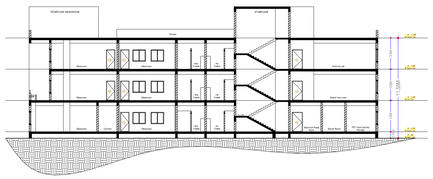
Plan showing for Building Permission of School Building named 'DELHI WORLD SCHOOL' , consisting of Ground + 2 Upper Floors, Site situated in Survey No 291/Ka/E,291/Ka/D, Pudur Village, Jogulamba Gadwal District, Telangana.

BELONGING TO:

1) Sri. M.Vasantha Kumar S/o Late Venkata Swamy
2) Sri. M.Vijayender S/o Late Venkata Swamy



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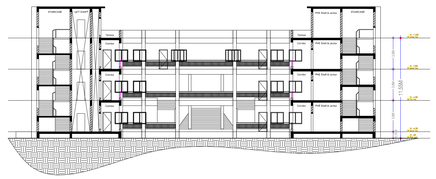
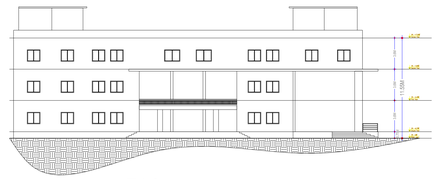
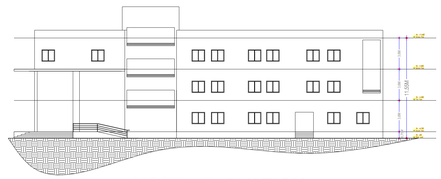


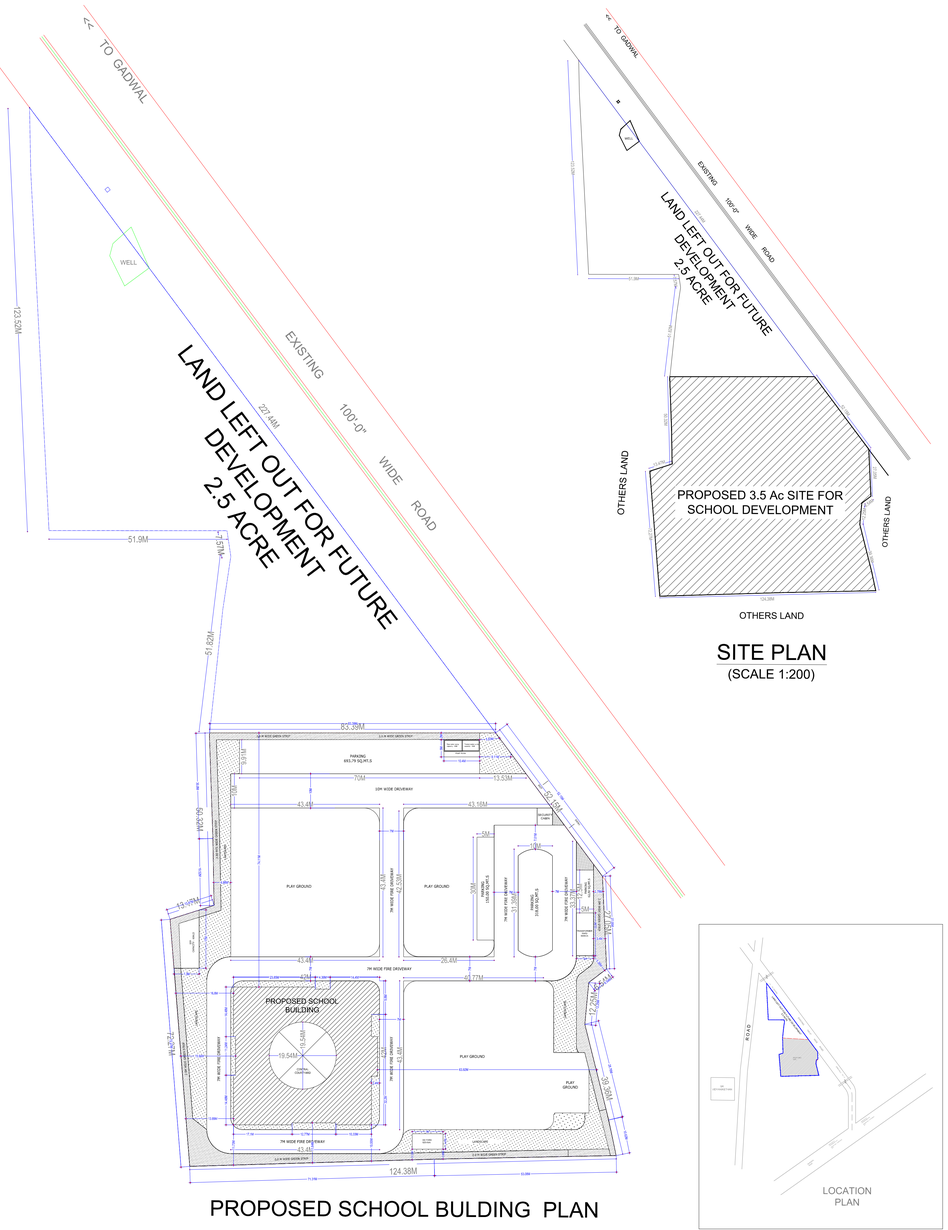
SECTION-BB'



EAST ELEVATION

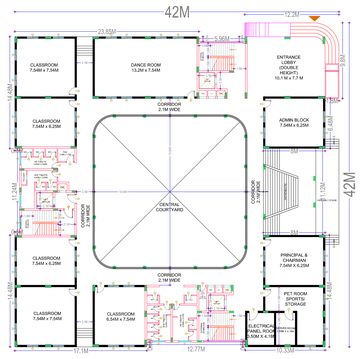


NORTH ELEVATION

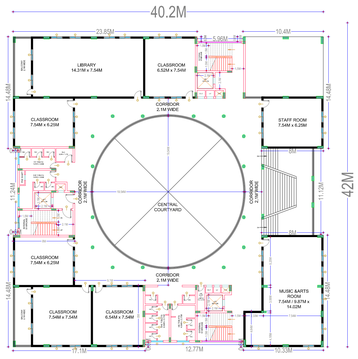


PROPOSED SCHOOL BULDING PLAN

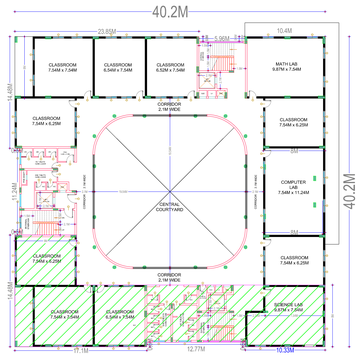
SITE PLAN
(SCALE 1:200)



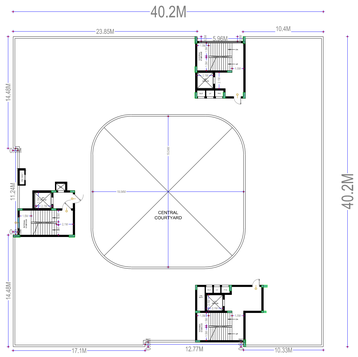
GROUND FLOOR PLAN



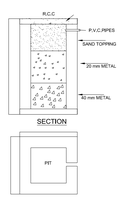
FIRST FLOOR PLAN



SECOND FLOOR PLAN



TERRACE FLOOR PLAN



SECTION

HARVESTING PIT PLAN
1.2X1.2X2.0M

SCHEDULE OF AREAS:-

		Sq.Yd's	Sq.Mt's
TOTAL PLOT AREA	:	29040.00	24277.44
LAND LEFT FOR FUTURE DEV.	:	12079.47	10098.44
NET PLOT AREA	:	16960.52	14179.00
GROUND FLOOR PLINTH AREA	:	1584.55	1324.69
FIRST FLOOR PLINTH AREA	:	1263.13	1055.98
SECOND FLOOR PLINTH AREA	:	1421.18	1188.11
TOTAL PLINTH AREA	:	4268.86	3568.78
MORTGAGE AREA	:	437.52	365.77
PROP. PARKING AREA	:	3911.48	3270.00
OPEN AREA	:	11464.48	9584.31

SPECIFICATIONS:-

Footings	R.c.c. isolated/ combined footings
Retaining wall	R.c.c.
Columns, beams, slab, staircase lintels	R.c.c.
Super Structure	R.c.c.
Plastering	Brickwork with plastering
Flooring	With C.M. 1:6 & 1:3
Painting	Granite/ Vetrified tiles in offices, ceramic tiles in toilets
Doors	Outside texture with paint Inside lappam with emulsion paint
Windows	Wood/ Aluminium for offices. Fire retardant opening doors near fire staircase.
Sanitary fittings	Structural/ Curtain wall glazing with sun-reflecting glass
Railings	As per ISI Standards
	Stainless steel/ M.S. railing
Electrical wiring/ fixtures	As per ISI Standards
Fire Fighting system	As per ISI Standards
Dadoing	With ceramic tiles upto door ht. in toilets

SCHEDULE OF JOINERY:-

DOORS

D :1.06X1.98
D1 : 0.90X1.98
D2 : 0.76X1.98

WINDOWS

W :1.50X1.20
W1 : 1.20X1.20
K.W : 1.20X0.90

REFERENCES:-

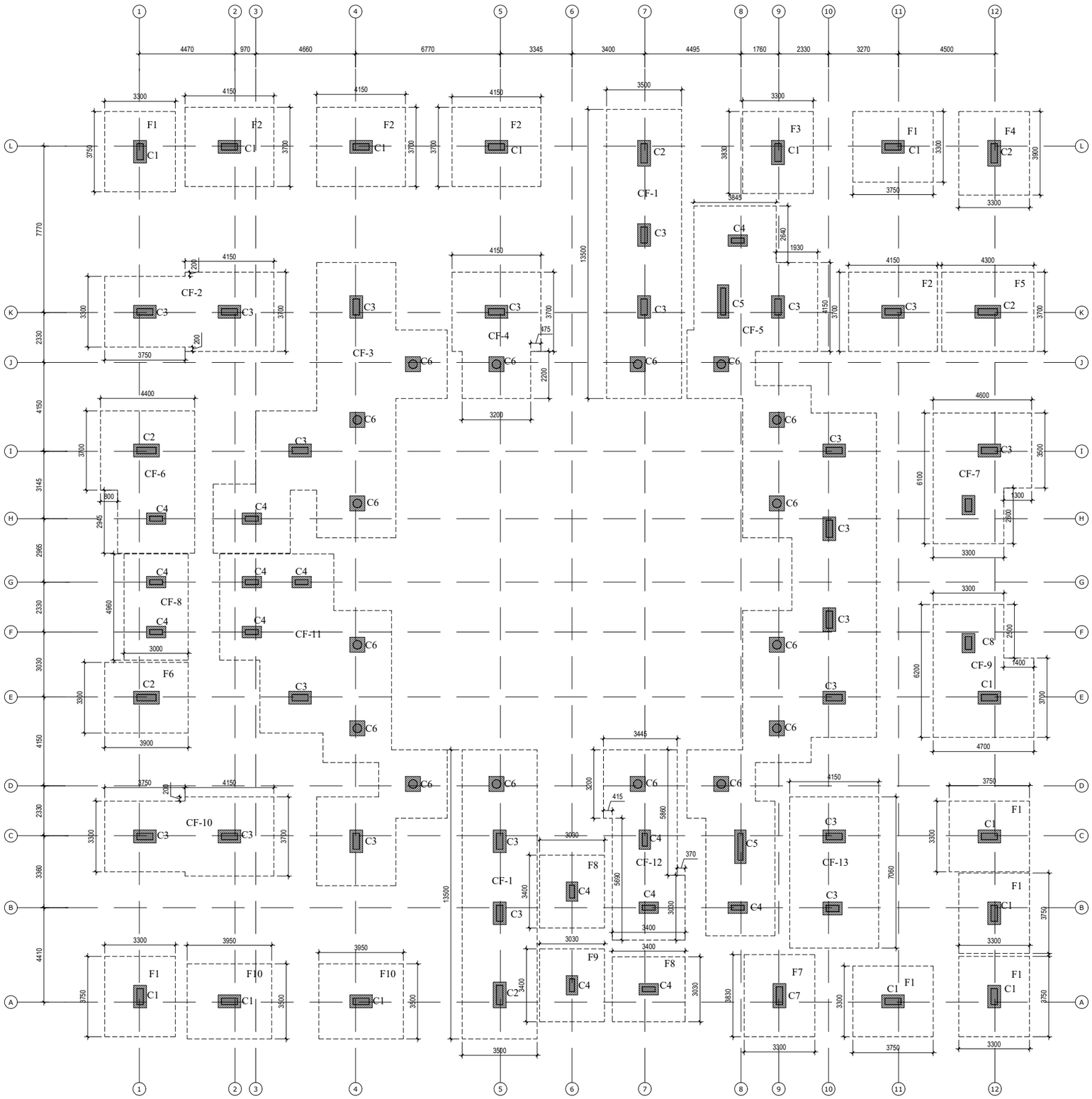
PROPOSED :
EXISTING :
TO BE DEMOLISH :
SCALE:1:100
ALL DIM. ARE IN MTS.

N

OWNERS SIGNATURE:

MAHAMMAD IMRAN Civil Engg.
Municipal Licence Engg.
Lic.No. G1/TP/LCR/03/2019-2020
J.M.R.Complex, Ambedkar Chowk,
WANAPARTHY Dist.-509 103.

SIGN. OF ARCHITECT



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NOTES:–

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   b) TYPICAL RC DETAILS : DWG NO : EDC-GS-STR-GEN-100A
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7. SBC CONSIDERED FOR FOOTING DESIGN IS 25T/Sqm 3M FROM N.G.L.
8. SBC TO BE CHECKED & CONFIRMED WITH THE SOIL CONSULTANTS BEFORE EXECUTION.
9. CLEAR COVERS
   FOR FOOTINGS SIDES–75MM
   TOP AND BOTTOM –50MM
   FOR COLUMNS –40MM

Rev. No.	DATE	DESCRIPTION OF REVISION
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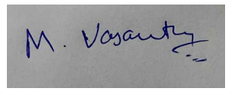


Vasantha Kumar Moghali
S/o Late Venkata Swamy Mogali

ARCHITECTS

Gunda Harish
COA Reg. No. CA/2017/84146

CONSULTANTS:

ENNOVATIVE DESIGN CONSULTANTS
PRIVATE LIMITED

SHAIK INTHIYAZ
License No. 339 / Str.Engineer / TP10 / GHMC

Ground Floor, SS Tech Park, Adj. DLF Cybercity,
PSR Prime Tower, Gachibowli, Hyderabad, TS – 500 032
E: info@ennovativedesigns.com | W: www.ennovativedesigns.com

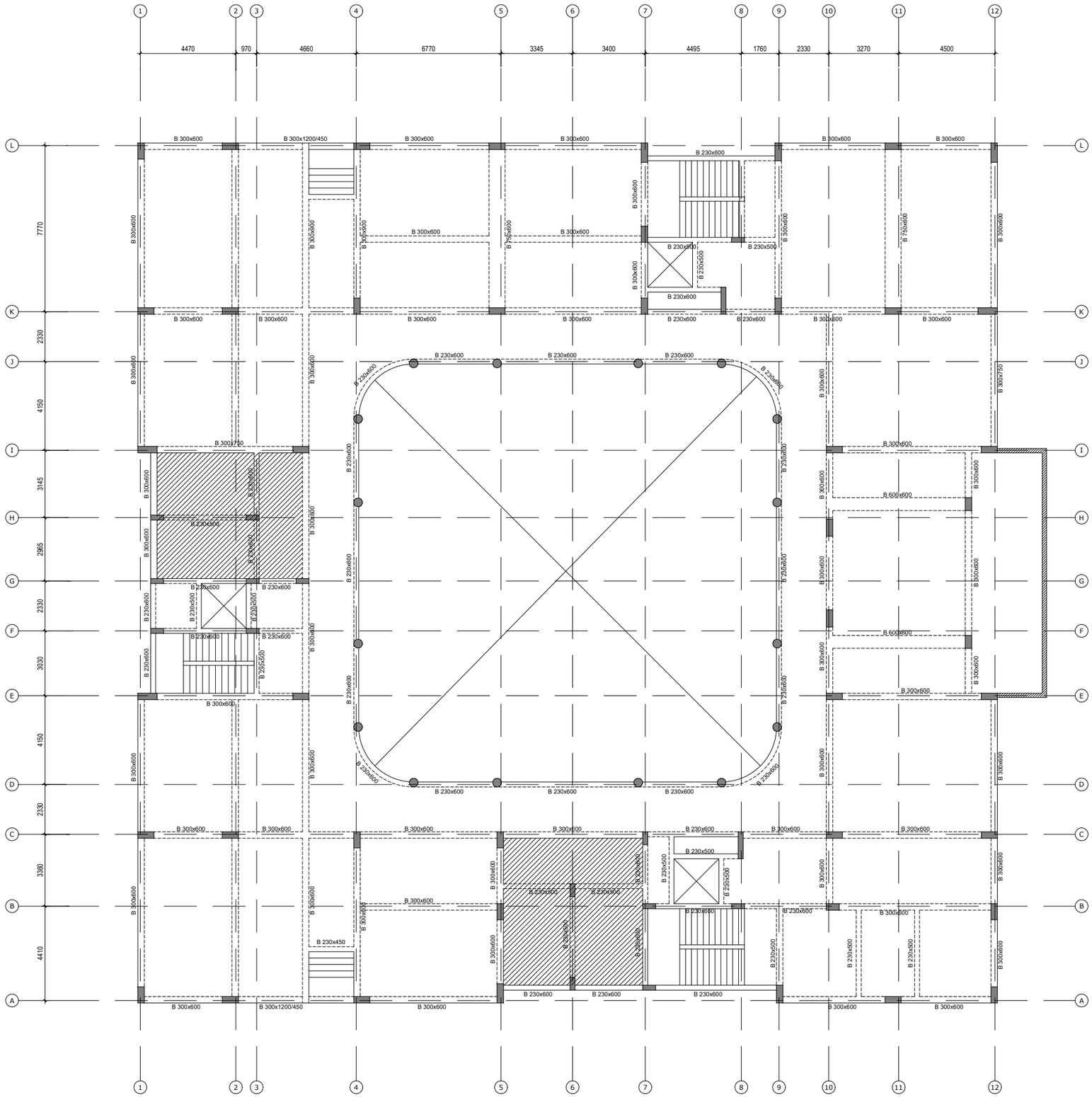
PROJECT:

MOGALI ONE

TITLE:

FOOTING & COLUMN LAYOUT

DEALT	: KALYAN		
DESIGNED	: VEERENDRANATH		
CHECKED	: INTHIYAZ		
DATE	: 24/06/2023	ISSUED FOR	
PROJ. NO.	: ----	➤	MUNICIPAL APPROVAL DRAWING
SCALE	: N.T.S		TENDER
SHEET	: A3		PRE-GFC
REV. NO.	: R0		GFC
DWG.NO:	: EDC-GS-STR-101		



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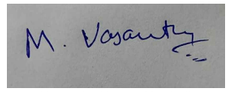


Vasantha Kumar Moghali
S/o Late Venkata Swamy Mogali

ARCHITECTS

Gunda Harish
COA Reg. No. CA/2017/84146

CONSULTANTS:

ENNOVATIVE DESIGN CONSULTANTS
OUR DESIGN FOR YOUR BUILD

SHAIK INTHIYAZ
Licence No. 339 / Str'L.Engineer / TP10 / GHMC

Ground Floor, SS Tech Park, Adj. DLF Cybercity,
PSR Prime Tower, Gachibowli, Hyderabad, TS – 500 032
E: info@ennovativedesigns.com | W: www.ennovativedesigns.com

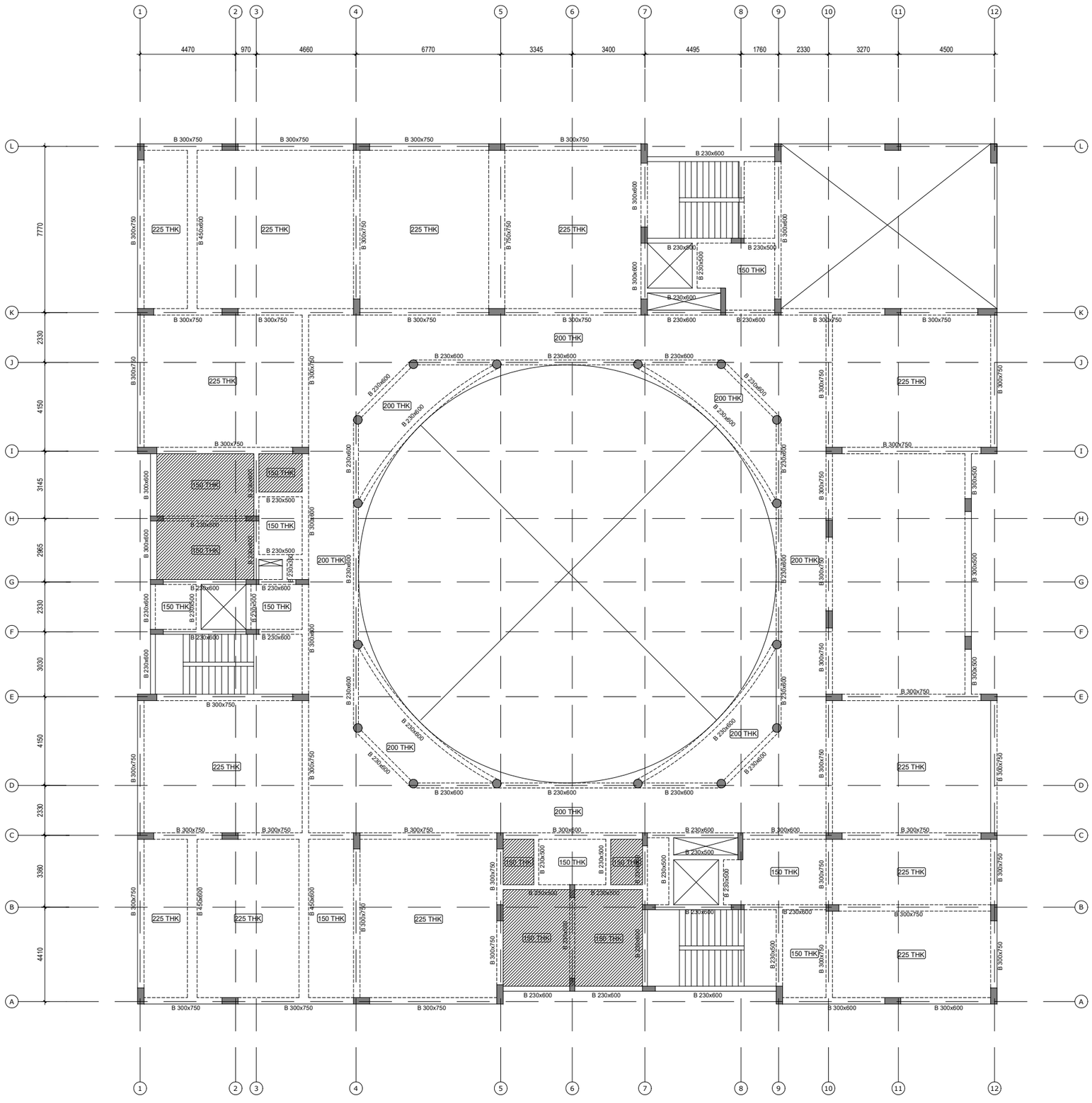
PROJECT:

MOGALI ONE

TITLE:

GROUND FLOOR SHUTTERING LAYOUT

DEALT	:	KALYAN		
DESIGNED	:	VEERENDRANATH		
CHECKED	:	INTHIYAZ		
DATE	:	24/06/2023	ISSUED FOR	
PROJ. NO.	:	----	➤	MUNICIPAL APPROVAL DRAWING
SCALE	:	N.T.S		TENDER
SHEET	:	A3		PRE-GFC
REV. NO.	:	R0		GFC
DWG.NO:	:	EDC-GS-STR-102		



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OWNER'S SIGNATURE:

Vasantha Kumar Moghali
S/o Late Venkata Swamy Mogali

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E: info@ennovativedesigns.com | W: www.ennovativedesigns.com

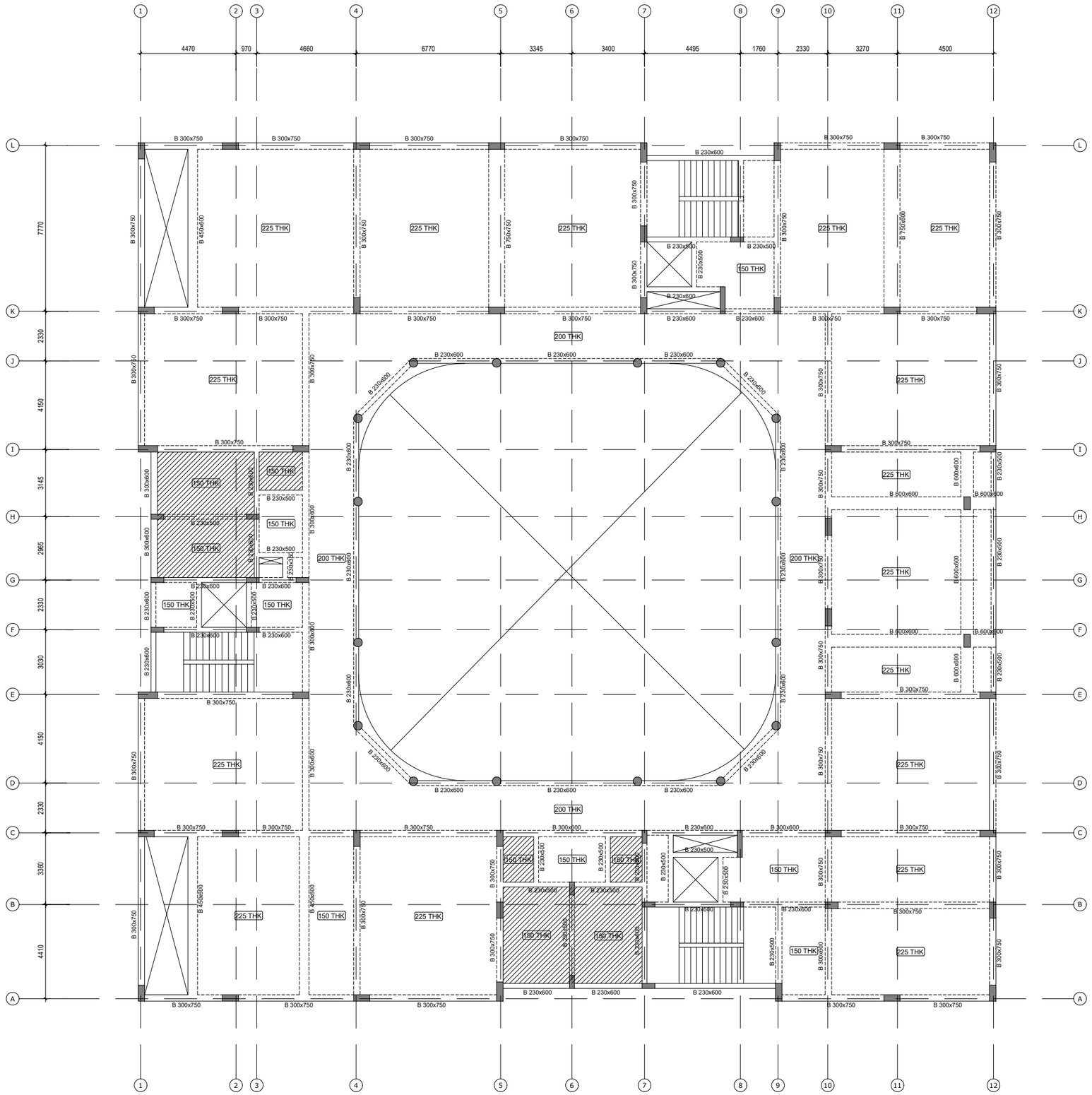
PROJECT:

MOGALI ONE

TITLE:

FIRST FLOOR SHUTTERING LAYOUT

DEALT	:	KALYAN		
DESIGNED	:	VEERENDRANATH		
CHECKED	:	INTHIYAZ		
DATE	:	24/06/2023	ISSUED FOR	
PROJ. NO.	:	----	➤	MUNICIPAL APPROVAL DRAWING
SCALE	:	N.T.S		TENDER
SHEET	:	A3		PRE-GFC
REV. NO.	:	R0		GFC
DWG.NO:	:	EDC-GS-STR-103		



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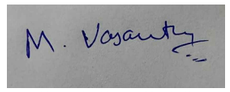

Vasantha Kumar Moghali
S/o Late Venkata Swamy Mogali

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E: info@ennovativedesigns.com | W: www.ennovativedesigns.com

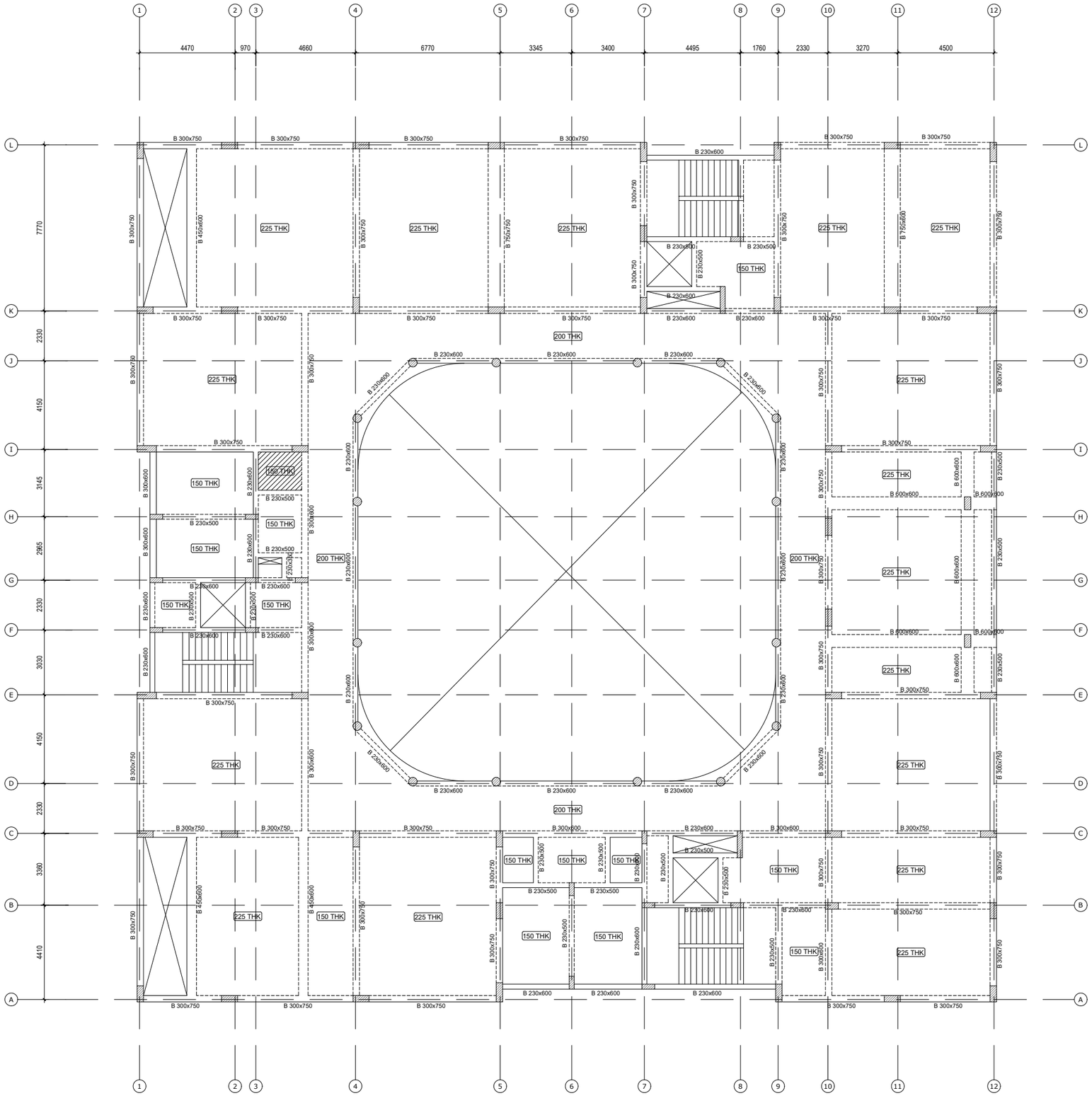
PROJECT:

MOGALI ONE

TITLE:

SECOND FLOOR SHUTTERING LAYOUT

DEALT	: KALYAN		
DESIGNED	: VEERENDRANATH		
CHECKED	: INTHIYAZ		
DATE	: 24/06/2023	ISSUED FOR	
PROJ. NO.	: ----	➤	MUNICIPAL APPROVAL DRAWING
SCALE	: N.T.S		TENDER
SHEET	: A3		PRE-GFC
REV. NO.	: R0		GFC
DWG.NO:	: EDC-GS-STR-104		



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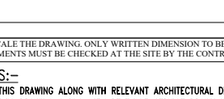

Vasantha Kumar Moghali
S/o Late Venkata Swamy Mogali

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PROJECT:

MOGALI ONE

TITLE:

TERRACE FLOOR SHUTTERING LAYOUT

DEALT	:	KALYAN		
DESIGNED	:	VEERENDRANATH		
CHECKED	:	INTHIYAZ		
DATE	:	24/06/2023	ISSUED FOR	
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SHEET	:	A3		PRE-GFC
REV. NO.	:	R0		GFC
DWG.NO:	:	EDC-GS-STR-105		

RL/023/06/48/01/SOIL/B: **Date: 21/06/2023**

To
Sri Vasanth Kumar,
G A D W A L.

REPORT ON SOIL INVESTIGATIONS FOR PROPOSED REQUISITION FOR THE SOIL REPORT (SBC) FOR THE PROPOSED OF CONSTRUCTION OF SCHOOL IN VIRAPURAM VILLAGE AT GADWAL ,JOGULAMBA GADWAL (DIST).

TEST REPORT ON GEO TECHNICAL INVESTIGATION OF SOIL (SBC)

1. INTRODUCTION:

In the view of design foundations some laboratory tests to be required. This Report evaluates the Safe Bearing Capacity of Sample and Strata. "This report is purely technical report (Geo-technical Investigation report) and is prepared based on the investigation carried out at the particular points shown by the client.

2. FIELD INVESTIGATIONS:

Sample was Collected by Laboratory. Condition of Sample is Undisturbed & Disturbed. The sample collected from existing ground level and depth mentioned in table No 1

Table 1

S.No	Sample identification	Location	Depth at Sample collected (mts) *
1	sample-1	51	2.7
2	sample-2	52	3.0
3	sample-3	53	2.7
4	sample-4	54	3.9
5	sample-5	55	3.6

3. LABORATORY TESTING:

The sample was tested in the Soil Testing Laboratory at Hyderabad. The following Engineering Tests were conducted all laboratory tests on Soil sample for Identifying Classification, Strength, Natural Moisture Conditions, weight, Plastic properties, Expansive properties etc. Test method of below testing as per IS 2720

- Specific gravity.
- Bulk density.
- Grain size distribution
- Direct shear test.
- C value = Cohesion
- Φ Value = Angle of shearing Resistance

4. RESULTS:

The following table No 2 shows the properties of Submitted soil sample and identified after laboratory testing. The Sample is classifieds per IS Classification IS: 2720 (Part-I)-1983-(Reaffirmed2015),IS: 2720 (Part-IV&V)-1985-(Reaffirmed2015),IS: 2720 (Part-XIII)-1986-(Reaffirmed2016),IS:1498-1970 (Reaffirmed 2016),

5. SUMMARY OF SOIL PROPERTIES:

Table 2

Property / Sample No.	**Sample-1**	**Sample-2**	**Sample-3**	**Sample-4**	**Sample-5**
Classification of Soil	Silty Sands - Clayey Sands (SM-SC)	Well Graded Silty Sand (SW&SM)	Well Graded Silty Sand (SW&SM)	Well Graded Silty Sand (SW&SM)	Well Graded Silty Sand (SW&SM)
Specific gravity	2.56	2.65	2.58	2.60	2.68
Bulk Density, gm / cc	2.39	2.18	2.20	2.17	2.20
Grain size Distribution					
Gravel > 4.75 mm	6.5	5.5	12.45	8.85	6.5
Sand, 4.75 – 0.075 mm	72.0	86.4	81.85	82.75	84.4
Silt & clay 0.075 – <0.002mm	21.5	8.0	5.70	8.40	9.10
Shear Parameters					
Cohesion, t/m^2	0.9	0.8	0.9	0.7	0.9
Angle of internal friction, Φ degrees	26	25	25	26	25

6. **RECOMMENDATIONS:**

Table 3

Depth (m) *	**Width (m) ***	**Length (m) ***	**Strata**	**Net Bearing Capacity(t/m^2)**
2.7	1.50	1.50	Silty Sands - Clayey Sands (SM-SC)	30.15
3.0	1.50	1.50	Well Graded Silty Sand (SW&SM)	27.10
2.7	1.50	1.50	Well Graded Silty Sand (SW&SM)	25.64
3.9	1.50	1.50	Well Graded Silty Sand (SW&SM)	36.83
3.6	1.50	1.50	Well Graded Silty Sand (SW&SM)	33.18

1. The soil comprises the classification is mentioned in above *Table No3*
2. Safe Bearing Capacity of Samples obtained for different depth as mentioned above *Table No 3*
3. Safe Bearing Capacity of Samples is 30.1 T/m^2 , 27.1 T/m^2, 25.7 T/m^2 , 36.9 T/m^2, 33.1 T/m^{2}at a depth mentioned in *table No 3*,
4. SBC calculations are given in the Annexure I (attached)
5. The results relate only to the items tested
6. Report shall not be reproduced, except in full, without the written approval of the laboratory.
7. Any corrections invalidate this report.
8. Samples submitted by Client.
9. * As furnished by the customer

For RAJADHANI LABS

AUTHORISED SIGNATORY

7. CALUCULATIONS:

Annexure I

Sample No -1

Analysis As Per Is 6403-1981

The Bearing Capacity Equation Is As Follows:

$$q^{net\ safe} = \{2/3\ c\ N_c'\ Sc\ dc\ I_c + q(N_q'-1)\ Sq\ dq, I_q + 0.5BY\ N_Y'\ Sy\ dy\ I_y\ W'\}/Fs$$

c (t/m^2)	Cohesion intercept	**Φ(degrees)**	Angle of shearing Resistance
$q^{net\ safe}$ (t/m^2)	Safe net bearing capacity	**q (t/m^2)**	Over burden pressure
Y (t/m^2)	Bulk Unit weight of foundation soil.	**W'**	Water table correction factor
dc, dq, dy	Depth factors	**B (mts)**	Foundation width
Sc, Sq, Sy	Shape factors	**Fs**	Factor of safety=3
N'_c, N'_q, N'_Y	Bearing capacity Factors	**I_c, I_q, I_y**	Inclination Factors
GSF	General Shear Failure	LSF	Local Shear Failure

Cohesion intercept	**value**	**unit**	**Angle of Internal friction**	**value**	**unit**	**Type of Failure**
c =	0.90	T/m2	ϕ =	26	degrees	GSF
c' =	0.60	T/m2	ϕ'=	18.10	degrees	LSF

Bearing capacity Factors	**value**	**Bearing capacity Factors**	**value**	**Bearing capacity Factors**	**value**	**Type of Failure**
N_c	22.60	N_q	12.21	N_Y	13.18	GSF
N_c'	13.36	N_q'	5.46	N_Y'	4.35	LSF

Foundation Dimensions,mts		**Shape**	**Depth ,mt**	**W'**	**Shape Factors**			**Depth factors**			**Safe Net Bearing Capacity T/m^2**
Length	**Width**				S_c	S_q	S_Y	d_c	d_q	d_Y	
1.50	1.50	square	2.70	1	1.30	1.20	0.60	1.58	1.29	1.29	30.15

8. CALUCULATIONS:

Annexure I

Sample No -1

Analysis As Per Is 6403-1981

The Bearing Capacity Equation Is As Follows:

$$q^{net\ safe} = \{2/3\ c\ N_c'\ Sc\ dc\ I_c + q(N_q'-1)\ Sq\ dq, I_q + 0.5BY\ N_Y'\ Sy\ dy\ I_y\ W'\}/Fs$$

c (t/m^2)	Cohesion intercept	**Φ(degrees)**	Angle of shearing Resistance
$q^{net\ safe}$ (t/m^2)	Safe net bearing capacity	**q (t/m^2)**	Over burden pressure
Y (t/m^2)	Bulk Unit weight of foundation soil.	**W'**	Water table correction factor
dc, dq, dy	Depth factors	**B (mts)**	Foundation width
Sc, Sq, Sy	Shape factors	**Fs**	Factor of safety=3
N'_c, N'_q, N'_Y	Bearing capacity Factors	**I_c, I_q, I_y**	Inclination Factors
GSF	General Shear Failure	LSF	Local Shear Failure

Cohesion intercept	**value**	**unit**	**Angle of Internal friction**	**value**	**unit**	**Type of Failure**
c =	0.80	T/m2	ϕ =	25	degrees	GSF
c' =	0.53	T/m2	ϕ'=	17.35	degrees	LSF

Bearing capacity Factors	**value**	**Bearing capacity Factors**	**value**	**Bearing capacity Factors**	**value**	**Type of Failure**
N_c	20.72	N_q	10.66	N_Y	10.88	GSF
N_c'	12.79	N_q'	5.10	N_Y'	3.94	LSF

Foundation Dimensions,mts		**Shape**	**Depth ,mt**	**W'**	**Shape Factors**			**Depth factors**			**Safe Net Bearing Capacity T/m^2**
Length	**Width**				S_c	S_q	S_Y	d_c	d_q	d_Y	
1.50	1.50	square	3.00	1	1.30	1.20	0.60	1.63	1.31	1.31	27.10

9. CALUCULATIONS:

Annexure I

Sample No -1

Analysis As Per Is 6403-1981

The Bearing Capacity Equation Is As Follows:

$$q^{net\ safe} = \{2/3\ c\ N_c'\ Sc\ dc\ I_c + q(N_q'-1)\ Sq\ dq, I_q + 0.5BY\ N_Y'\ Sy\ dy\ I_y\ W'\}/Fs$$

c (t/m^2)	Cohesion intercept	**Φ(degrees)**	Angle of shearing Resistance
$q^{net\ safe}$ (t/m^2)	Safe net bearing capacity	**q (t/m^2)**	Over burden pressure
Y (t/m^2)	Bulk Unit weight of foundation soil.	**W'**	Water table correction factor
dc, dq, dy	Depth factors	**B (mts)**	Foundation width
Sc, Sq, Sy	Shape factors	**Fs**	Factor of safety=3
N'_c, N'_q, N'_Y	Bearing capacity Factors	**I_c, I_q, I_y**	Inclination Factors
GSF	General Shear Failure	LSF	Local Shear Failure

Cohesion intercept	**value**	**unit**	**Angle of Internal friction**	**value**	**unit**	**Type of Failure**
c =	0.90	T/m2	ϕ =	25	degrees	GSF
c' =	0.60	T/m2	ϕ'=	17.35	degrees	LSF

Bearing capacity Factors	**value**	**Bearing capacity Factors**	**value**	**Bearing capacity Factors**	**value**	**Type of Failure**
N_c	20.72	N_q	10.66	N_Y	10.88	GSF
N_c'	12.79	N_q'	5.10	N_Y'	3.94	LSF

Foundation Dimensions,mts		**Shape**	**Depth ,mt**	**W'**	**Shape Factors**			**Depth factors**			**Safe Net Bearing Capacity T/m^2**
Length	**Width**				S_c	S_q	S_Y	d_c	d_q	d_Y	
1.50	1.50	square	2.70	1	1.30	1.20	0.60	1.57	1.28	1.28	25.64

10. CALUCULATIONS:

Annexure I

Sample No -1

Analysis As Per Is 6403-1981

The Bearing Capacity Equation Is As Follows:

$$q^{net\ safe} = \{2/3\ c\ N_c'\ Sc\ dc\ I_c + q(N_q'-1)\ Sq\ dq, I_q + 0.5BY\ N_Y'\ Sy\ dy\ I_y\ W'\}/Fs$$

c (t/m^2)	Cohesion intercept	**Φ(degrees)**	Angle of shearing Resistance
$q^{net\ safe}$ (t/m^2)	Safe net bearing capacity	**q (t/m^2)**	Over burden pressure
Y (t/m^2)	Bulk Unit weight of foundation soil.	**W'**	Water table correction factor
dc, dq, dy	Depth factors	**B (mts)**	Foundation width
Sc, Sq, Sy	Shape factors	**Fs**	Factor of safety=3
N'_c, N'_q, N'_Y	Bearing capacity Factors	**I_c, I_q, I_y**	Inclination Factors
GSF	General Shear Failure	LSF	Local Shear Failure

Cohesion intercept	**value**	**unit**	**Angle of Internal friction**	**value**	**unit**	**Type of Failure**
c =	0.70	T/m2	ϕ =	26	degrees	GSF
c' =	0.47	T/m2	ϕ'=	18.10	degrees	LSF

Bearing capacity Factors	**value**	**Bearing capacity Factors**	**value**	**Bearing capacity Factors**	**value**	**Type of Failure**
N_c	22.60	N_q	12.21	N_Y	13.18	GSF
N_c'	13.36	N_q'	5.46	N_Y'	4.35	LSF

Foundation Dimensions,mts		**Shape**	**Depth ,mt**	**W'**	**Shape Factors**			**Depth factors**			**Safe Net Bearing Capacity T/m^2**
Length	**Width**				S_c	S_q	S_Y	d_c	d_q	d_Y	
1.50	1.50	square	3.90	1	1.30	1.20	0.60	1.83	1.42	1.42	36.83

11. CALUCULATIONS:

Annexure I

Sample No -1

Analysis As Per Is 6403-1981

The Bearing Capacity Equation Is As Follows:

$$q^{net\ safe} = \{2/3\ c\ N_c'\ Sc\ dc\ I_c + q(N_q'-1)\ Sq\ dq, I_q + 0.5BY\ N_Y'\ Sy\ dy\ I_y\ W'\}/Fs$$

c (t/m^2)	Cohesion intercept	**Φ(degrees)**	Angle of shearing Resistance
$q^{net\ safe}$ (t/m^2)	Safe net bearing capacity	**q (t/m^2)**	Over burden pressure
Y (t/m^2)	Bulk Unit weight of foundation soil.	**W'**	Water table correction factor
dc, dq, dy	Depth factors	**B (mts)**	Foundation width
Sc, Sq, Sy	Shape factors	**Fs**	Factor of safety=3
N'_c, N'_q, N'_Y	Bearing capacity Factors	**I_c, I_q, I_y**	Inclination Factors
GSF	General Shear Failure	LSF	Local Shear Failure

Cohesion intercept	value	unit	Angle of Internal friction	value	unit	Type of Failure
c =	0.90	T/m2	ϕ =	25	degrees	GSF
c' =	0.60	T/m2	ϕ'=	17.35	degrees	LSF

Bearing capacity Factors	value	Bearing capacity Factors	value	Bearing capacity Factors	value	Type of Failure
N_c	20.72	N_q	10.66	N_Y	10.88	GSF
N_c'	12.79	N_q'	5.10	N_Y'	3.94	LSF

Foundation Dimensions,mts		Shape	Depth ,mt	W'	Shape Factors			Depth factors			Safe Net Bearing Capacity T/m^2
Length	Width				S_c	S_q	S_Y	d_c	d_q	d_Y	
1.50	1.50	square	3.60	1	1.30	1.20	0.60	1.75	1.38	1.38	33.18

PROPOSED SCHOOL BUILDING FOR CONSTRCUTIONS @ GADWAL HYDERABAD.

DESIGN BRIEF REPORT (STRUCTURES)

PROPOSED SCHOOL BUILDING @ GADWAL.

Client : Vasantha Kumar Moghali

Architects : Ar. Harish Gunda

SMEP CONSULTANTS :

ENNOVATIVE
DESIGN CONSULTANTS
OUR DESIGN FOR YOUR BUILD

SS Tech Park,
PSR Prime Tower Unit-2 Ground Floor,
Block B, Adjacent to DLF Cybercity, Hyderabad,
Telangana 500032

ISSUE RECORD

PROJECT : SCHOOL BUILDING AT GADWAL.

TITLE : STRUCTURAL DBR

DOCUMENT NO :

1.0 STRUCTURE

DATE	ISSUE	PREPARED	CHECKED	REVISION
24.06.2023	Preliminary Report	VEERENDRANATH	INTHIYAZ	R0

1.0 STRUCTURAL WORKS

SECTION 1.0 - STRUCTURAL WORKS

CONTENTS:

1.1 INTRODUCTION /PROJECT BRIEF:

Mr. Vasantha Kumar Moghali intends to develop School building at **GADWAL**. Project Architecture by **Ar. Harish Gunda, Hyderabad** and SMEP Services are provided by **ENNOVATIVE DESIGN CONSULTANTS**, Hyderabad.

Total development envisaged for single building.
BUILDING consist of ground +3 floor + 2 future floors + Terrace floor.

All service facilities like underground, pump room and plant rooms are to be provided as per the requirements given by clients.

Statutory Requirements:

Design of structural and other building services will comply with the following requirements:

a) National Building Code
b) Bureau of Indian Standards
c) The Environmental Protection Act in liaison with the Environmental Agency.
d) Fire prevention and detection in compliance with the local Fire Regulation.

1.2 DESIGN STANDARDS:

Specific applicable codes and standards will be identified and adopted in the design philosophies as appropriate to the structural elements. The latest editions of the Codes and Standards will be used in designs. All design work shall be based on Indian Standards and Codes with latest revision, with amendments if any, as on date.

IS: 16700-2017	: Criteria for structural safety of tall concrete buildings.
IS: 432(part 2) – 1982	: Specification for mild steel and medium tensile steel bars and hard-drawnsteel wire for concrete reinforcement.
IS: 1786-2008	: Specification for high strength deformed steel bars and wires for concrete Reinforcements.
IS: 12269	: Ordinary Portland cement 53 grade.
IS: 6313 (part II)	: Standards for anti-termite treatment.
IS: 875 (part 1)-1987	: Code of practice for design loads (other than earthquake) for buildings & Structures -unit weights of buildings materials and stored material.
IS: 875 (part 2)-1987	: Code of practice for design loads (other than earthquake) for buildings and Structures - imposed.
IS: 875 (part 3)-2015	: Code of practice for design loads (other than earthquake) for buildings(3rd Revision)and Structures - wind loads.
IS: 875 (part 5)-1987	: Code of practice for design loads (other than earthquake) for buildings Structures- Special loads and load combinations.

IS: 456-2000 : Code of practice for plain and reinforced concrete.

IS: 14268 – 1995 : Uncoated stress relieved low relaxation seven-ply strand for pre stressed Concrete – Specification.

IS: 1904 – 1986 : Code of practice for design and construction of foundations in soil (third revision)

IS: 4926 – 2003 : Code of practice for ready-mixed concrete (second revision)

IS: 9103 – 1999 : Specification for concrete admixtures (first revision)

IS: 12070 – 1987 : Code of practice for design and construction of shallow foundations on rock

IS: 13920 – 2016 : Ductile design and detailing of reinforced concrete structures subjected to seismic forces (first revision)

IS: 16172 – 2014 : Specification for concrete reinforcement couplers for mechanical splice of bars in concrete

IS: 1893 part 1 – 2016 : Criteria for earthquake resistant design of structures (part-1 general (6^{th} Revision)provisions and buildings)

IS: 4326 -1993 : Code of practice for earthquake resistant design and construction of buildings.

IS: 3370-2009 : Code of practice for concrete structures for the storage of liquids.

IS: 2751 : Code of practice for welding of mild steel bars used for reinforced concrete construction.

IS: SP 34-1987 : Handbook on concrete reinforcement and detailing.

IS: 800 – 2007 (reaffirmed 1998): Code of practice in general construction in Steel.

IS: 1904 - 1986 : Code of practice for structural safety of building foundations.

SP: 16 – 1980 : Design aid for reinforced concrete to IS 456.

Reference : Major Development Plan.

Wherever appropriate Indian Regulation does not exist for any particular item, appropriate British standards will be followed.

1.2.1 IS Standards – Material

- IS: 269 - 1989 : Specification for Ordinary, rapid hardening and low heat Portland cement.
- IS: 455 - 1989 : Specification for Portland blast furnace slag cement.
- IS : 1489 – 1991 : Specification for Portland pozzolana cement
- IS: 4031 - 1991 : Method of physical tests for Portland cement.
- IS: 383 - 1970 :Specification for coarse, fine aggregates from natural sources for concrete.
- IS: 516 -1959 : Method of test for strength of concrete.
- IS: 1199 -1959 : Method of sampling and analysis of concrete.
- IS: 432 -1982 : Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement.
- IS: 1139 : Specification for hot rolled mild steel and Medium tensile steel deformed bars for concrete reinforcement.
- IS: 1566 -1982 : Specification for plain hard drawn steel wire fabric for concrete reinforcement.

- IS: 1786 -2004 : Specification for high tensile bars for concrete reinforcement.
- IS: 4990 -1993 : Specification for plywood for concrete shuttering works.
- IS: 2645 -1975 : Specification for integral cement water proofing compounds.
- BS: 4449: 1997 : Specification for carbon steel bars for the reinforcement of concrete.

1.3 DESIGN DATA:

Loads:

1.3.1 Dead loads:

Dead load shall include weight of all structural and Architectural components. Self-weight of the materials shall be calculated on the basis of unit weights given in IS: 875 Part-1

- Floor finish of 50mm thick for class room floors : 100kg/sq.m (0.05x20=1kN/sq.m).

  (We have considered screed density of 20kN/cum as per general practice)
- Ceiling Plaster : 30kg/sq.m (0.30kN/sq.m) (12 to 15mm thick Plastering)

  (In modern day practice, crushed natural stone aggregate or Manufactured sand will be used of density 22kN/cum – IS 875 – (Part-1) – 1987 Table 1 clause 20)
- False Ceiling load in Living/Dining : 15kg/sq.m (0.15kN/sq.m)
- Sunken Load for Toilet/Balcony 100mm thk. : 100kg/sq.m(0.1x10) say to (1 kN/sq.m)
- Sunken Load for for Utility 150mm thk. : 150kg/sq.m(0.15x10) say to (1.5 kn/sq.m)

  (We have considered sunken filling density of brick bats 10.0 kN/cum)
- Partition walls : As per actuals.
- Wall loads : As per actuals.

Example – Floor Height 2.95m, Beam depth above
0.45m) (Wall height 2.95-0.45 = 2.5m)
200mm thick wall = 0.2 x 24 x 2.35 = 11.28 kN/m (concrete Bricks)
(We have considered concrete solid block density of 24kN/cum)
Plastering Load (12mm External Plastering and 10mm Internal plastering)
0.024 x 20 x 2.95 = 1.416 say to 1.42 kN/m
Total Load = 11.28 + 1.42 = 12.70 say to 12.75 kN/m for blank walls.
For worst condition we are considering plastering load for all walls.

- Self-weight of Plain concrete : 2400 kg/cu.m (24 kN/cu.m).
- Self-weight of RCC : 2500 kg/cu.m (25 kN/cu.m).
- Concrete Solid block masonry : 2200 kg/cu.m (22 kN/cu.m)
- Soil (Dry) : 1800 kg/cu.m (18 kN/cu.m).
- Soil (Wet) : 2000 kg/cu.m (20 kN/cu.m).

- Water : 1000 kg/cu.m (10 kN/cu.m).
- Glass : 2350 kg/cu.m (23.5 kN/cu.m).
- Stainless steel : 8000 kg/cu.m (80 kN/cu.m).
- Rebar Density : 7850 kg/cu.m (78.5 kN/cu.m).
- Filling for sunken portion : 1000 kg/cu.m (10.0 kN/cu.m)
- Waterproofing (membrane). : 15kg/sq.m (0.15kN/sq.m).
- External finishes : As per actuals.
- Gardening/Landscape loads : As per actuals.
- Equipment loads : As per Vendor details.
  (Generator, Pump, Electrical Rooms)
- OHTLoadings : As per Vendor details.

1.3.2 Live loads:

The superimposed loads shall be calculated in accordance with IS: 875(Part-2) based on Occupancy Classification. For multiple occupancies of use in the building shall be referred with the other appropriate comparable occupancy classification as per Table.1 of IS 875(Part-2)-1987.

- Parking Area : 300 kg/ sq.m (3.00 kN/sq.m) + 25% Impact (3.75kN/sq.m)

  As per our usual practice we are going with 25% impact, it has minor difference in loading.

  (Vehicles are associated with Braking and Acceleration, which induces impact on supporting elements. Hence this impact is to be considered for analysis and design)

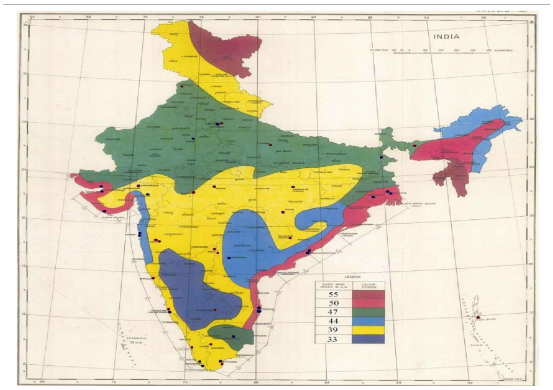
  (As per NBC Volume-1 Table 3.8 loading on slabs to be considered as 15kN/sqm and 20kN/sqm for 45MT and 65MT respectively)

Residential Floors

- Class rooms : 400 kg/sq.m (4.0 kN/sq.m)
- Labs / Library / Halls : 500 kg/sq.m (5.0 kN/sq.m)
- Stairs : 500 kg/sq.m (5.0 kN/sq.m)
- Corridors / Balcony/Utility : 500 kg/sq.m (5.0 kN/sq.m)
- Toilets : 200 kg/sq.m (2.0 kN/sq.m)
- Lift Machine room : 1000 kg/ sq.m or as per actuals (10 kN/sq.m).

  For slab design we are considering 1000kg / sq.m + 100% Impact Load.
- Terraces : 200 kg/ sq.m (2.0 kN/sq.m)
- Ramps : 500 kg/sq.m (5 kN/sq.m)
- DG Room : As per actuals
- Electrical Room : 750 kg/sq.m (7.50 kN/sq.

1.3.3 Wind loads: In accordance with IS: 875 calculated in (Part-3).



- The proposed Building has **GROUND + 3 Floors + 2 Future floors + Terrace** GADWAL, which is located in Telangana, is having wind speed of 44m/sec.

Basic Wind Speed Vb : 44 m/sec

Risk Coefficient K1 : 1.00 (k1 corresponds to 50 years Mean Probable Design Life of Structure) As per Table – 1, of IS - 875 - Part 3

Terrain, height, structure size factor K2 : To suit the height of the structure for category 1 As per Table – 2 of IS - 875 - Part 3

Structure class :Class-C

Topography factor k3 : 1.00

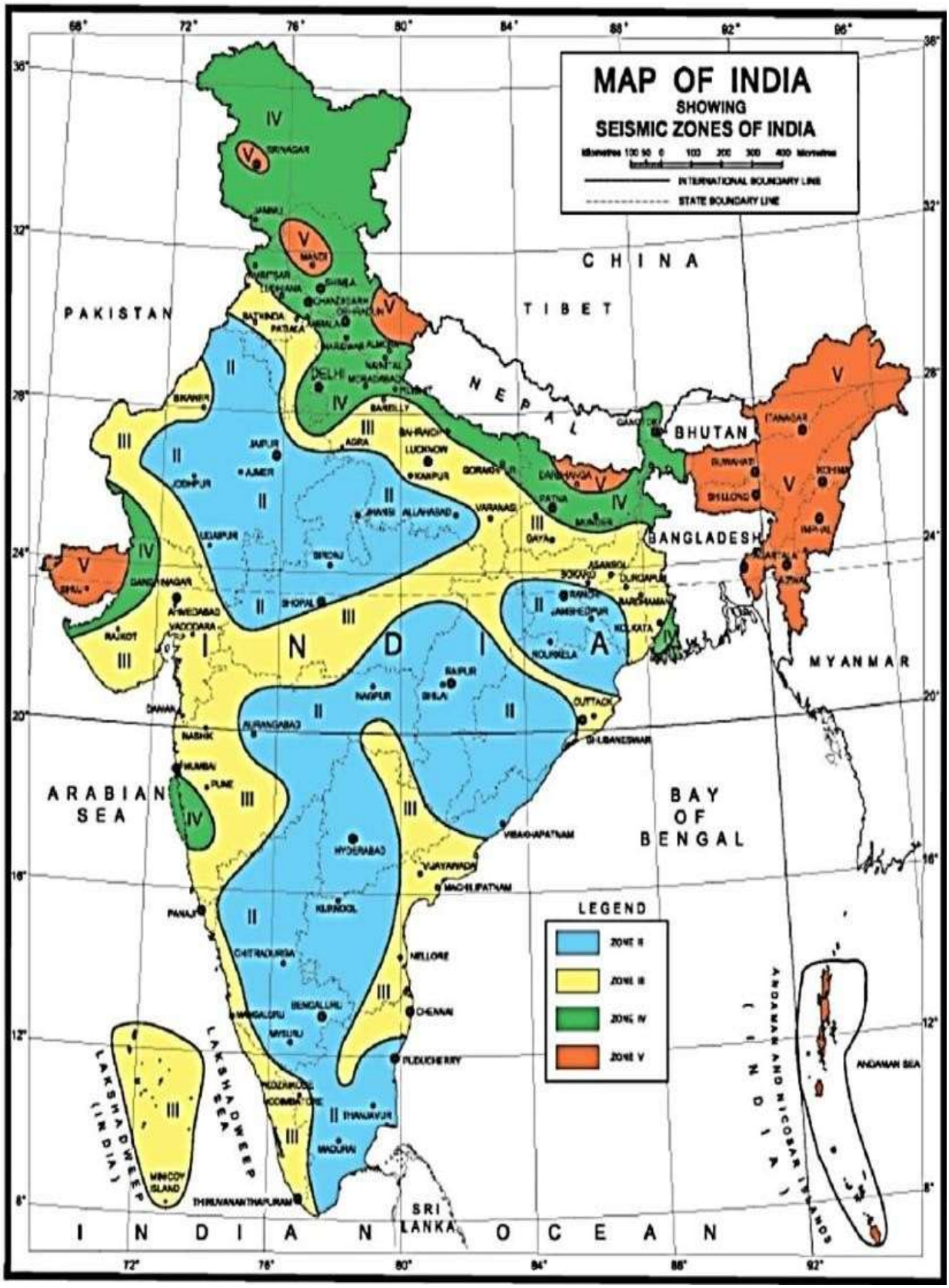
The external and internal pressure co-efficient shall be as per respective clauses of IS: 875 (Part 3)

Design wind speed Vz : Vb x k1 x K2 x k3 x k4

Design wind pressure Pz : 0.6 x Vz^2

Height of the building(m)	K2	Vz = Vb x k1 x k2 x k3(m/s)	Pz = 0.6 x Vz^2(kN/m^2)
10	0.99	43.56	1.14
15	1.03	45.32	1.23
20	1.06	46.64	1.31
30	1.09	47.96	1.38
50	1.14	50.16	1.51

1.3.4 Seismic Forces



LIST OF SOME TOWNS WITH POPULATION MORE THAN 3 LAKHS (as per CENSUS 2011) AND THEIR SEISMIC ZONE FACTOR Z

Town	Zone	Z	Town	Zone	Z
Agra	III	0.16	Calicut (Kozhikode)	III	0.16
Ahmedabad	III	0.16	Chandigarh	IV	0.24
Ajmer	II	0.10	Chennai	III	0.16
Allahabad	II	0.10	Chitradurga	II	0.10
Almora	IV	0.24	Coimbatore	III	0.16
Ambala	IV	0.24	Cuddalore	II	0.10
Amritsar	IV	0.24	Cuttack	III	0.16
Asansol	III	0.16	Darbhanga	V	0.36
Aurangabad	II	0.10	Darjeeling	IV	0.24
Bahraich	IV	0.24	Dharwad	III	0.16
Bangalore (Bengaluru)	II	0.10	Dehra Dun	IV	0.24
Barauni	IV	0.24	Dharampuri	III	0.16
Bareilly	III	0.16	Delhi	IV	0.24
Belgaum	III	0.16	Durgapur	III	0.16
Bhatinda	III	0.16	Gangtok	IV	0.24
Bhilai	II	0.10	Guwahati	V	0.36
Bhopal	II	0.10	Gulbarga	II	0.10
Bhubaneswar	III	0.16	Gaya	III	0.16
Bhuj	V	0.36	Gorakhpur	IV	0.24
Bijapur	III	0.16	Hyderabad	II	0.10
Bikaner	III	0.16	Imphal	V	0.36
Bokaro	III	0.16	Jabalpur	III	0.16
Bulandshahr	IV	0.24	Jaipur	II	0.10
Burdwan	III	0.16	Jamshedpur	II	0.10

Hyderabad lies under seismic zone II as per IS 1893-2016 (Part 1) (Sixth Revision) and has the following factors to be considered for designs. Ductile detailing is not required. (Please refer attached details)

Seismic Zone II

Soil Type :Type1 Rock or Hard soil

Seismic Zone factor, Z : 0.1 (As per Table 3, IS: 1893-2016)

Table 3 Seismic Zone Factor *Z*
(*Clause* 6.4.2)

Seismic Zone Factor (1)	II (2)	III (3)	IV (4)	V (5)
Z	0.10	0.16	0.24	0.36

Damping ratio DM : 5%

Design horizontal seismic coefficient (Ah) : (Z/2)*(Sa/g)/(R/I)

I -Importance factor : 1.2 (Ref Table 8, IS: 1893-2016)

Response reduction Factor : 3 (OMRF)

R as per Table 9 of IS: 1893-2016 is based on Ordinary RC Moment -Resisting Frame (OMRF).

Sa/g – Average response acceleration coefficient for soil sites as per Fig.2 of IS: 1893-2016 and it is arrived based on appropriate natural periods as per clause 7 6.1 of IS : 1893-2016.

Design horizontal seismic coefficient (Ah) : (Z/2)*(Sa/g)/(R/I)

Design seismic base shear, Vb : Ah * W where, W - seismic weight of building

Time Period Considered for Analysis : As per Clause 7.6.2 (Refer Below)

Time Period considered for analysis : $\frac{0.09\times h}{\sqrt{d}}$

TABE-2 Zone Factor, Z				
(Clause 6.4.2)				
Seismic Zone	**II**	**III**	**IV**	**V**
Seismic Intensity	Low	Moderate	Severe	Very Severe
Z	0.10	0.16	0.24	0.36

1.3.5 Environmental conditions, Corrosion and Fire protection for concrete and structural steel

- Environment : Moderate
- Exposure conditions : Concrete surfaces sheltered from severe rain or freezing Whilst wet Environment.
- Fire protection : Thickness of the structural elements as per table 15, 16 & 16A clause 26.4 of IS 456-2000.
- Minimum grade of concrete : Moderate exposure – M30
- Nominal cover to reinforcement : For Moderate Exposure Nominal cover should not be less than 30 mm

1.3.6

MINIMUM DIMENSIONS OF REINFORCED CONCRETE MEMBERS FOR FIRE RESISTANCE (Part 1)

Fire Resistance h	Minimum Beam Width b	Rib Width of Waffle Slabs b_w	Minimum Thickness of Floors D
(hrs)	(mm)	(mm)	(mm)
0.5	200	125	75
1	200	125	95
1.5	200	125	110
2	200	125	125
3	240	150	150
4	280	175	170

MINIMUM DIMENSIONS OF REINFORCED CONCRETE MEMBERS FOR FIRE RESISTANCE (Part 2)

Fire Resistance h	Column Dimension (b or D)			Minimum Wall Thickness		
	Fully Exposed	50% Exposed	One Face Exposed	p<0.4%	0.4%≤p≤1%	p>1%
(hrs)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
0.5	150	125	100	150	100	100
1	200	160	120	150	120	100
1.5	250	200	140	175	140	100
2	300	200	160	-	160	100
3	400	300	200	-	200	150
4	450	350	240	-	240	180

p is the percentage of steel reinforcement.

NOMINAL COVER TO MEET SPECIFIED PERIOD OF FIRE RESISTANCE

Fire Resistance h	Beams		Slabs		Ribs		Columns
	Simply Supported	Continuous	Simply Supported	Continuous	Simply Supported	Continuous	
(hrs)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
0.5	20	20	20	20	20	20	40
1	20	20	20	20	20	20	40
1.5	20	20	25	20	35	20	40
2	40	30	35	25	45	35	40
3	60	40	45	35	55	45	40
4	70	50	55	45	65	55	40

1.3.7 Exceptional Loads:

Loads due to the following catastrophe scenarios are not considered in the design.

- Exceptional loads due to terrorist attacks (Explosions)
- Accidental loads (Falling of aircraft on the building)
- Accidental hitting of vehicle on the façade

1.3.8 Temperature Load

- Temperature load with variation will be applied for Exposed areas ie.For Terrace and Podiumslab only.

1.4 MATERIALS:

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

Concrete:

- All structural concrete shall have cube crushing strength of M50 to M30 N/sq.mm at 28 days.
- Plain cement concrete shall have cube crushing strength of 10 N/sq.mm (M10) at 28 days.

Concrete Mix

Concrete item	Grade
Foundation	M25
Building Columns/Shear walls	Varies from M35
Slab, beams, Staircase, Ramps	M2
UG Sump/OHT	M30
REFER GENERAL NOTES FOR COLUMN GRADE AT ALL LEVELS	

Reinforcement steel:

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

Structural Steel

All structural steel shall confirm to IS: 2062 with minimum yield strength of 250 N/sq.mm.

1.5 STRUCTURAL CONCEPT

- The Structural System comprises of **Conventional Beam and Slab system**. Floor slabs and beams are considered to act as a rigid diaphragm to transfer the lateral forces to the shear walls.
- Balcony slab is sunk by 100mm, toilet by 100mm and utility areas are sunk by 150mm. The cut-outs in slab are based on the provisions given in Clause 31.8 of IS 456-2000. Core cutting in slabs shall be provided to

accommodate utility services. Staircases are provided with mid-landing between the floors as per architectural layout.

- Structural Configuration – **R C frame with beam slab system.**

Sl.NO	Description	BUILDING	
	Structuralsystem	**Beam and Slab System**	
1	**Slab thickness**	**As per design**	
2	**Beams size**	**As per design**	
3	**Column size**	**As per design**	
4	**No. of slabs**	**1 Slab**	

1.5.1 Structural analysis and design:

General

- All R.C.C structures shall be designed according to the Limit State Method as specified in IS: 456 – 2000.
- The structure is idealized as 3D space frame and analyzed using ETABS 2018 software package for both vertical and lateral loads.
- Forces and moments from the 3D analysis output for the worst combinations are used for the design of the structure.
- The structure is analyzed for specific loads like dead load, live load, wind and seismic loads and for the load combinations as given in the relevant codes.
- The slabs are analyzed as two-way and one way slabs.

Design of structural steel members are made using elastic method as per IS: 800 with relevant allowable stresses.

1.5.2 Deflection Limits:

For Reinforced concrete works:

Limiting values of deflection (Short and Long term) as per clause 35.3 of IS: 456-2000 is followed in the design.

Limiting value for short term deflection is considered as span/250 and for the long term deflection is considered as span/350 or 20mm whichever less as per IS 456 – 2000.

As per IS1893 (Part1) :2016, Storey drift in any storey due to minimum specified design seismic lateral force shall not exceed 0.004 times the storey height design.

Lateral sway due to wind load should not exceed H/500 (H is the total height of structure).

Long term and short term deflections are as below

10.4.4 Checks on Total Deflection

After calculating the various components of short-term deflection (Δ_D, Δ_{D+L}) and long-term deflection (Δ_{sh}, Δ_{cp}, Δ_{temp}), the acceptability of these deflections should be verified with reference to the deflection limits specified by the Code. As explained in Section 10.2.1, two checks on total deflection are called for:

$$\Delta_{D+L} + \Delta_{long\text{-}term} \leq l/250 \qquad (10.29a)$$

$$\Delta_L + \Delta_{long\text{-}term} \leq \begin{cases} l/350 \\ 20 \text{ mm} \end{cases} \quad \text{(whichever is less)} \qquad (10.29b)$$

where

$$\Delta_{long\text{-}term} = \Delta_{sh} + \Delta_{cp} + \Delta_{temp} \qquad (10.29c)$$

1.5.3 Cracking Limits:

Limiting values of crack width as per clause 35.3 of IS: 456-2000 is followed in the design.

In general for slabs and beams, the crack width is limited to 0.3mm.

For water retaining structures, crack width is limited to 0.2mm.

1.5.4 Load Combinations:

Load Combination	Limit State of Collapse				Limit State of Serviceability		
	DL+SDL	LL	WL/EL	TL	DL+SDL	LL	WL/EL/TL
DL + LL	1.5	1.5	—	—	1	1	—
DL ± WL (or) GUST	1.5	—	1.5	—	1	—	1
DL ± WL (or) GUST	0.9	—	1.5	—	—	—	—
DL ± EL (or) SPECTRUM	1.5	—	1.5	—	1	—	1
DL ± EL (or) SPECTRUM	0.9	—	1.5	—	—	—	—
DL + TL	1.4	—	—	1.4	1	—	1
DL+LL±WL(or) GUST	1.2	1.2	1.2	—	1	0.8	0.8
DL+LL±EL(or) SPECTRUM	1.2	1.2	1.2	—	1	0.8	0.8

***This value is to be considered when stability against overturning and stress reversal is critical where DL/LL/WL/EL denotes,**

DL - Dead Load; LL - Live Load; TL - Temperature Load; WL - Wind Load (or) Gust factor;

EL - Earthquake Load(or) Response spectrum

For designing of structure we are considering response spectrum case only.

The various loads are combined in accordance with the stipulations in IS: 875 (Part 5)-1987; whichever combination produces the most unfavorable effect in the building foundation or structural member concerned may be adopted.

Wind load and earthquake loads are considered for both x & y directions. Whenever imposed load is combined with earthquake load, the appropriate part of imposed load as specified in IS: 1893-2016 / Clause 7.3.1 of seismic code will be used both for evaluating earthquake effect and for combined load effects used in such combination.

1.6 DESIGN PHILOSOPHY:

Design Life

The design life of the building is assumed as 50 years. This requirement is applicable only for concrete works and not applicable to replaceable finishing materials, water proofing membrane and thermal insulations (if any). Hence periodic maintenance / refurbishment is required for all replaceable material for longer life.

1.6.1 Design Interface:

This structure has physical interface with almost all the disciplines like Geotechnical, MEP Services and Landscape etc. The Structure proposed is of cast in-situ concrete construction with columns suitably placed. The core walls around lifts, stairs are of cast in-situ concrete to resist lateral forces. The Structural design of the proposed project is based on Indian Standard Codes and is analyzed for Dead, Live, Wind and Seismic Load conditions taking into relevant load combinations recommended by the codes. The Vertical Loads including the dead and super imposed loads are transferred to the soil through columns, core walls and footings. Footings are sized with consideration to the safe bearing capacity of soil at the level of transfer of load recommended by specialist soil investigation consultants. The Lateral loads due to wind and seismic forces are dissipated to soil through the proposed Reinforced Concrete Core Walls/columns. The type of footings proposed will be individual or Raft based on actual design.

Live Load reduction considered in Designs as per IS 875 Part 2-1987

1.6.2 ANALYSIS METHODOLOGY:

This structure has physical interface with almost all the disciplines like geotechnical works, MEP services, landscape etc. The structure proposed is of cast in-situ concrete construction with columns suitably placed. The core walls around lifts, stairs are of cast in-situ concrete to resist lateral forces.

The Vertical Loads including the dead and super imposed loads are transferred to the soil through columns, core walls and footings. Footings are sized with consideration to the safe bearing capacity of soil at the level of transfer of load recommended by specialist soil investigation consultants. The Lateral loads due to wind and seismic forces are dissipated to soil through the proposed Reinforced Concrete Core Walls/columns.

1.7 Mathematical model

Mass Modeling:

Mass Source as per IS: 1893_2016 is considered as follows.

Mass source = DL+SDL+ 0. 25LL for LL<= 3kN/m2 and

Mass source = DL+SDL+ 0. 5LL for LL> 3kN/m2

Where DL - Dead Load;

SDL – Super Imposed Dead Load; LL - Live Load

Stiffness Modelling:

Stiffness modifiers that are used both for analysis and design are as detailed below:

Members	Serviceability limit state model	Ultimate limit state model
Walls	$f_{11},f_{22},f_{12},m_{11},m_{12},m_{22}$=0.9	$f_{11},f_{22},f_{12},m_{11},m_{12},m_{22}$=0.7
Columns	I_{22},I_{33}=0.9	I_{22},I_{33}=0.7
Beams	I_{22} , I_{33}=0.7	I_{22} , I_{33}=0.35
Slabs(Shell)	f_{11},f_{22},f_{12}, m_{11},m_{12},m_{22}=0.35	f_{11},f_{22},f_{12}, m_{11},m_{12},m_{22}=0.25
Slabs(MEM)	f_{11},f_{22},f_{12} =0.35	f_{11},f_{22},f_{12} =0.25

For design of Beam we will consider slab has membrane element.

1.7.1 Assumptions:

- The structure is idealized as 3D space frame and analyzed using Etabs software package for both vertical and lateral loads.
- The structure is analyzed for specific loads like dead load, live load, wind and seismic loads and for the load combinations as given in the relevant codes.
- The floor slab is considered as rigid diaphragm which would not undergo any in-plane deformations and would transfer the lateral forces to vertical lateral load resisting elements.
- The foundation is represented in analysis model using Fixed end conditions.

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Date: 23.08.2023

STRUCTURAL STABILITY CERTIFICATE

This is to certify that the STRUCTURAL DESIGNS for the proposed MOGALI ONE PROPOSED SCHOOL BUILDING consisting of **GROUND+2 UPPER FLOORS+TERRACE** SITUATED AT GADWAL VILLAGE, JOGULAMBA **GADWAL DISTRICT**, TELANGANA.

It is designed based on the architectural plans submitted by **ALSO DESIGN PVT. LTD**, Hyderabad to concerned authority.

The structure system being designed for SCHOOL BUILDING is a RC Columns with ordinary moment resisting frame to support RC slabs is complying with the Bureau of Indian Standard norms and is safe and suitable for the purpose for which it is intended.

It is being designed in accordance with IS: 456 and IS: 875 and the structure falls under seismic zone II as per Seismic code IS: 1893 (part 1) 2016. The design has been done for same and shall be detailed accordingly as per relevant I**n**dian standard codes.

We affirm that the structural designs and drawings that are being prepared duly taking the sub soil bearing capacity into consideration as per soil consultant report and are true and correct according to our knowledge and professional experience.

for Ennovative Design Consultants (P) Ltd.,

SHAIK INTHIYAZ
License No. 339 / Strl.Engineer / TP10 / GHMC

(Mr. SHAIK INTHIYAZ)

License No: 436/Strl Engineer/TP10/GHMC/2020