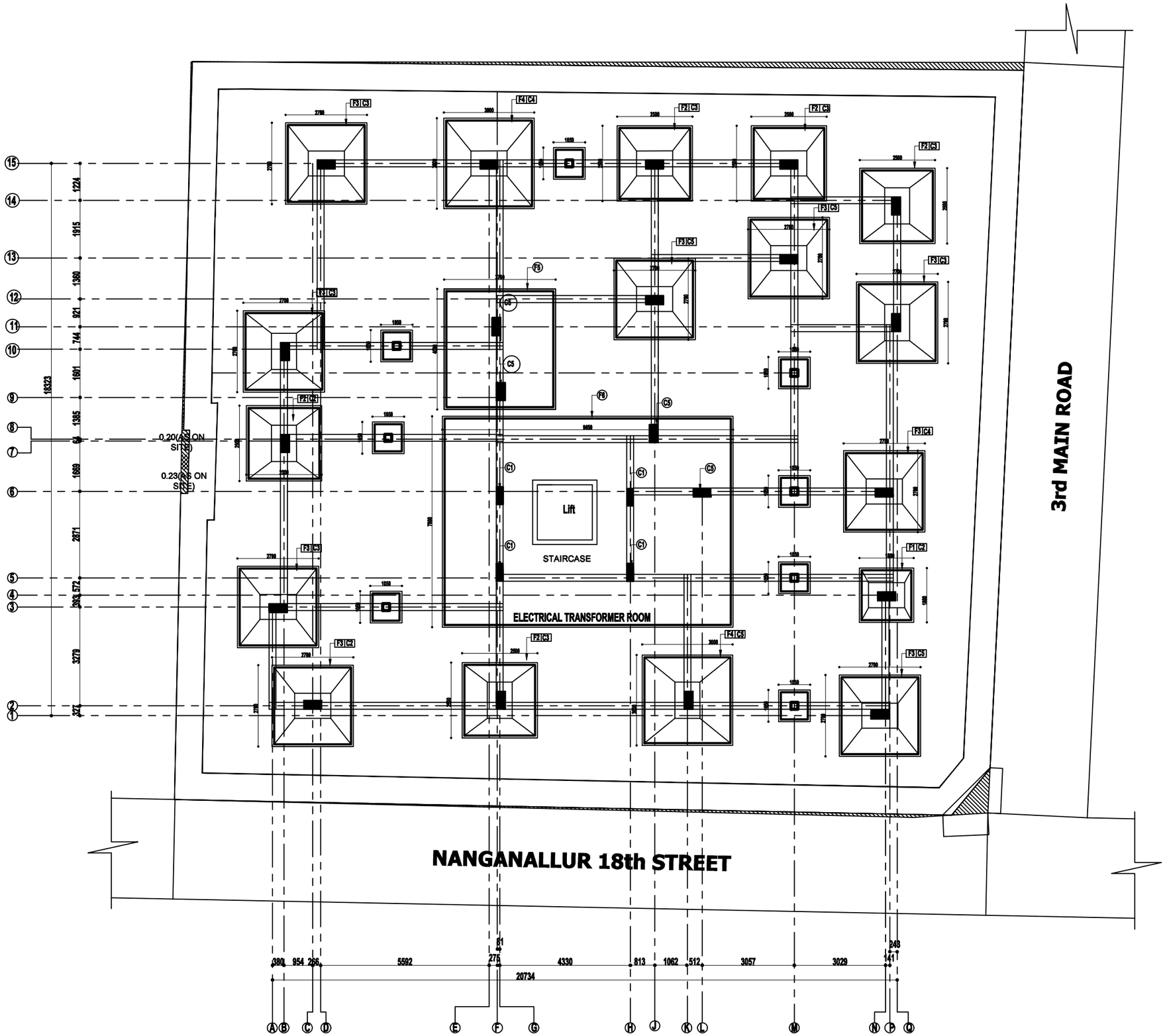
STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION

Shear Coeff. for Discontinuous Edge-Y	=	0	
Corresponding Design Shear	=	0	KN.
Maximum Design Shear	**=**	**6.076**	**KN.**
As Per IS:456-2000, Clause			
Actual Shear Stress	=	0.068	N/sq.mm.
As Per IS:456-2000, Clause 40.2.1.1 & Table			
Design Shear Strength of Concrete	=	0.342	N/sq.mm.
As Per IS:456-2000, Table 20,			
Max. Permissible Shear Stress	=	3.124	N/sq.mm.
It can be seen that 0.068 < 0.342 and 0.068 <			
The Slab Panel is SAFE in Shear.			

S001 - DEFLECTION CHECK

Effective Short Span	=	0.99	m.
Effective Depth of Slab	=	90	mm.
Actual Span to Depth Ratio	**=**	**11**	
As Per IS:456-2000, Clause			
Factor Alpha	=	26	
As Per IS:456-2000, Clause 23.2.1.b,			
Factor Zigma	=	1	
As Per IS:456-2000, Clause			
Factor Gamma	=	1.478	
Allowable Span to Depth Ratio	**=**	**38.424**	**> 11**
Deflection Requirements are O.K.			

STABILITY CALCULATIONS FOR THE PROPOSEDCONSTRUCTION OF STILT +5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.3M) AVAILING PREMIUM FSI WITH TODBENIFIT AT PLOT NO.31&32,OLD DOOR NO.02,NEW DOOR NO.03,18TH MAIN ROAD AND 3 RD MAIN ROAD,NCBS COLONY,NANGANALLUR,CHENNAI-600061AND COMPRISED IN OLD S.NO.21/3A,(PART),AS PER PATTA NEW T.S NO.70&71 BLOCK NO.22,WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUKAND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION



F O U N D A T I O N L A Y O U T.

PROJECT:

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.30M) AVAILING PREMIUM FSI WITH TOD BENEFIT AT PLOT NO. 31 & 32, OLD DOOR NO. 02, NEW DOOR NO. 03, 18TH MAIN ROAD AND 3RD MAIN ROAD, NCBS COLONY, NANGANALLUR, CHENNAI 600061 AND COMPRISED IN OLD S.NO. 21/3A (Part), AS PER PATTA NEW T.S. NO. 70 & 71, BLOCK NO. 22, WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUK AND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

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19. ALL BEAM TOP RODS SHALL BE PROPERLY IN COLUMNS

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R.NO.	REVISION	DATE	SIGN
1. 2. 3.			

PROJECT NO:

DRG TITLE: **FOUNDATION LAYOUT**

STRUCTURAL DRAWING

DRG.NO : SD-01 ONLY.

SCALE : 1"=4'-0" & 1"=2'-0"

DATE : 13.4.2025

SHEET SIZE : A_1 — 1/1

DRAWN BY : K.Uma

CAD FILE: E\SHANKAR/2025\ANIRUDH FOUNDATION/RKS/FDN

GOOD FOR CONSTRUCTION

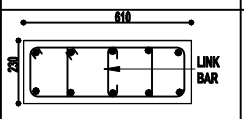
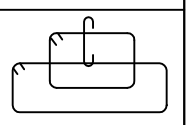
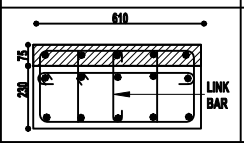
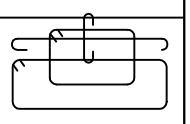
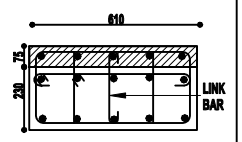
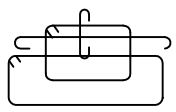
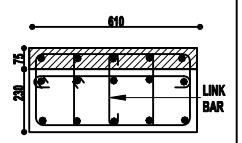
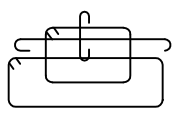
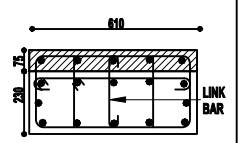
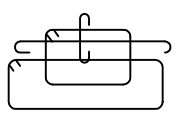
AANIRUDH FOUNDATION PVT LTD

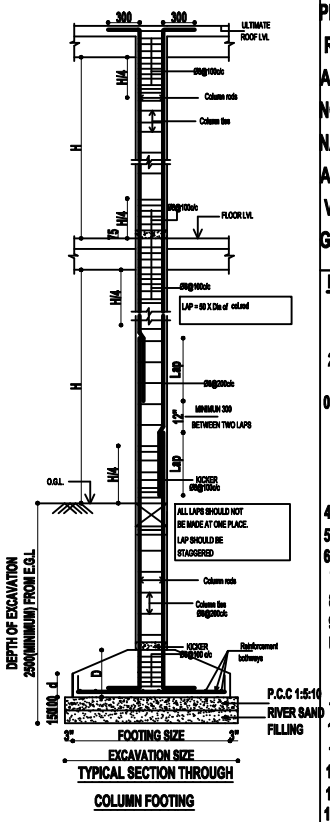
No.4, Lakshmi Nagar, 10th Street,
Nanganallur, Chennai - 600 061
Phone : 98400 51129, 97911 12935
E-mail : engg@aanirudhflatpromoters.in
Web :www.aanirudhflatpromoters.in

STRUCTURAL CONSULTANTS:

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SENIOR PROFESSIONAL ENGINEER
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MOBILE:9282102586: 9952050643
e-mail m_shankarengineer@yahoo.co.in

COLUMN SCHEDULE

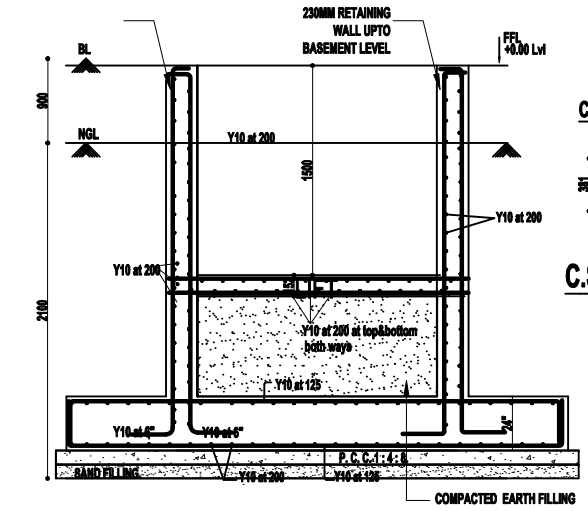
SNO	COLUMN REFERENCE	SIZE	COLUMN SHAPE	MAINSTEEL	BINDERS	BINDERS	TIE DETAILS
01.	C1	230X610		10Y20	--REFER -- --SECTION---	M 30	
02.	C2	300X610		10Y20	--REFER -- --SECTION---	M 30	
03.	C3	300X610		10Y25	--REFER -- --SECTION---	M 30	
04.	C4	300X610		10Y25	--REFER -- --SECTION---	M 30	
05.	C5	300X610		12Y25	--REFER -- --SECTION---	M 30	



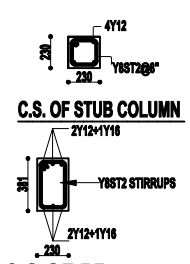
TYPICAL SECTION THROUGH COLUMN FOOTING

FOOTING SCHEDULE:

SL.NO	FOOT.REF	EX.SIZE	FOOTING SIZE	DEPTH d	DEPTH D	REINFT SH.DR	REINFT LO.DR	MIX
1	F1	1800X1800	1650X1650	200	600	Y12 at 150	Y12 at 150	M 25
2	F2	2500X2500	2350X2350	200	650	Y12 at 150	Y12 at 150	M 25
3	F3	2700X2700	2550X2550	200	700	Y12 at 150	Y12 at 150	M 25
4	F4	3000X3000	2850X2850	200	750	Y12 at 150	Y12 at 150	M 25
5	F5	3700X4000	3550X3850	--	750	Y12 at 150	Y12 at 150	M 25
6	F6	9650X7000	9550X6850	--	850	Y12 at 150 AT TOP&BOT	Y12 at 150 AT TOP&BOT	M 25

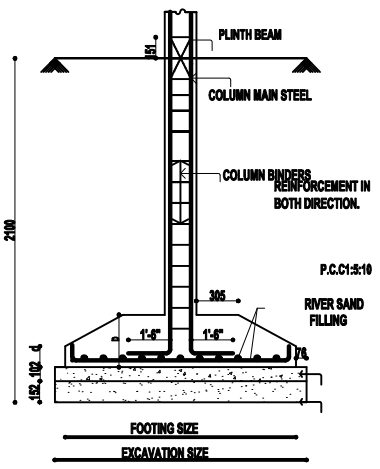


TYPICAL LIFT PIT/SHEAR WALL DETAILS. '
(WATER PROOFING TO BE DONE ON BOTH POSITIVE AND NEGATIVE SIDES.)

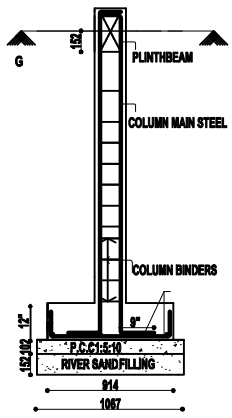


C.S. OF STUB COLUMN

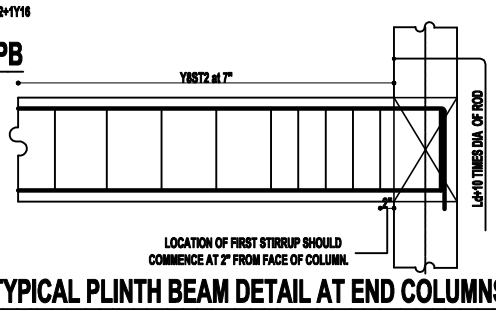
C.S.OF PB



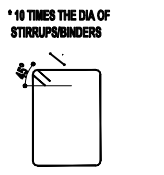
TYPICAL DETAILS OF SQUARE SLOPED FOOTING



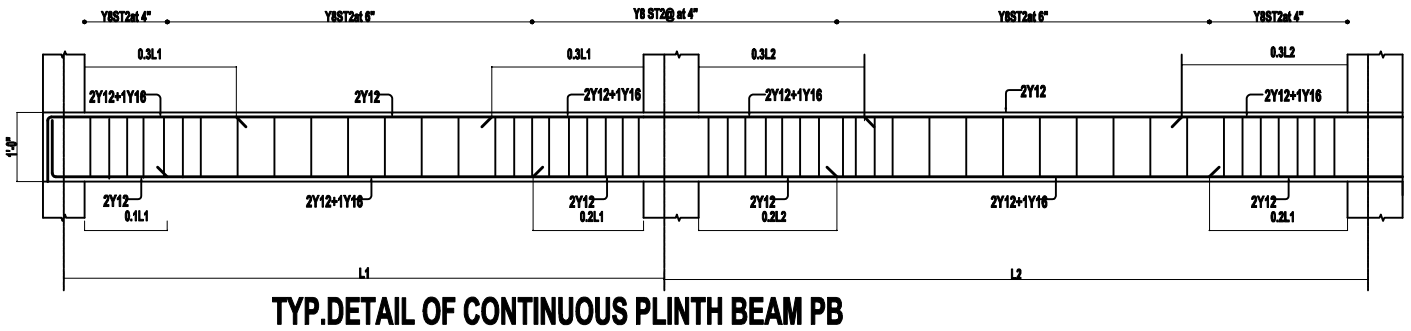
TYPICAL DETAILS OF STUB COLUMN FOOTING.



TYPICAL PLINTH BEAM DETAIL AT END COLUMNS.



TYPICAL DETAILS OF BINDERS/STIRRUPS.



TYP.DETAIL OF CONTINUOUS PLINTH BEAM PB

PROJECT:

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.30M) AVAILING PREMIUM FSI WITH TOD BENEFIT AT PLOT NO. 31 & 32, OLD DOOR NO. 02, NEW DOOR NO. 03, 18TH MAIN ROAD AND 3RD MAIN ROAD, NCBS COLONY, NANGANALLUR, CHENNAI 600061 AND COMPRISED IN OLD S.NO. 21/3A (Part), AS PER PATTA NEW T.S. NO. 70 & 71, BLOCK NO. 22, WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUK AND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

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R.NO.	REVISION	DATE	SIGN
1.			
2.			
3.			

PROJECT NO:

DRG TITLE: **COLUMN&FOOTING DETAILS**

STRUCTURAL DRAWING

DRG.NO : SD-01 ONLY.

SCALE : 1"=4'-0" & 1"=2'-0"

DATE : 13.4.2025

SHEET SIZE : A_1 1/1

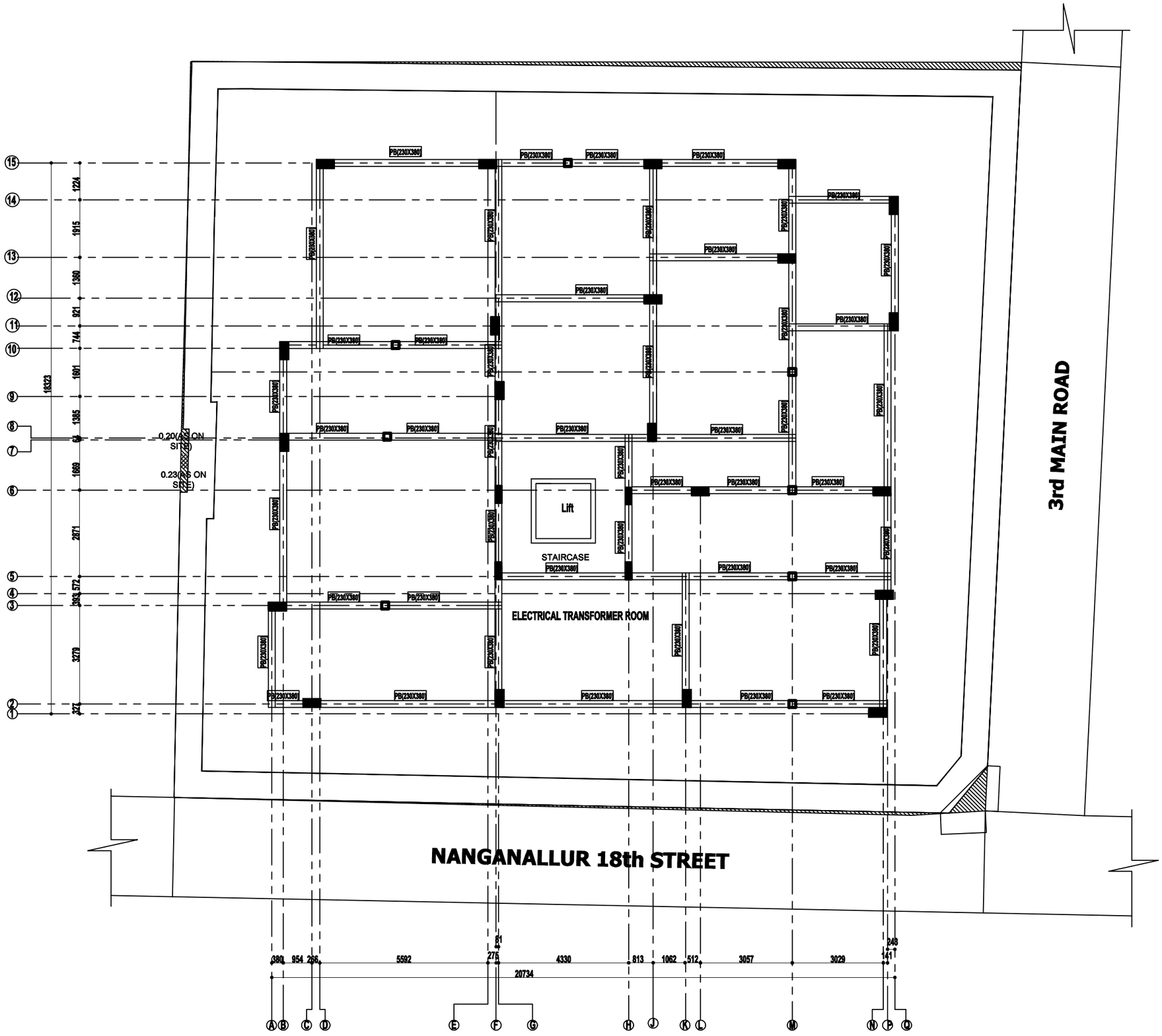
DRAWN BY : K.Uma

CAD FILE: E\SHANKAR/2025ANIRUDH FOUNDATION/RKS/FDN

GOOD FOR CONSTRUCTION

AANIRUDH FOUNDATION PVT LTD
Your Home Our Pride
No.4, Lakshmi Nagar, 10th Street,
Nanganallur, Chennai - 600 061
Phone : 98400 51129, 97911 12935
E-mail : engg@aanirudhflatpromoters.in
Web www.aanirudhflatpromoters.in

STRUCTURAL CONSULTANTS:
Er.M.SHANKAR, M.Tech(STRUCT),MIE,C.ENG(IND),MISSE,FMACCE(I)
CHARTERED ENGINEER/STRUCTURAL ENGINEER GRADE- I(SE-I)
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11,THERADI STREET, PALLIKKARANAI. CHENNAI-600100.
MOBILE:9282102586: 9952050643
e-mail m_shankarengineer@yahoo.co.in
structural consultants



PLINTHBEAM LAYOUT.

PROJECT:

PLAN SHOWING THE PROPOSED CONSTRUCTION OF STILT FLOOR + 5 FLOORS RESIDENTIAL BUILDING WITH 16 DWELLING UNITS (WITH HEIGHT 18.30M) AVAILING PREMIUM FSI WITH TOD BENEFIT AT PLOT NO. 31 & 32, OLD DOOR NO. 02, NEW DOOR NO. 03, 18TH MAIN ROAD AND 3RD MAIN ROAD, NCBS COLONY, NANGANALLUR, CHENNAI 600061 AND COMPRISED IN OLD S.NO. 21/3A (Part), AS PER PATTA NEW T.S. NO. 70 & 71, BLOCK NO. 22, WARD-B OF NANGANALLUR VILLAGE, ALANDUR TALUK AND WITHIN THE LIMITS OF GREATER CHENNAI CORPORATION.

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R.NO.	REVISION	DATE	SIGN
1. 2. 3.			

PROJECT NO:

DRG TITLE: **PLINTH BEAM LAYOUT**

STRUCTURAL DRAWING

DRG.NO : SD-01 ONLY.

SCALE : 1"=4'-0" & 1"=2'-0"

DATE : 13.4.2025

SHEET SIZE : A_1 1/1

DRAWN BY : K.Uma

CAD FILE: E\SHANKAR/2025ANIRUDH FOUNDATION/RKS/FDN

GOOD FOR CONSTRUCTION

AANIRUDH FOUNDATION PVT LTD

No.4, Lakshmi Nagar, 10th Street,
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E-mail : engg@aanirudhflatpromoters.in
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STRUCTURAL CONSULTANTS:

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MOBILE:9282102586: 9952050643
e-mail m_shankarengineer@yahoo.co.in

THE LANDLENS SUITE

Eight ways to know a piece of land before you pay for it.

This report covers one part of the picture. These cover the rest, drawn from the same government records, for any property in Tamil Nadu.

LandLens One
Ask anything about a property and get an answer grounded in live government records, with the sources shown.
/landlens/one

Verify My Land
Every record check run on one property and returned as a single report.
/landlens/verify-my-land

Legal Opinion
An advocate's written opinion on the title, built on the records we pull for it.
/landlens

One Map
Every layer on one map: the parcel, its boundary, zoning, water bodies and what sits around it.
/landlens/one/map

PriceMap
What land actually changed hands for around this plot, taken from the registered deeds.
/landlens/pricemap

Build Scope
What you are allowed to build here: floor space, height, coverage and setbacks.
/landlens/build-scope

Property Tracker
Watch a property and hear about it when something new is registered against it.
/landlens/property-tracker

Deal Room
Run the transaction in one place: documents, stamping, signatures and the parties.
/landlens/deal-room

FREE TOOLS · NO ACCOUNT NEEDED

Twenty-four checks you can run yourself, at no cost.

Records and verification

The registers themselves, read for you.

- Encumbrance Certificate
- Patta and Chitta
- Field Measurement Sketch
- EC Analyzer
- Bank charge check
- Court case search
- Seller background check
- Approval check by survey

Value and duty

What it is worth and what it costs to register.

- Guideline value by street
- Guideline value by survey
- Stamp duty and registration fees
- Capital gains
- Floor space index
- Area unit converter

Zoning and land use

What the plan says can happen on this land.

- Land use zone finder
- CMDA land use check
- Coastal regulation zone
- Master plan check
- Water bodies finder
- Airport height clearance

Registers and directories

Who holds it, and which office keeps the record.

- Find your registering office
- Temple property check
- Waqf property check
- RERA register

Every free tool
/tools

Services we run for you
/services

The LandLens suite
/landlens/one

Verified RealEstate™

Every claim in this document traces back to a government record.

- Legal opinions, due diligence and title verification
- Building plan, layout and sub-division approvals
- Completion and occupancy certificates, regularisation
- Escrow, negotiation and NRI property management
- Land survey, soil testing, architecture and construction

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Prepared from the registers named on the page each finding sits on. Where a register could not be read, this document says so in its place rather than leaving the gap to be read as a clean result.