LYCÉE LOUIS MASSIGNON
ليسيه لوي مسينيون

ÉTABLISSEMENT EN GESTION DIRECTE

aefe
Agence pour l'enseignement français à l'étranger

HELAL&PARTNERS
ARCHITECTS | ENGINEERS | TOWN PLANNERS

RENOVATION OF BLOCK B' FOR FRENCH SCHOOL (LYCEE LOUIS MASSIGNON)

CONCRETE REPAIRS AND STRUCTURAL REINFORCEMENT

PLOT (26_27), SECTOR (E40)
ABU DHABI ISLAND
EMIRATE OF ABU DHABI
UNITED ARAB EMIRATES

VOLUME 5 – Part 6 of 7

M/s eForce Inspection Consultancies
Report eForce/1104/24-R1 dated January 07th, 2025

HP Project No. 1782

Revision 1
April 18th, 2025

eFORCE Inspection Consultancies

(CENTER FOR ENGINEERING STUDIES & CONSULTANCY SERVICES)

إيفورس لإستشارات الكشف على الإنشاءات

(مركز الدراسات الهندسية والخدمات الإستشارية)

Existing Lycee Louis Massignon School, Al Sa'ada Street, Abu Dhabi, UAE - Structural Testing Works for [Gymnasium Building & Auditorium Building]- Structural Assessment & Structural Strengthening Design

Submitted to	**Al Hilal Engineering Consultants**
Reference code	**eFORCE/1104/24 R1**

By

Dr. Ashraf Biddah, Ph.D., C. Eng, MACI, MICRI

Reinforced concrete design and rehabilitation Expert

Professor, Managing Director

eFORCE Inspection Consultancies

07th Jan 2025 -R1

P.O.Box 118148 Dubai e-mail: eforceconsult@eforceuae.com

P.O.Box 93898 Abu Dhabi

Tel. 04-5519910 – 02-6669591

Fax. 04-5519920 – 02-6669591

Mobile: 050-7636202

www.eforceconsultancies.com

A member of eFORCE Consultancies Group

Member of

INTERNATIONAL CONCRETE REPAIR INSTITUTE

American Concrete Institute® Advancing concrete knowledge

Preliminary note

Prepared by	Verified by	Rev. Number	Date
I.A	A.B.	00	20-12-2024
I.A	A.B.	01	07-01-2025

TABLE OF CONTENTS

1 Structural Analysis

1.1 Design Brief

eFORCE has carried out the design check of the existing building using the compressive strength obtained from core testing.

1.2 Design Standards

Design check was carried out to meet the requirements of the following standards and design guidelines:

ACI 318-14	Building Code Requirements for Structural Concrete and Commentary
ASCE 7-05	Minimum Design Loads for buildings and other Structures
IEBC 2018	International Existing Building Code

1.3 Material Properties

I. Concrete Compressive Strength

Floor Level	Columns f'c	Slabs/Beams f'c
Ground	19.6	16.6
Roof	19.6	16.6

II. Reinforcement Steel Yield Strength

Fy = 420 MPa for flexure bars

2 Design Loads

2.1.1 Design loads

The below loads were considered in the review of the structural elements analysis and checking.

I. Gravity Loads, refer to the below table

Location	SDL	LL
Roof (Inaccessible)	3.0 kPa	1.0 kPa
Roof (Accessible)	3.0 kPa	1.5 kPa
Block Works (200mm thk.)	10.0 kPa	-
Ribbed and Waffle slab filler	1.0 kPa	-

Self-weight is automatically calculated by the design software.
Refer to below screen shots from ETABS for Loads allocation.

II. Wind Load

Automatically computed by ETABS software according to ASCE 7-05.
Basic Wind Speed = 100 mph
Exposure Category = C
Importance Factor = 1.0
Gust Factor = 0.85
e1, e2 = 0.15

III. LOADS RUN DOWN GYMNASIUM

At this point, the investigations to determine the mechanical characteristics of the crossbeams are not planned yet, the technical solution for reinforcing the beams has not been determined and validated.

In order to take into account, the additional load due to the reinforcement, the dead weight is increased by 30%. However, in a conservative posture, this coefficient does not have to be applied in combination with a negative pressure wind.

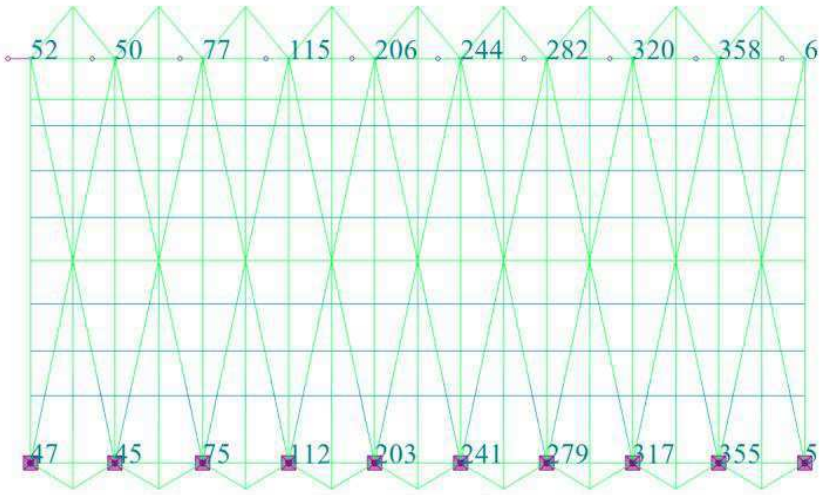


Figure 2-1 reactions from Robot structural refer to **Appendix-A**

IV. LOADS RUN DOWN AUDITORIUM

At this point, the investigations to determine the mechanical characteristics of the crossbeams are not planned yet, the technical solution for reinforcing the beams has not been determined and validated.

In order to take into account, the additional load due to the reinforcement, the dead weight is increased by 30%. However, in a conservative posture, this coefficient does not have to be applied in combination with a negative pressure wind.

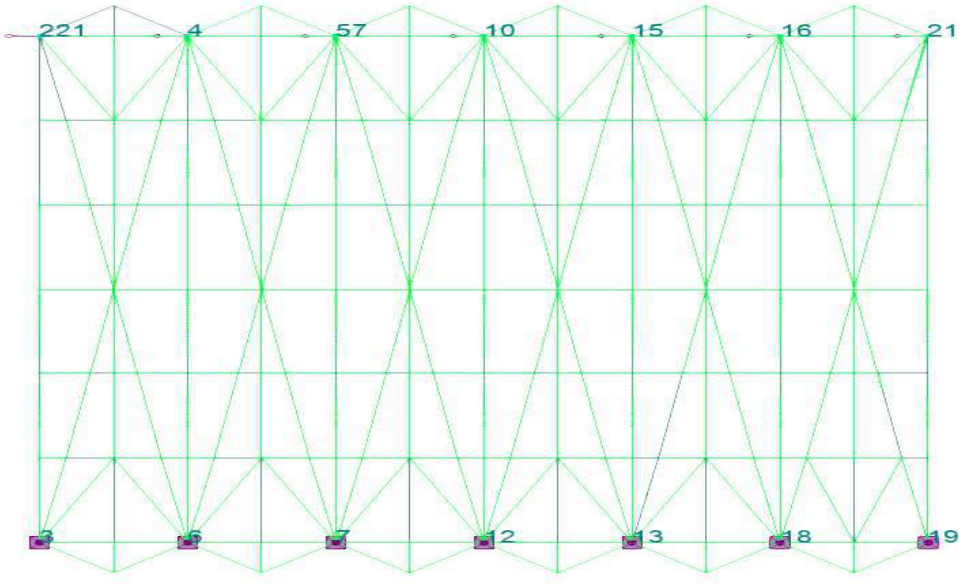


Figure 2-2 reactions from Robot structural refer to **Appendix-A**

3 Design Load Combination

3.1.1 Load combination for Vertical Elements

The structure shall be checked for limit state load combination in accordance with ASCE 7-05

I. 1.4 D
II. 1.2 D + 1.6 L_n + 1.6 L_h + 1.6 L_p
III. 1.2 D + 0.5 Ln + 1.0 Lh + 1.0 Lp ± 1.6 W
IV. 1.2 D + 0.5 Ln + 1.0 Lh + 1.0 Lp ± 1.6 W
V. 0.9 D ± 1.6 W
VI. 0.9 D ± 1.6 W

3.1.2 Load Combinations for Slab Design

The following load combinations will be used in the design of the PT slab

I. Serviceability Limit state

1.0 D + 1.0 L_n + 1.0 L_h + 1.0 L_p

II. Ultimate Limit State

1.2 D + 1.6 L_n + 1.6 L_h + 1.6 L_p

III. Crack-section analysis

Immediate All = 1.0 D + 1.0 L_n + 1.0 L_h + 1.0 L_p
Immediate Sustained = 1.0 D + 0.25 L_n + 0.25 L_h + 1.0 L_p
Long Term Sustained= 1.0 D + 0.25 L_n + 0.25 L_h + 1.0 L_p

IV. Total Long-Term Deflection:

Immediate All – Immediate Sustained + Long Term Sustained

4 Design Software

The software ETABS 2016 is used for the analysis of the structural frame of the building and the design of vertical elements and beams.

The software SAFE 2016 is being used for the design check of the slab and beams.

5 Analysis and Design Procedure

5.1 ETABS Model

The structure is modeled using structural programs ETABS for analysis using a Finite Element Method in order to study the stability, deformation and forces acting on each member of the structure due to vertical and wind loads.

In general, the slab and beams will transmit the loads to the vertical support going down to the foundation.

In ETABS analysis, the lateral stability shall be satisfied through RCC Shear Walls, Columns and Beams with sufficient stiffness that can satisfy all the requirements in strength.

For the ultimate strength analysis and design, the following stiffness modification factor for each element shall be applied considering the crack section.

Solid Slab	-	0.25
Rib/Waffle Slab	-	0.25
Beams	-	0.35
Columns	-	0.70
Walls	-	0.70

5.1.1 GYMNASIUM PART

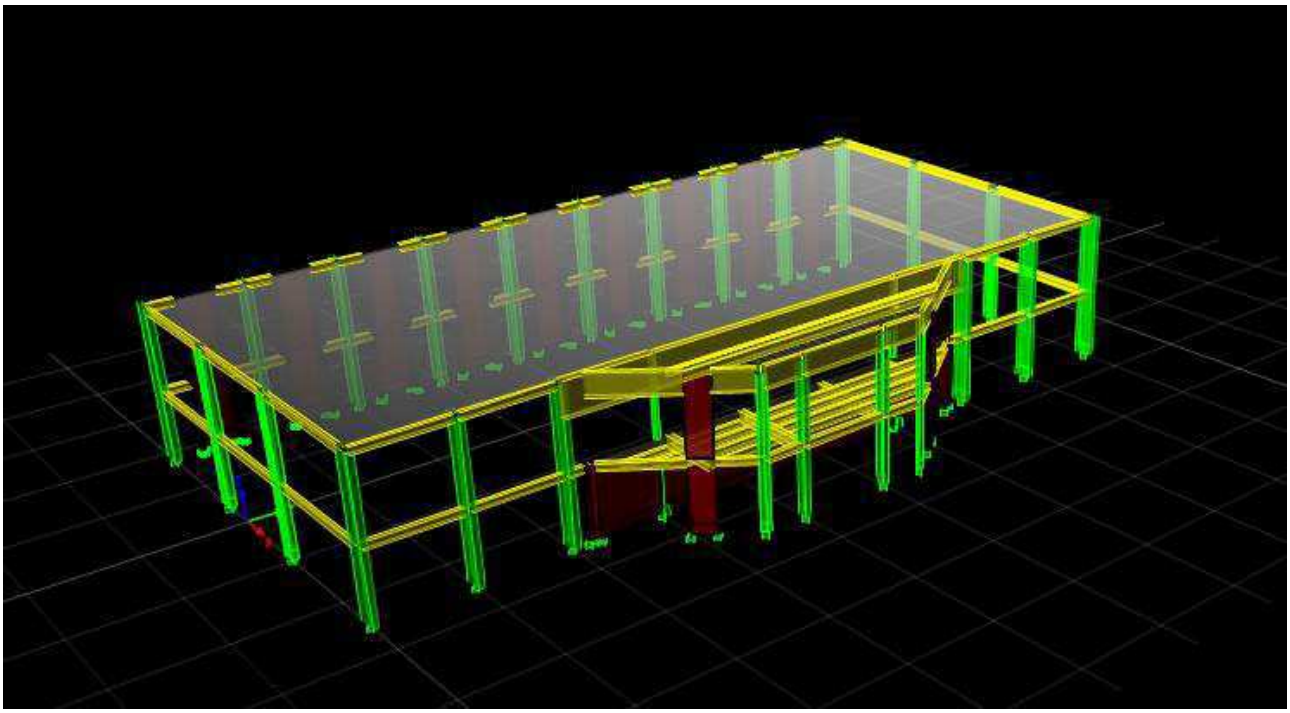


Figure 5-1 ETABS 3D Model for gymnasium part

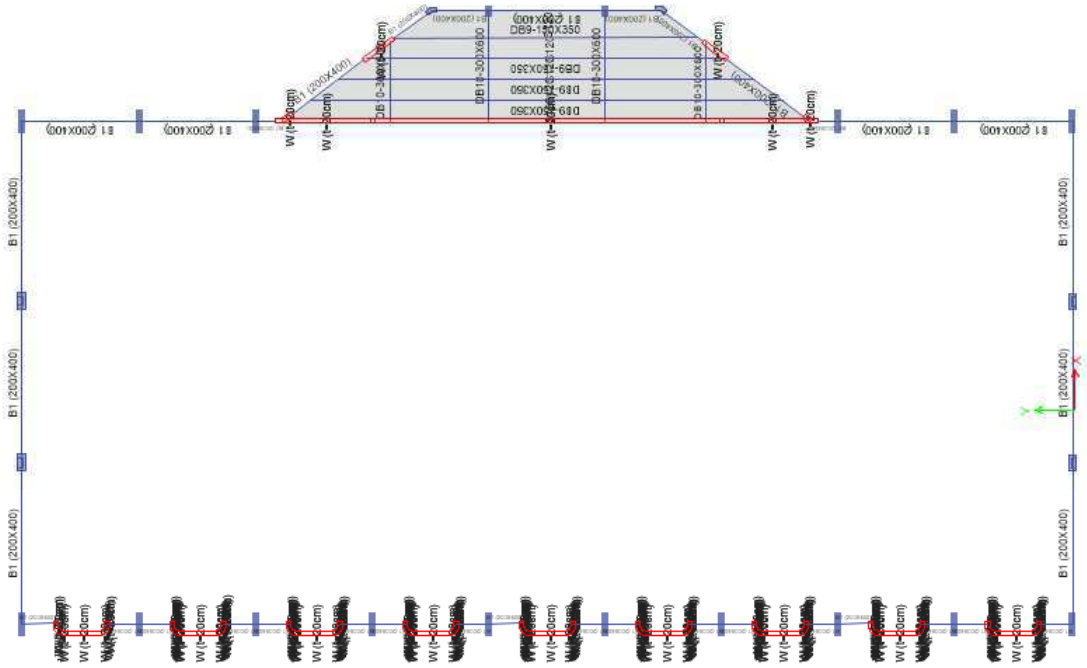


Figure 5-2 Walls, Slabs and Beams Section Assignment at ground Floor Level

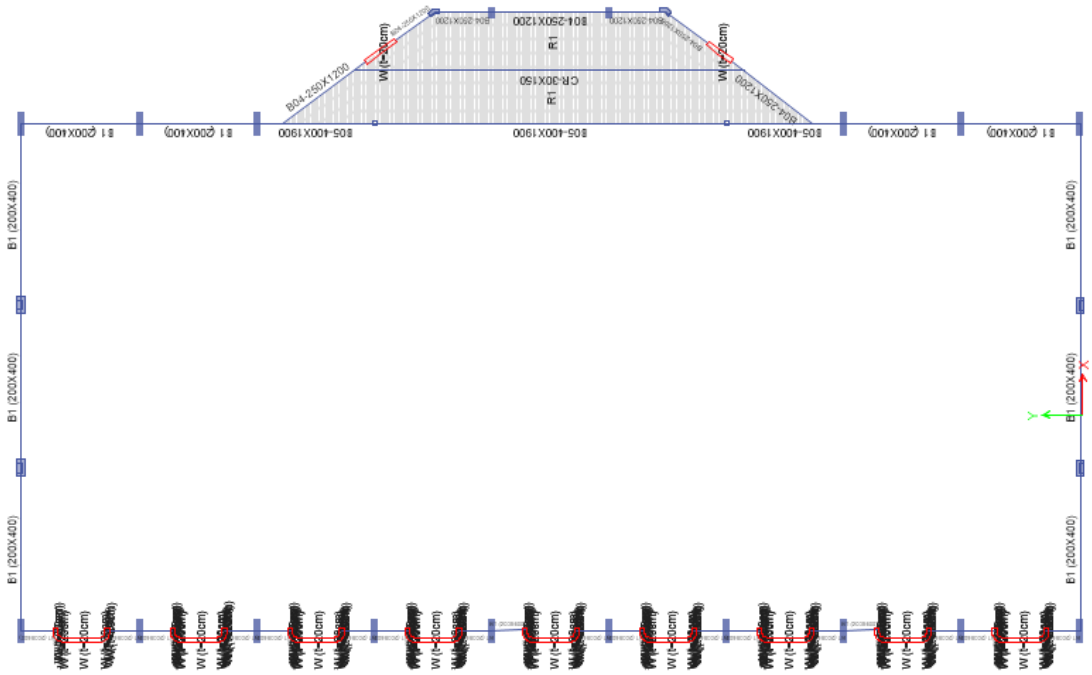


Figure 5-3 Walls, Slabs and Beams Section Assignment at Roof Floor Level

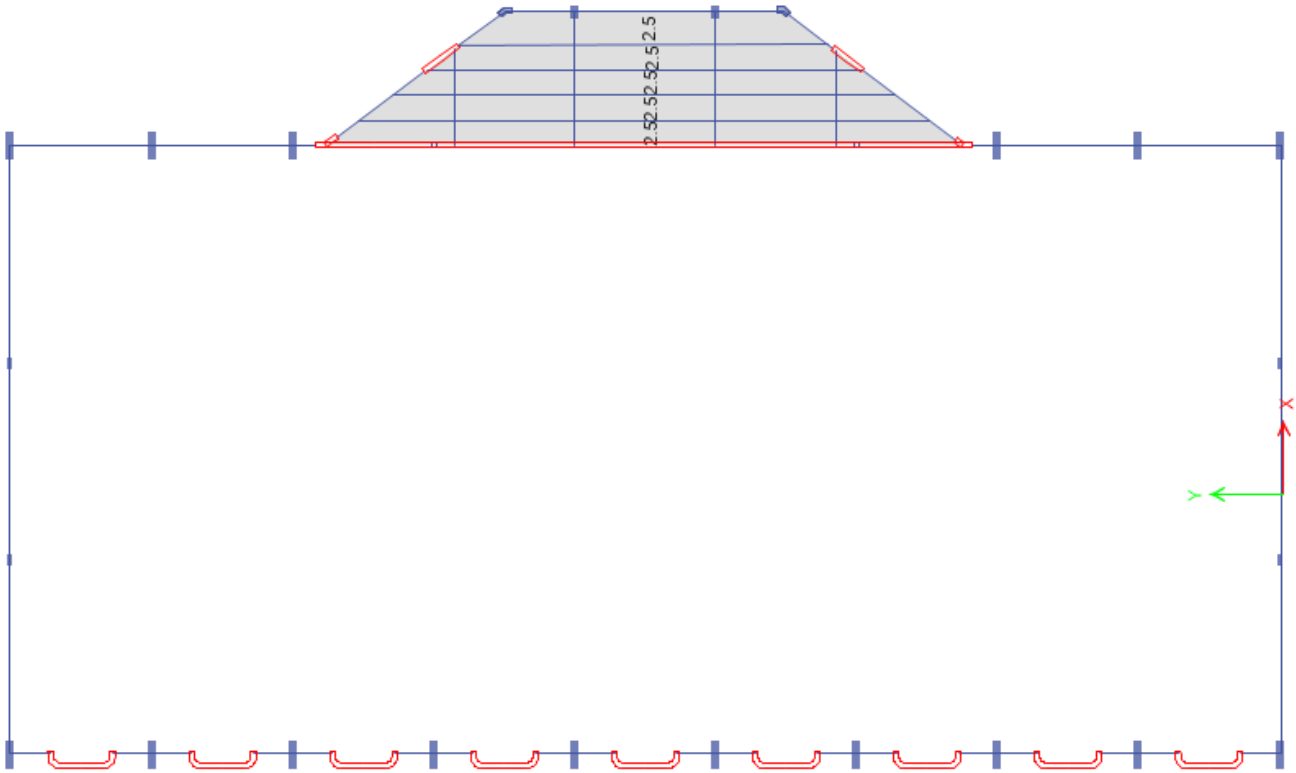


Figure 5-4 Super Imposed Dead Load at GROUND Floor Slab (SID)

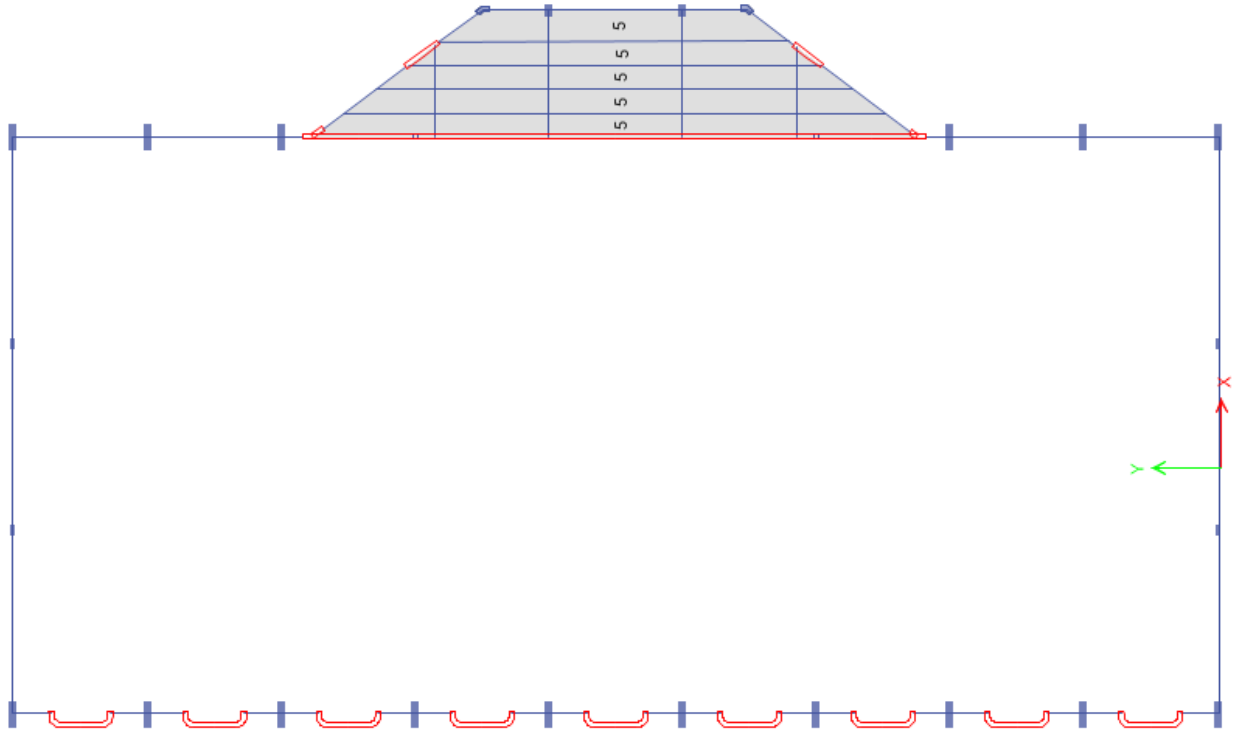


Figure 5-5 Live Load Dead Load at GROUND Floor Slab (LL)

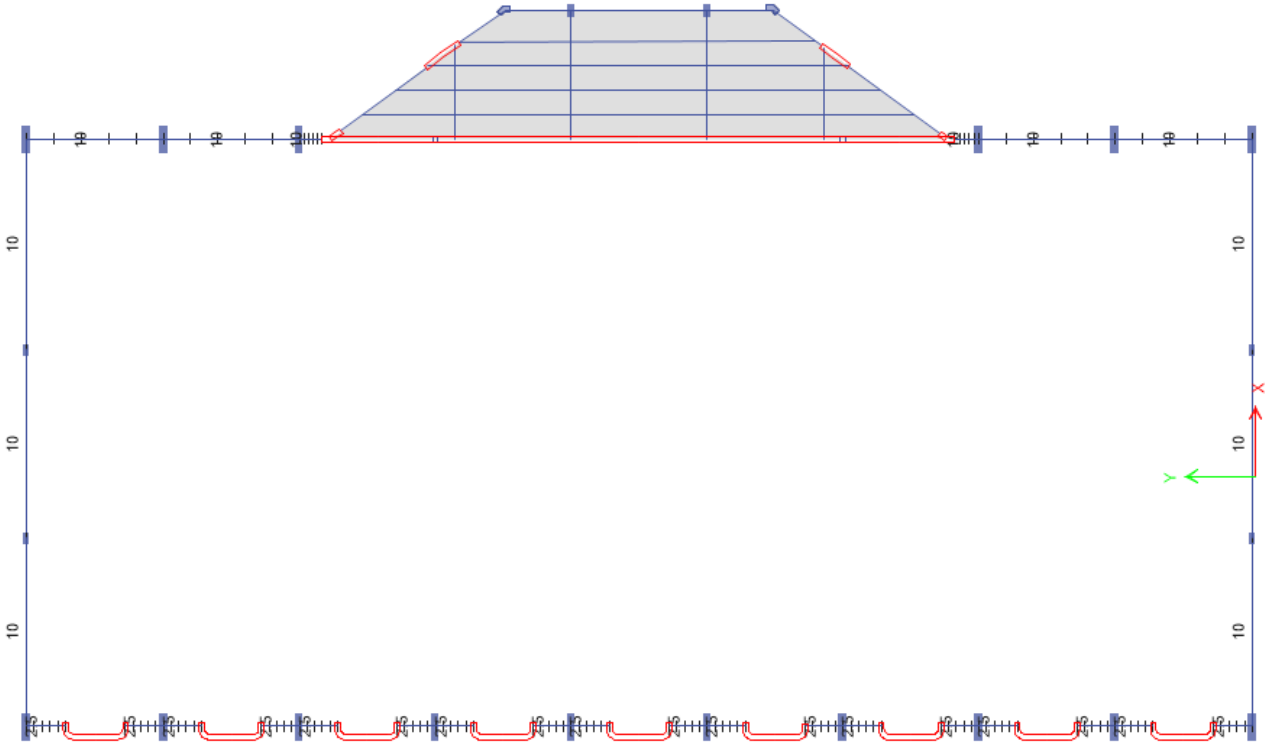


Figure 5-6 Blockworks Load at GROUND Floor Slab (Block)

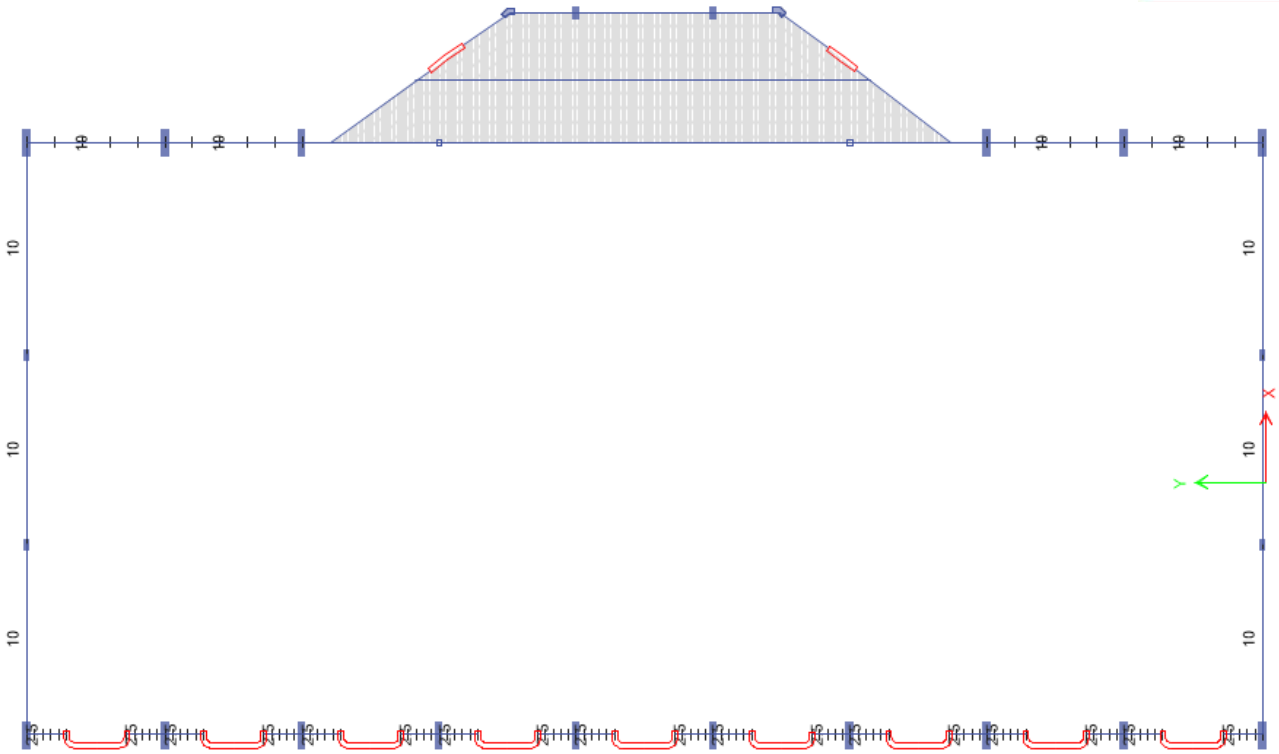


Figure 5-7 Blockworks Load at ROOF Floor Slab (Block)

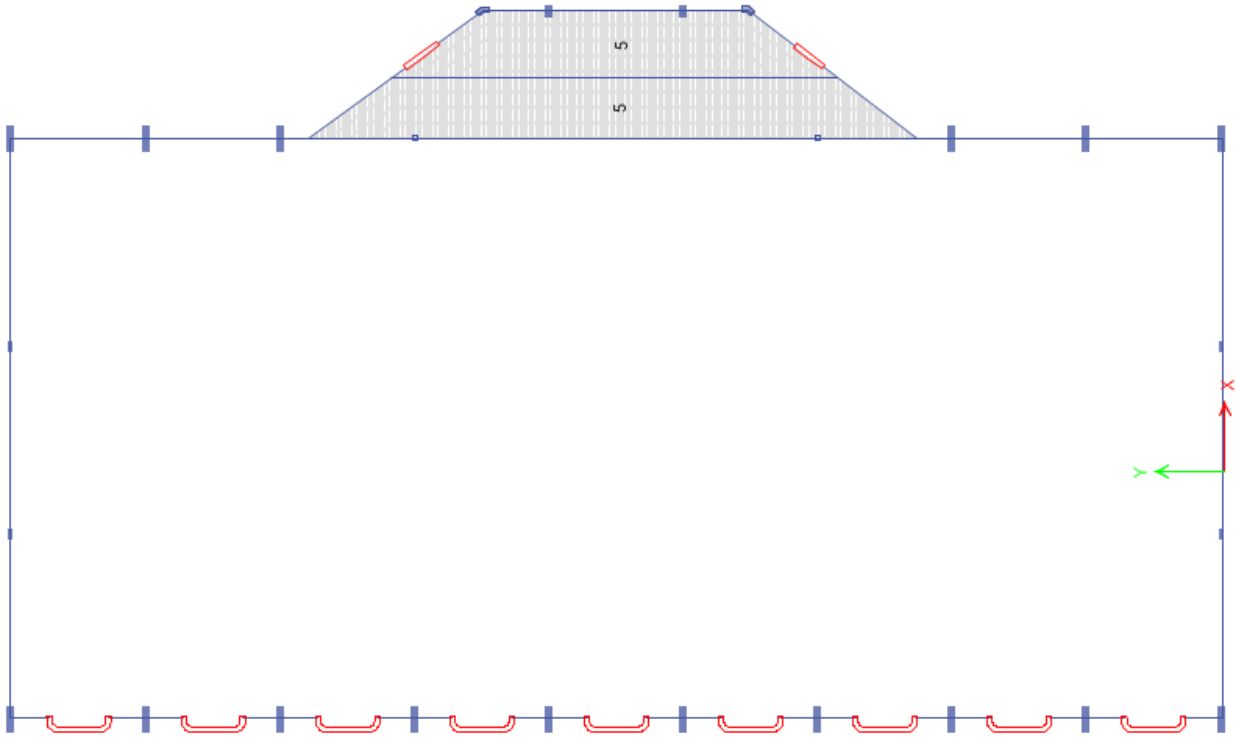


Figure 5-8 Super Imposed Load at Roof Floor Slab (SID)

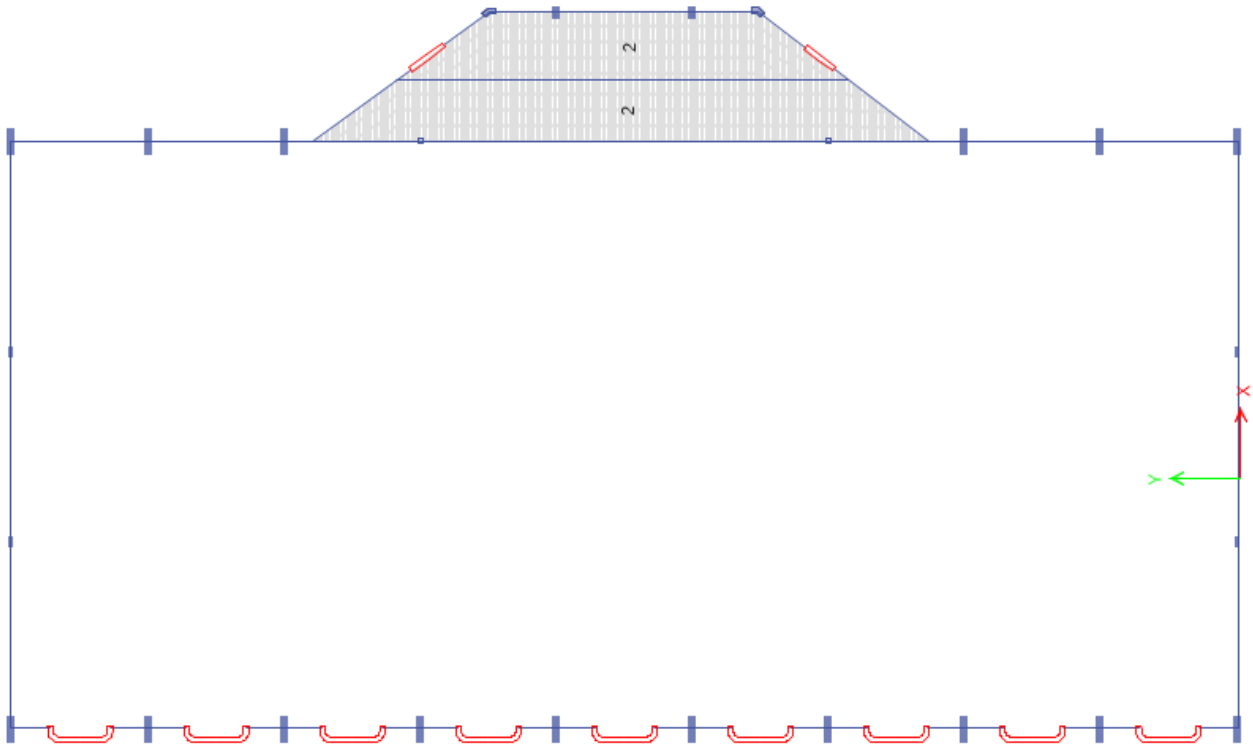


Figure 5-9 Live Load at Roof Floor Slab (LL Roof)

5.1.2 AUDITORIUM PART

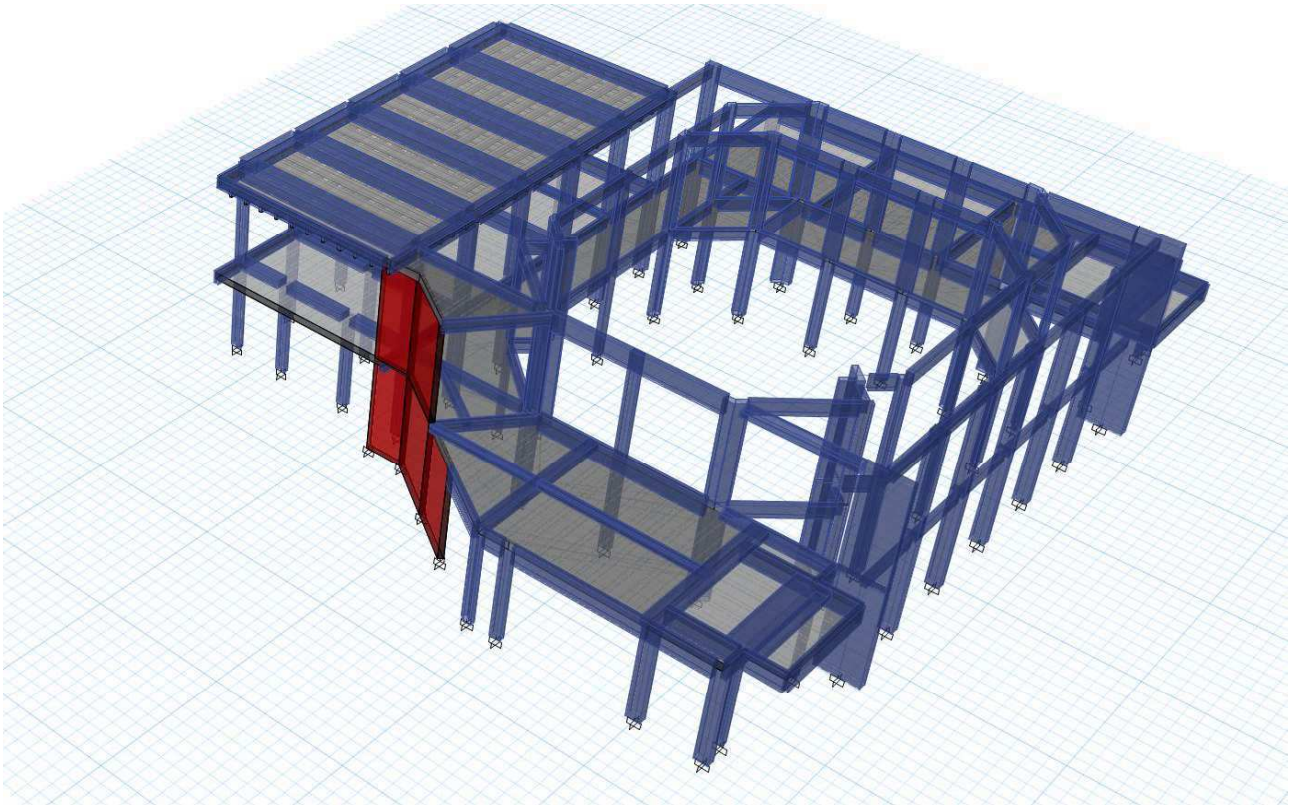


Figure 5-10 ETABS 3D Model for Auditorium part

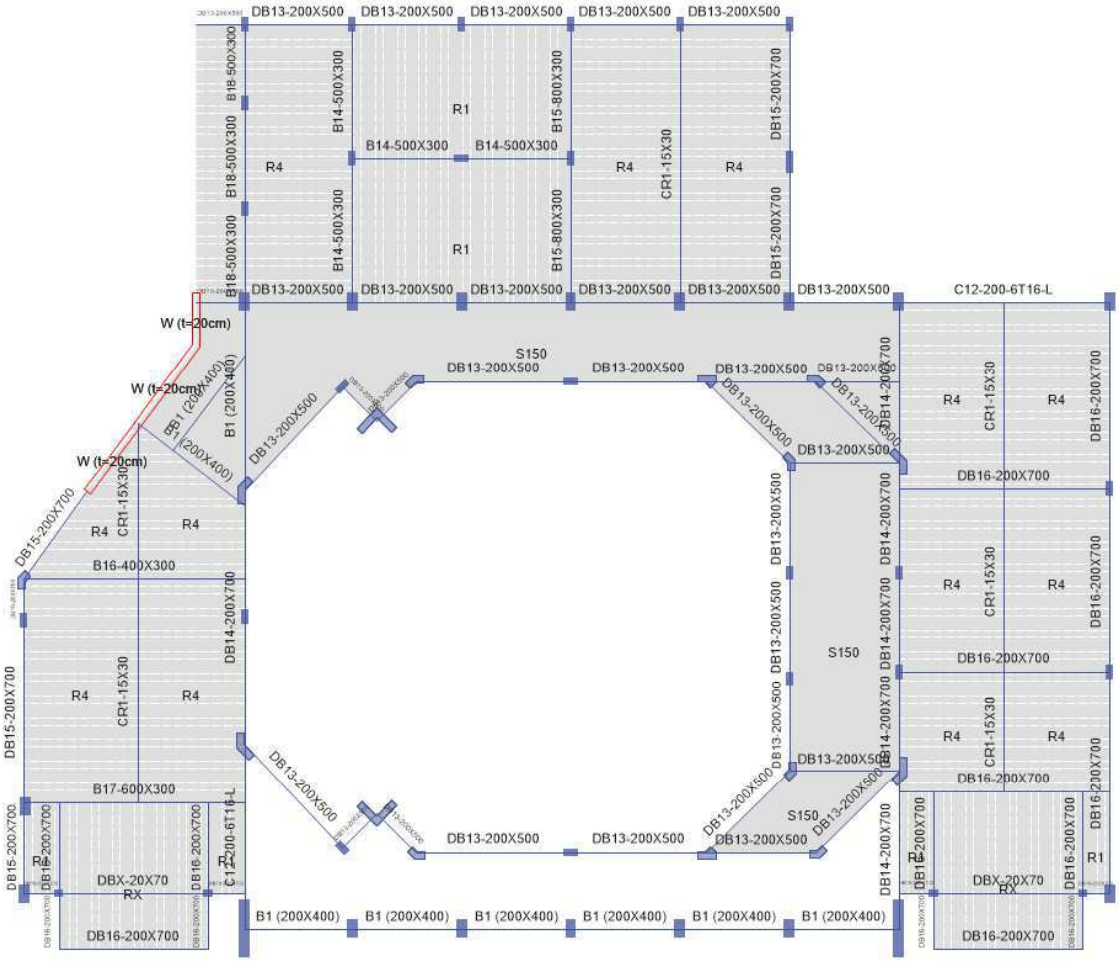


Figure 5-11 Walls, Slabs and Beams Section Assignment at ground Floor Level

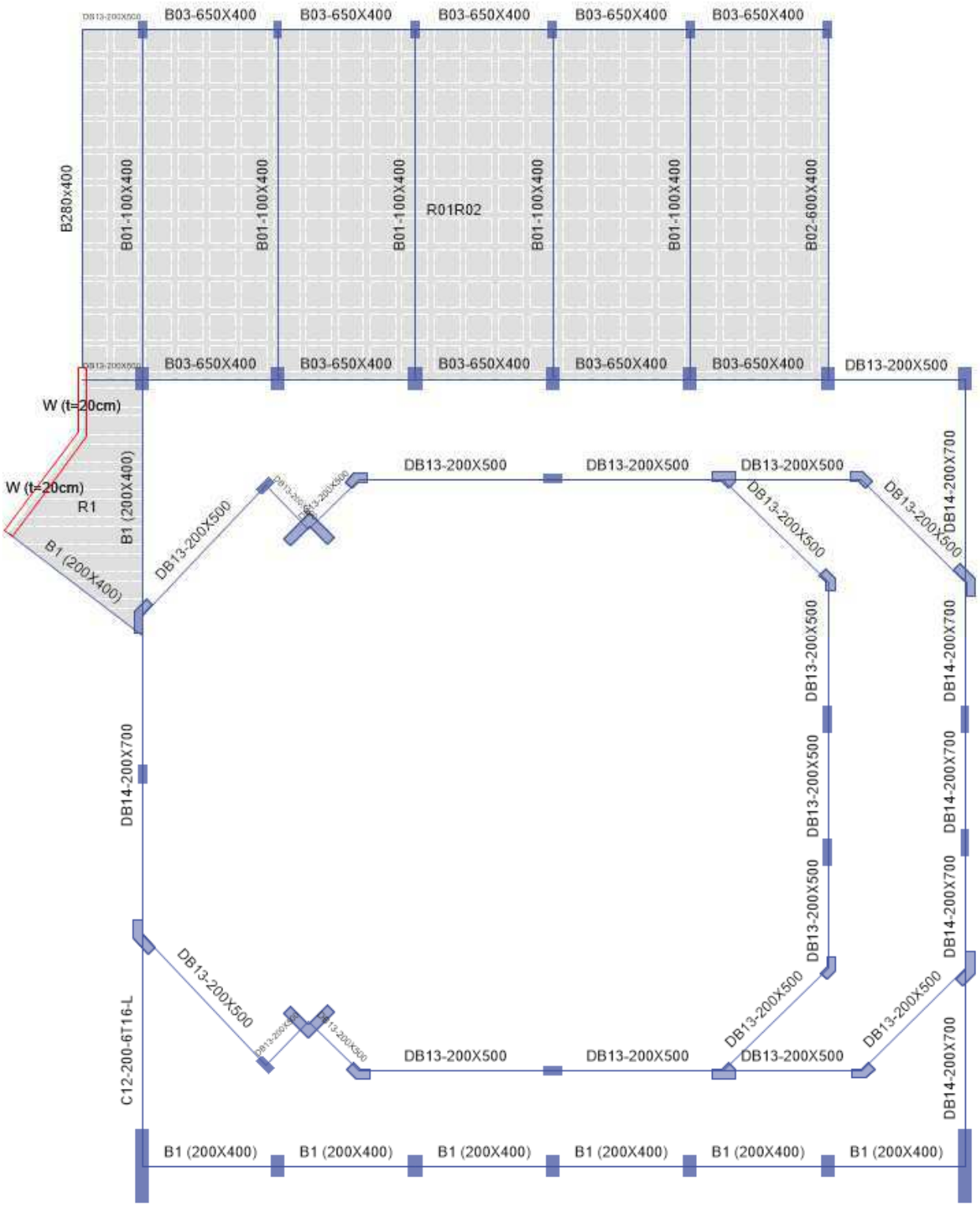


Figure 5-12 Walls, Slabs and Beams Section Assignment at Roof Floor Level

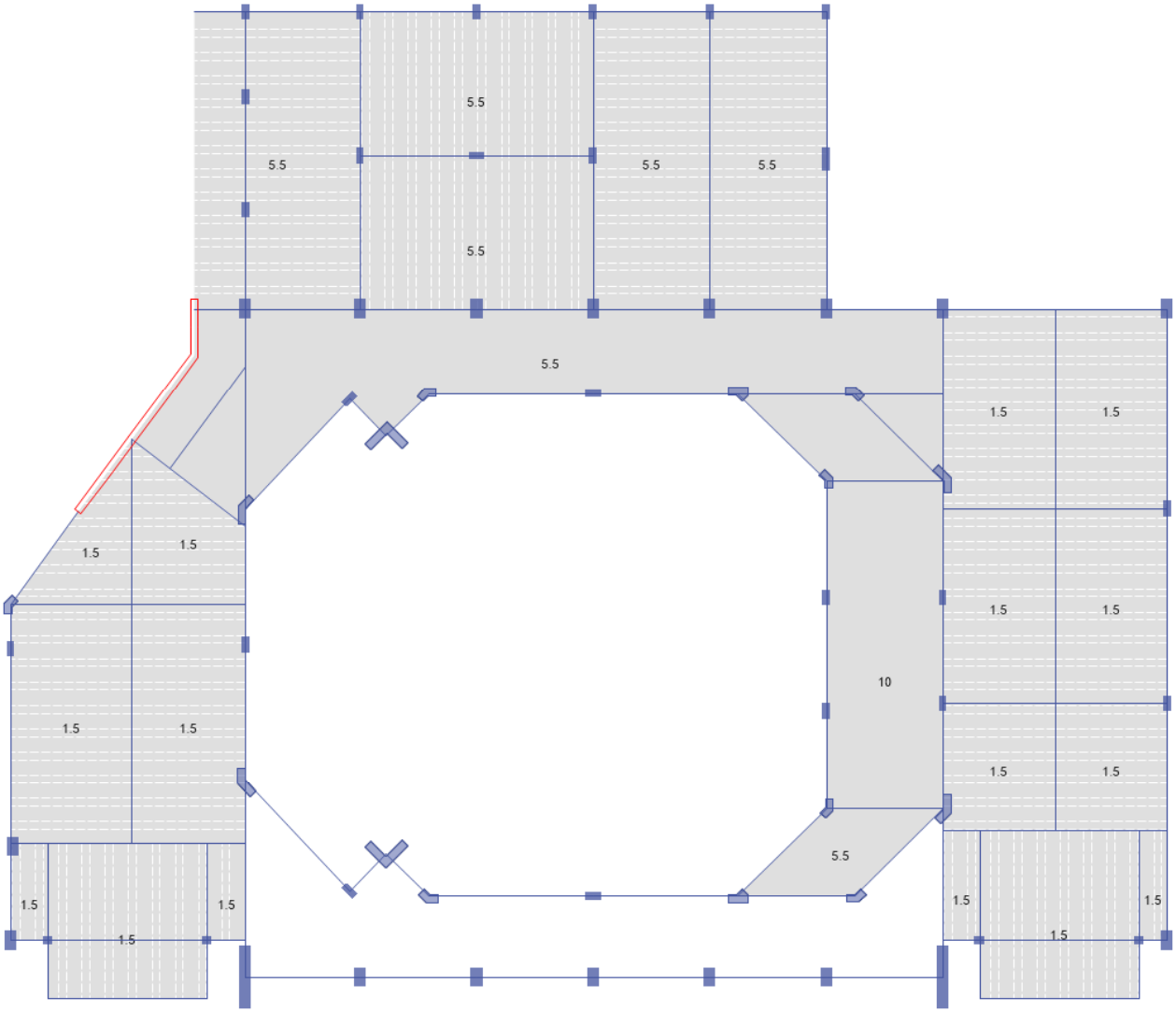


Figure 5-13 Super Imposed Dead Load at GROUND Floor Slab (SID)

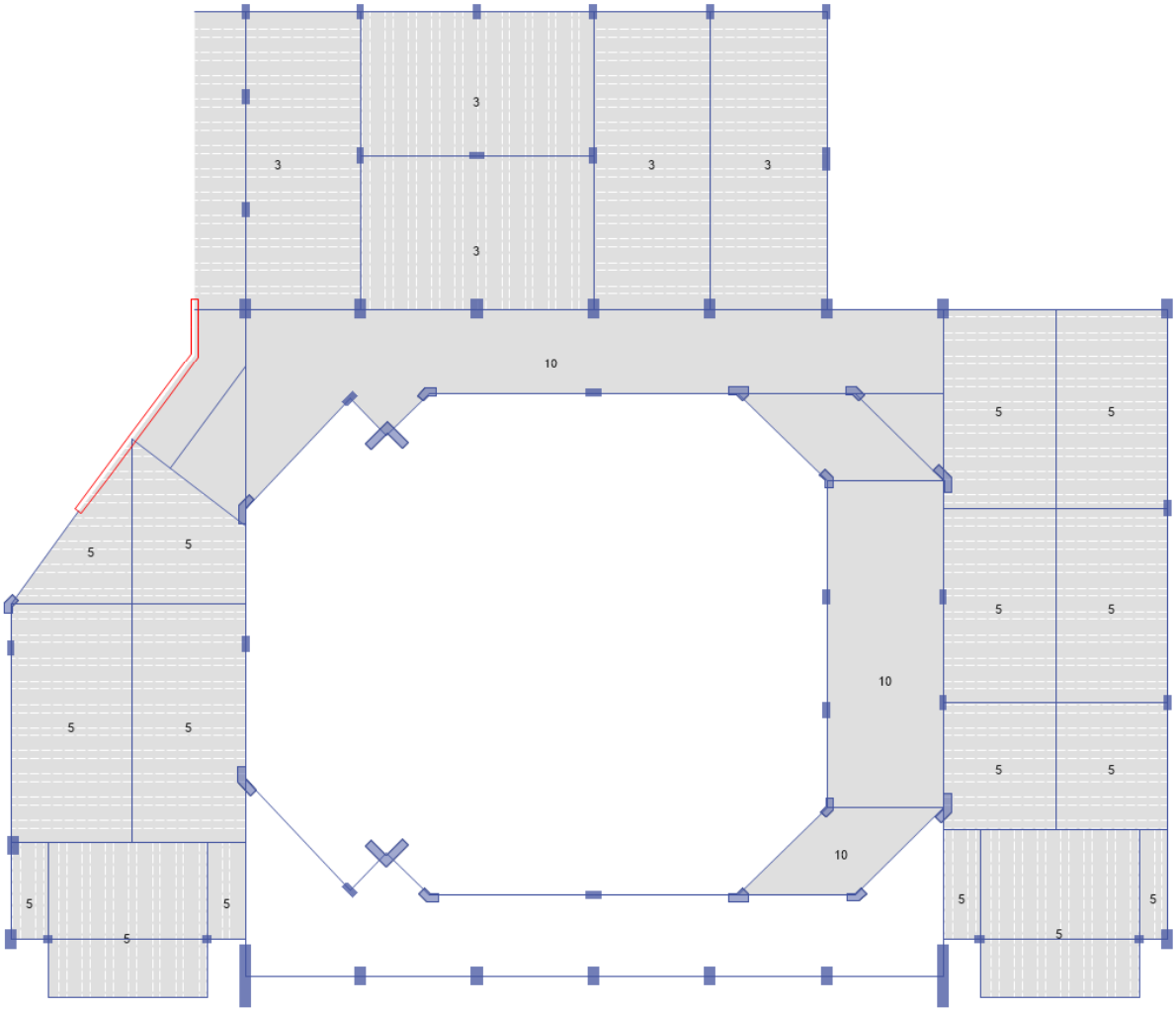


Figure 5-14 Live Load Dead Load at GROUND Floor Slab (LL)

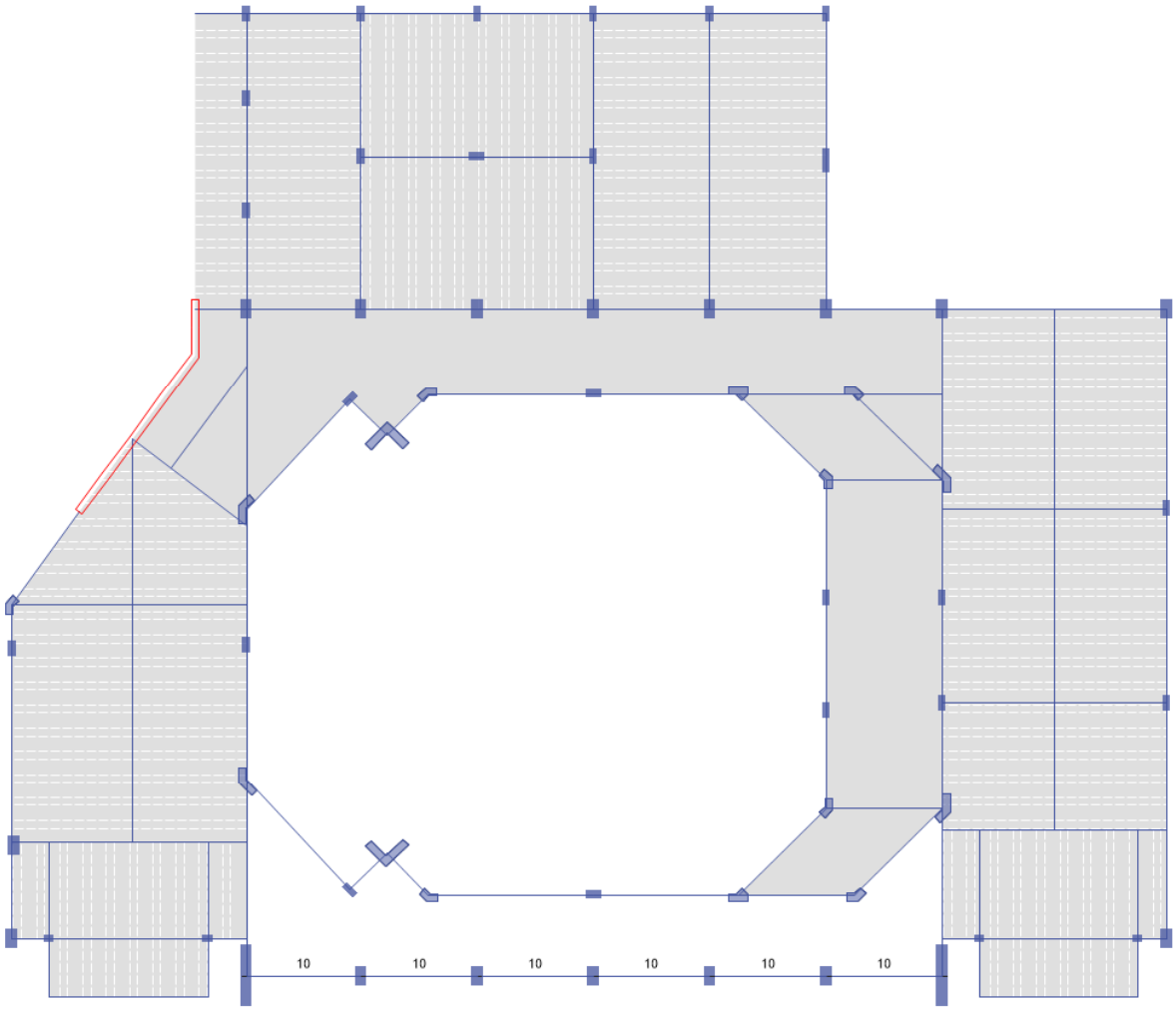


Figure 5-15 Blockworks Load at GROUND Floor Slab (Block)

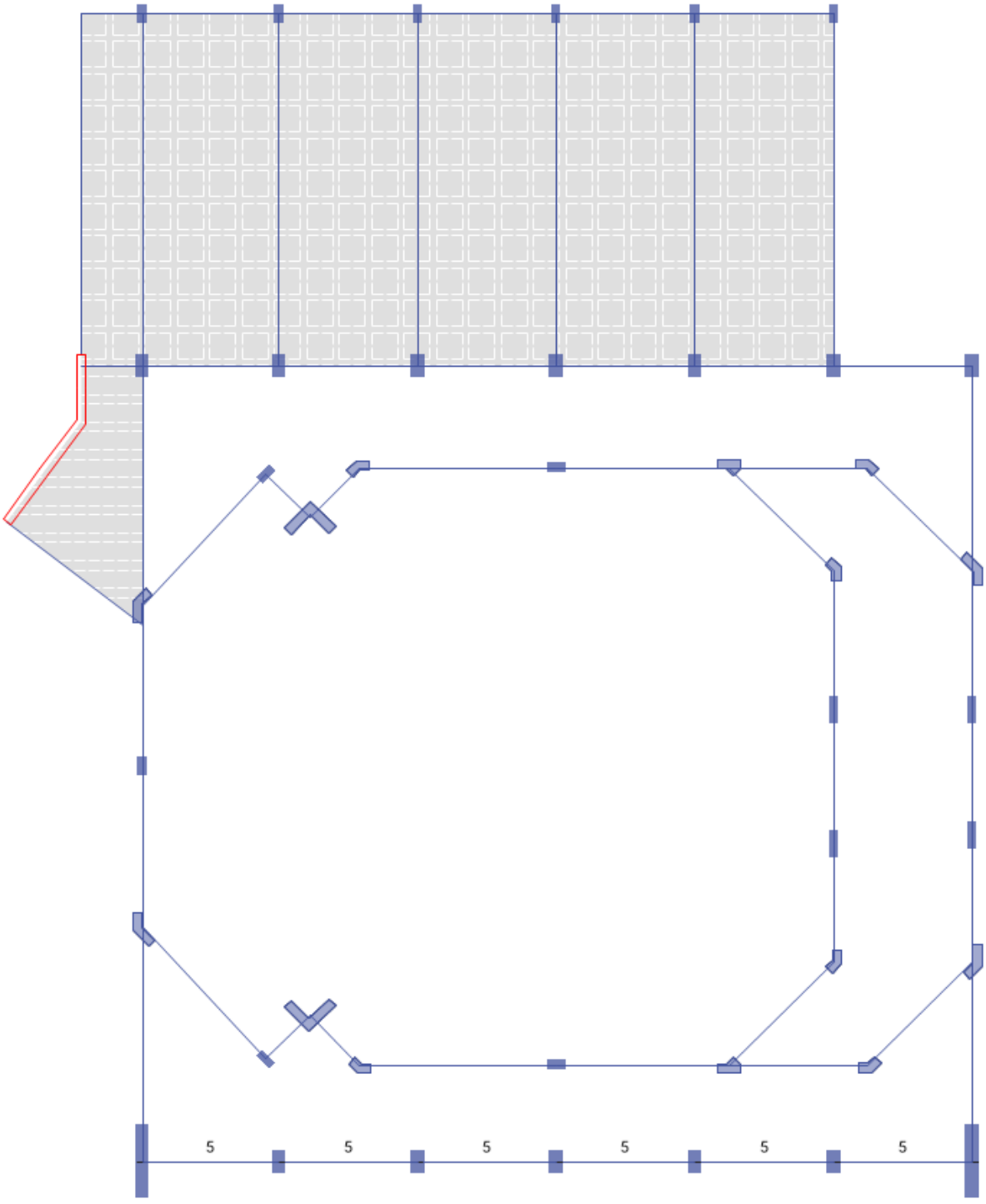


Figure 5-16 Blockworks Load at ROOF Floor Slab (Block)

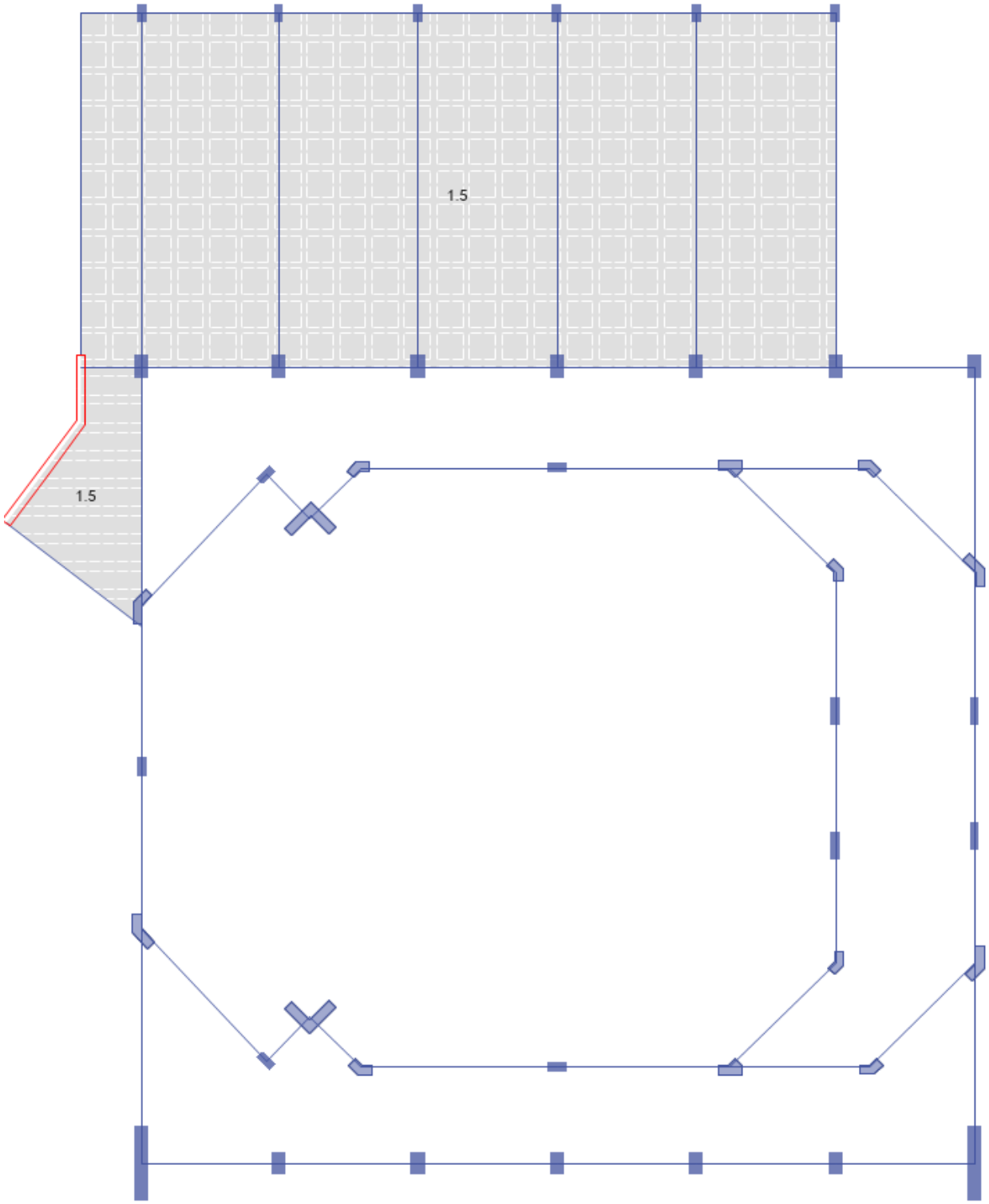


Figure 5-17 Super Imposed Load at Roof Floor Slab (SID)

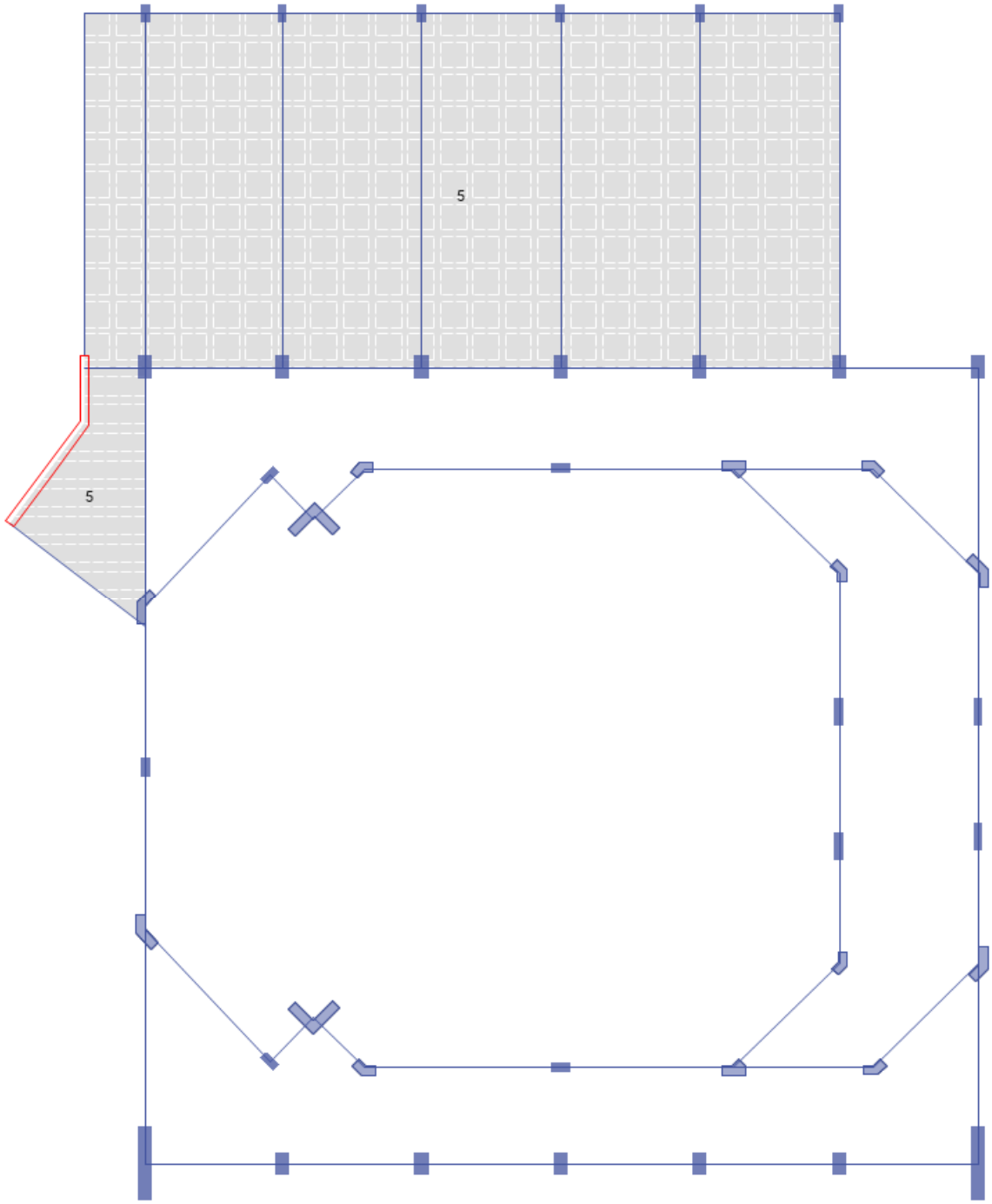


Figure 5-18 Live Load at Roof Floor Slab (LL Roof)

5.1.3 SWIMMING PART

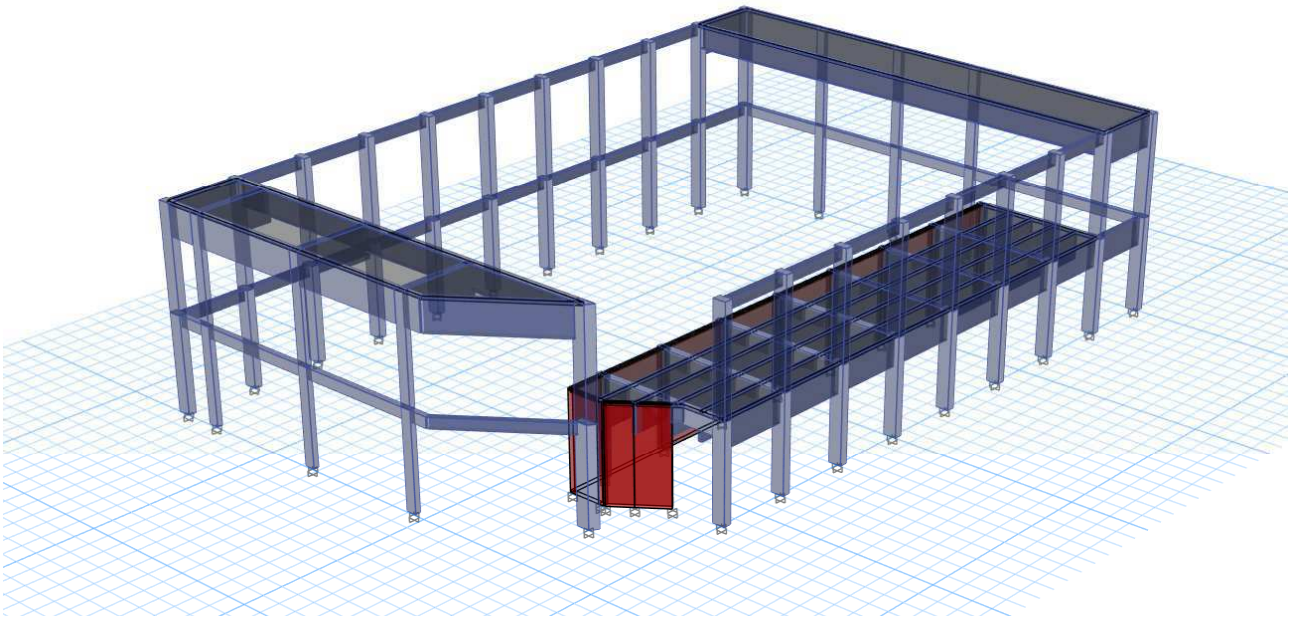


Figure 5-19 ETABS 3D Model for swimming part

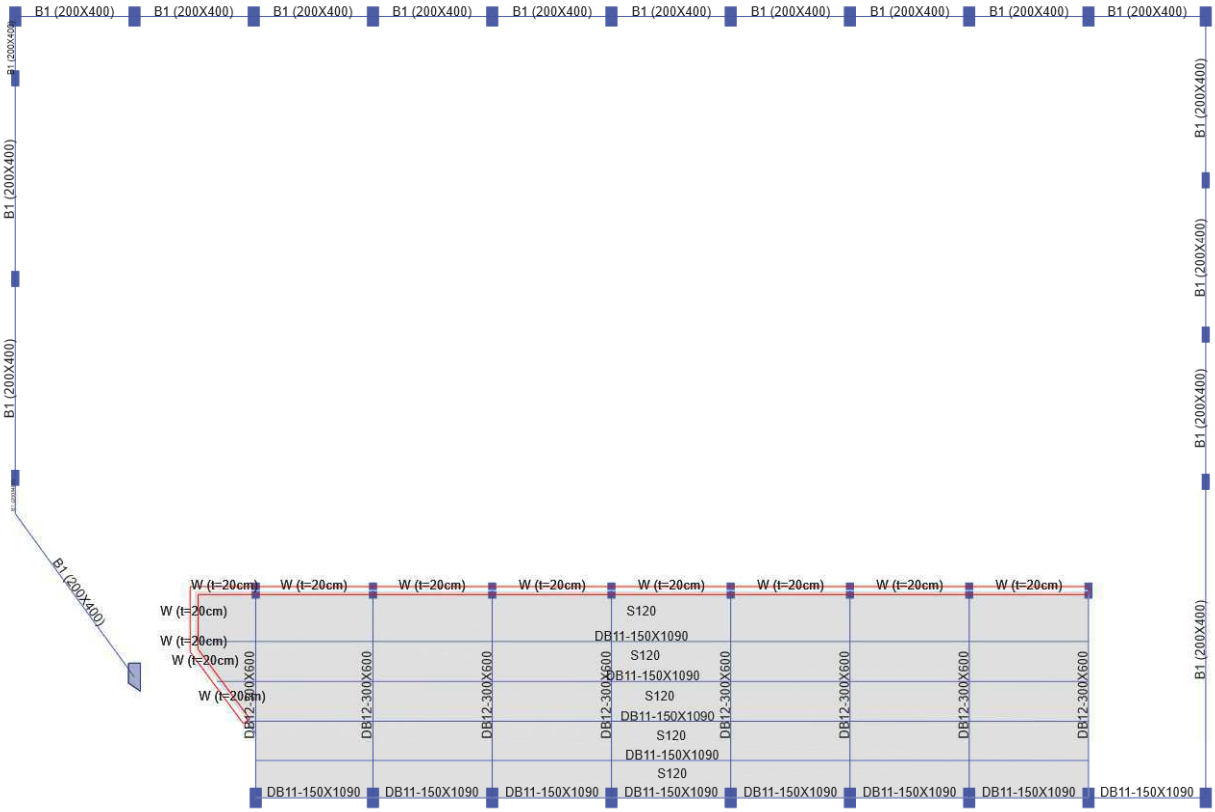


Figure 5-20 Walls, Slabs and Beams Section Assignment at ground Floor Level

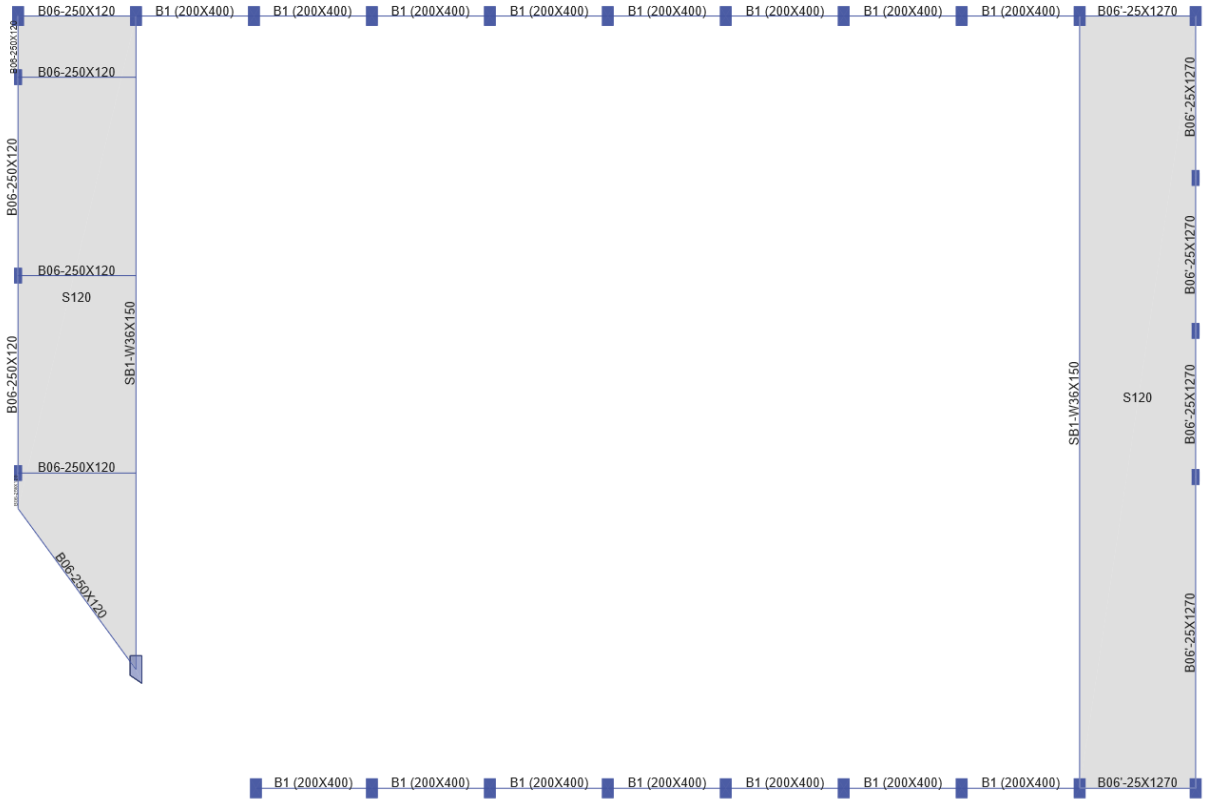


Figure 5-21 Walls, Slabs and Beams Section Assignment at Roof Floor Level

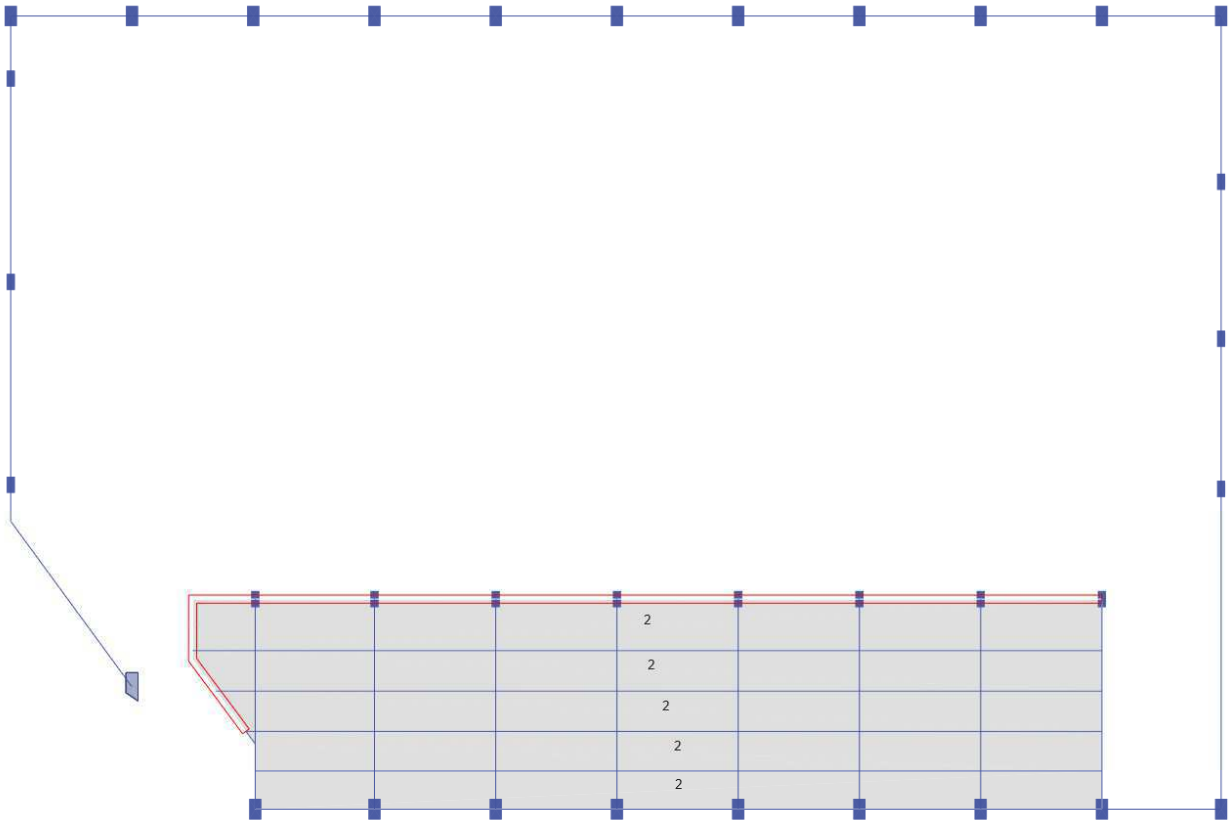


Figure 5-22 Super Imposed Dead Load at GROUND Floor Slab (SID)

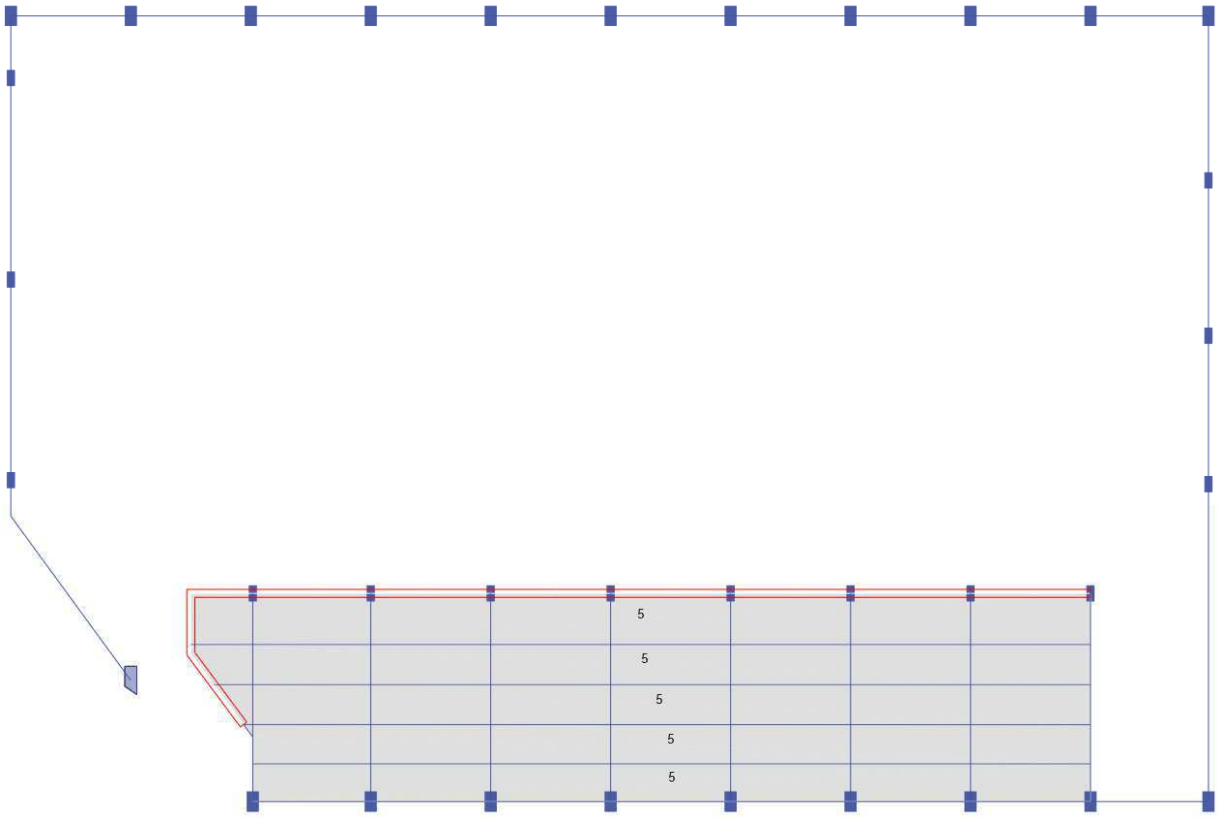


Figure 5-23 Live Load Dead Load at GROUND Floor Slab (LL)

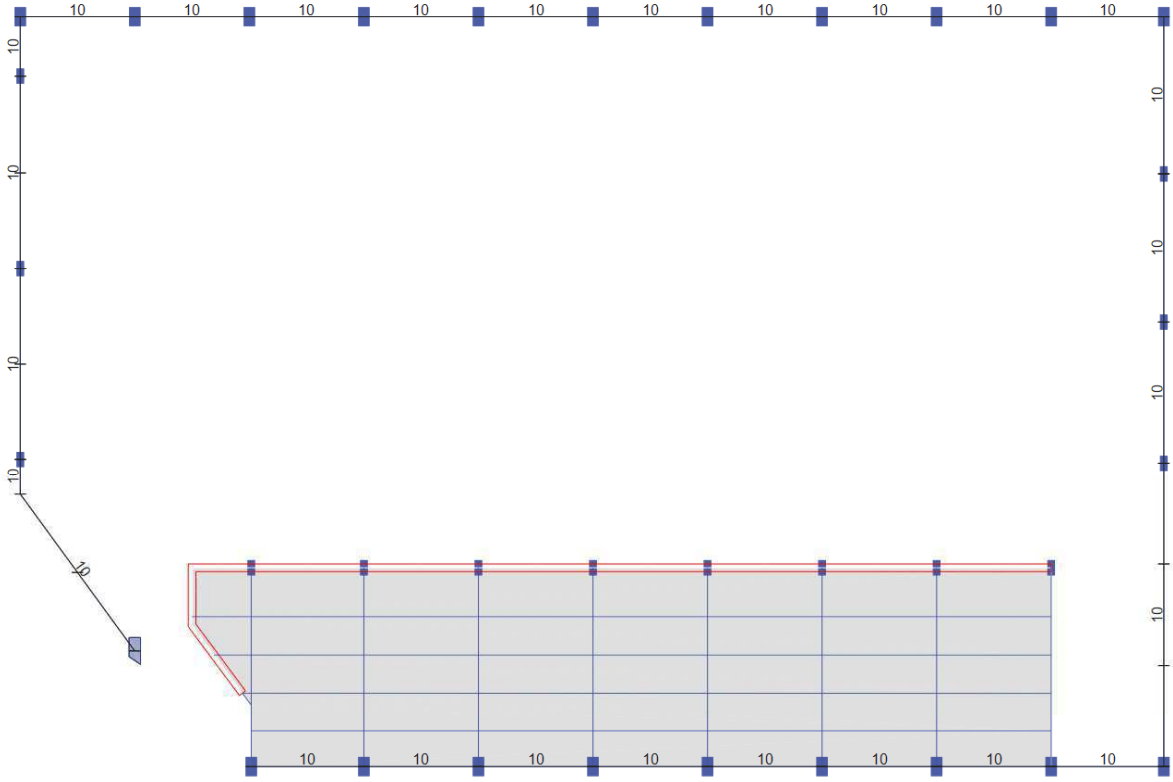


Figure 5-24 Blockworks Load at GROUND Floor Slab (Block)

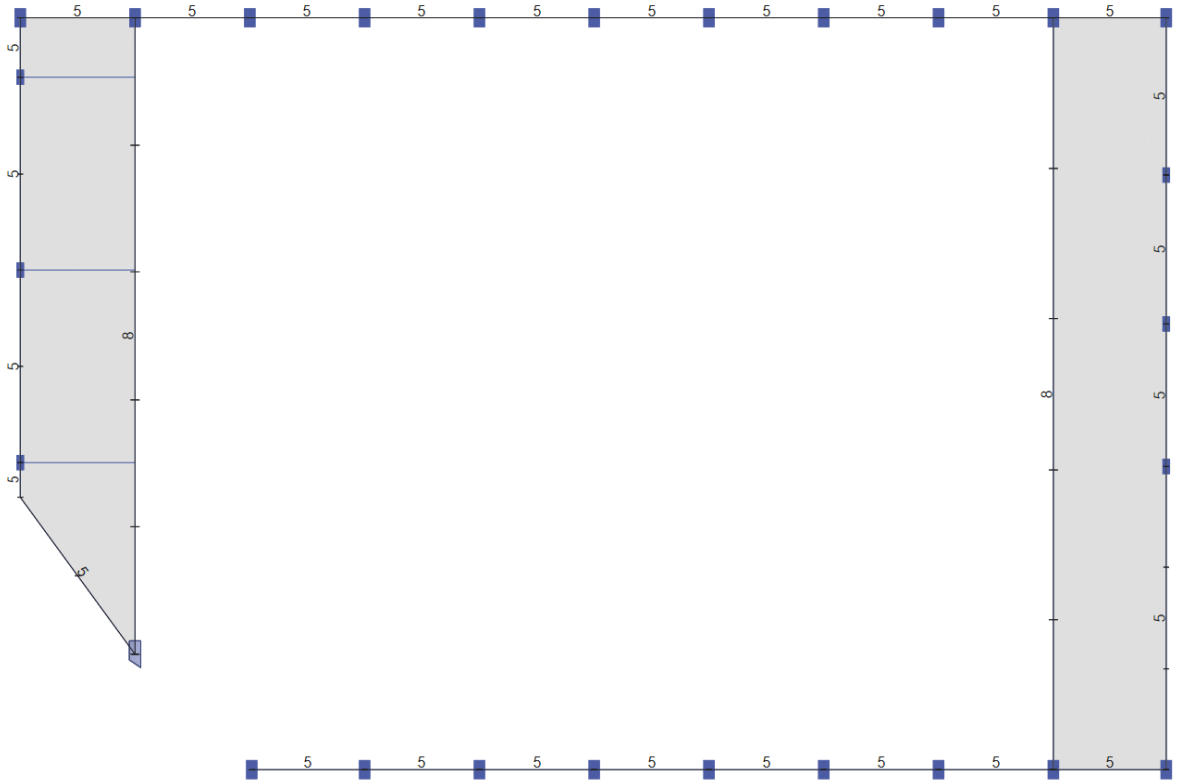


Figure 5-25 Blockworks Load at ROOF Floor Slab (Block)

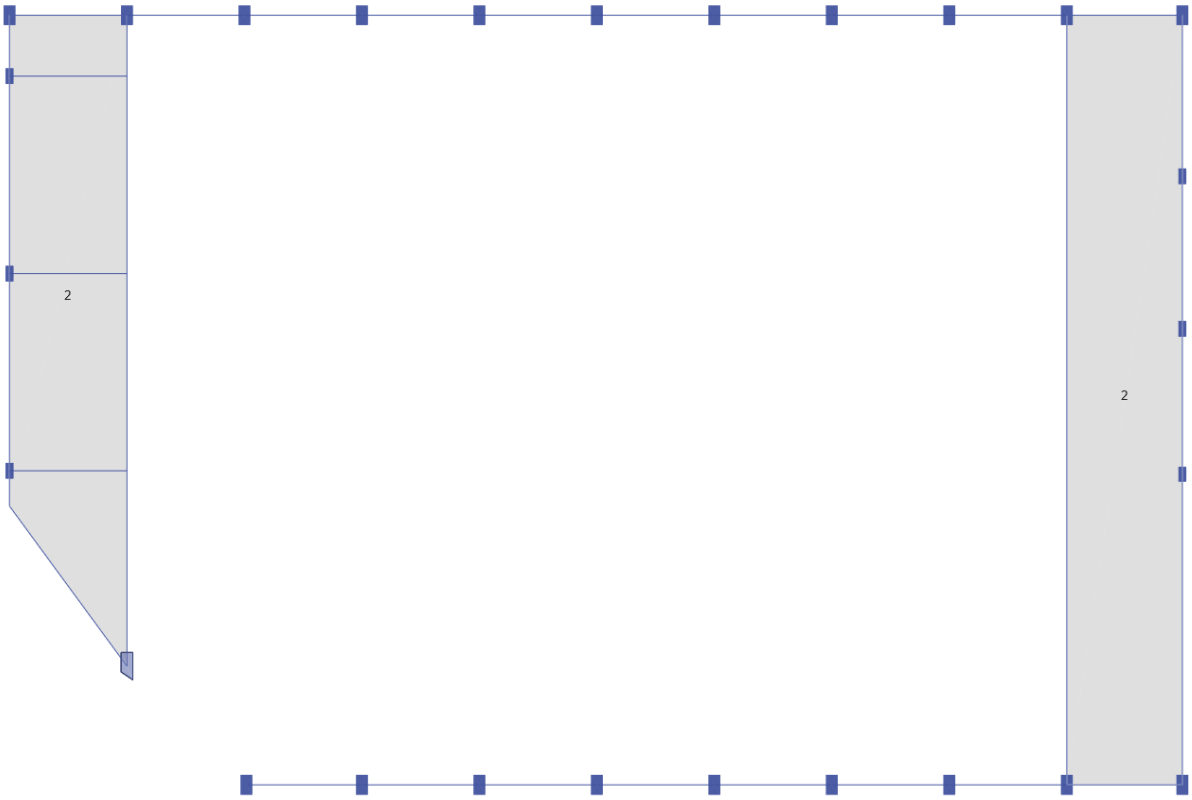


Figure 5-26 Super Imposed Load at Roof Floor Slab (SID)

Figure 5-27 Live Load at Roof Floor Slab (LL Roof)

5.2 SAFE Model

The slab and beam analysis and design shall be performed using SAFE software. Ground Floor, Typical Floor and Roof floor in ETABS model are exported to SAFE model to check the design of slab and beams.

5.2.1 GYMNASIUM PART

I. Ground floor

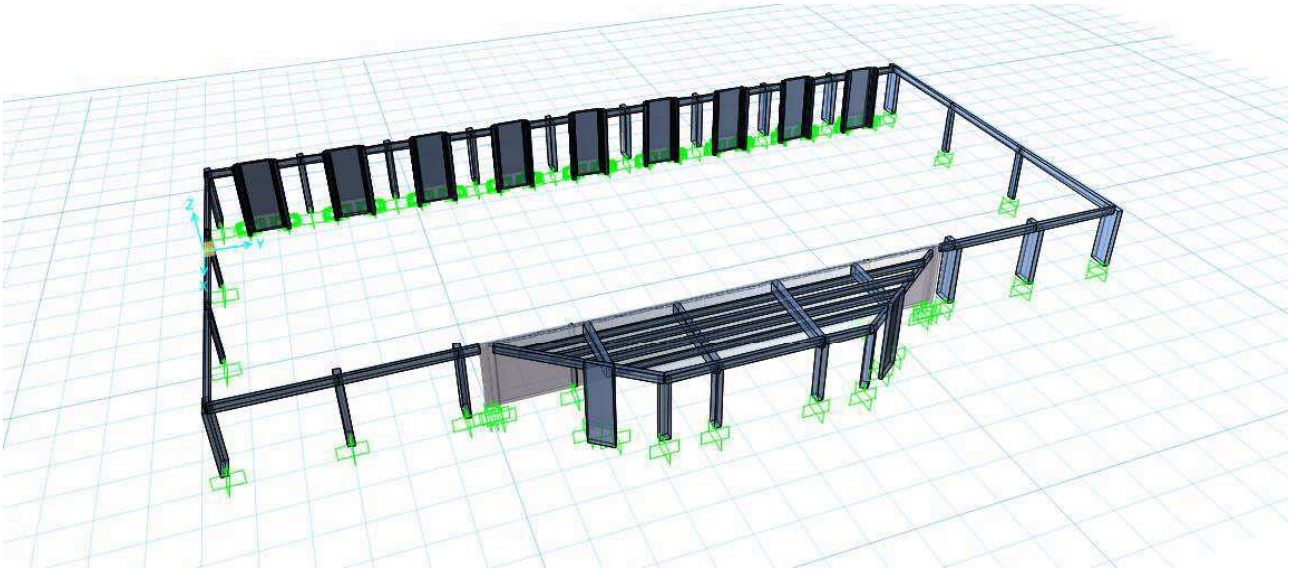


Figure 5-28 3D View at GROUND Floor

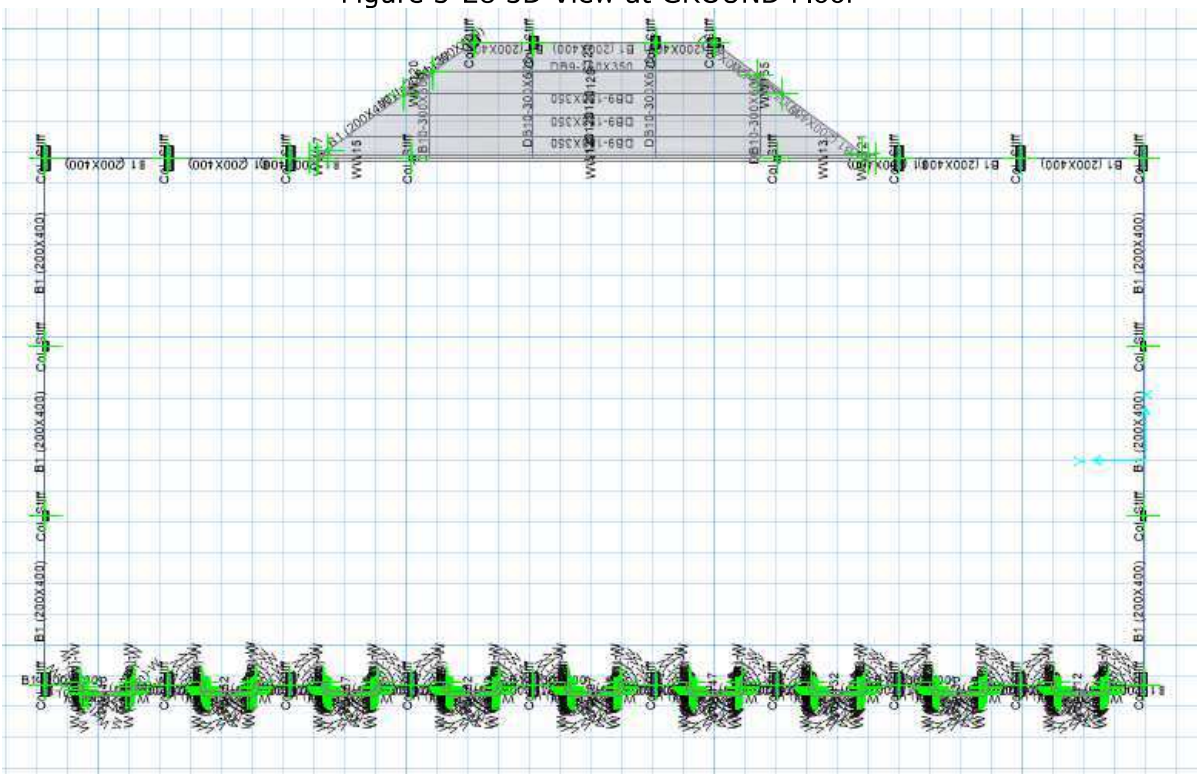


Figure 5-29 Section Assignment at GROUND Floor

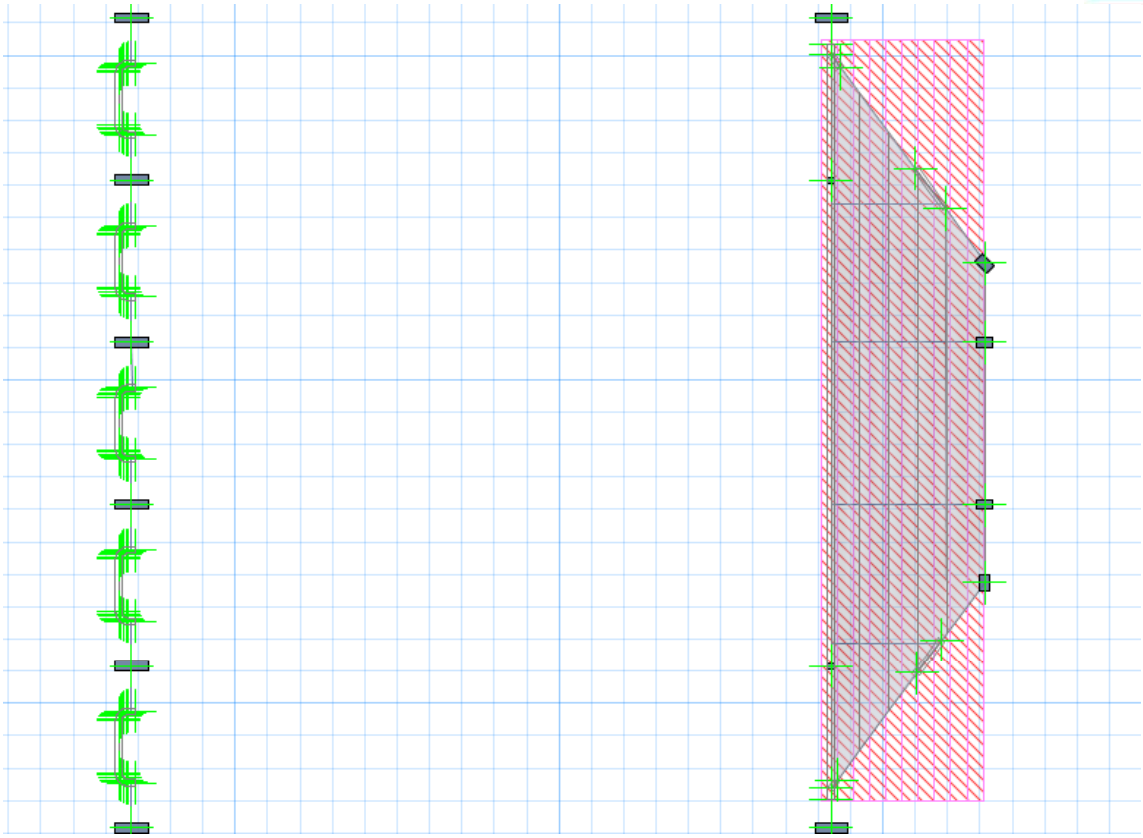


Figure 5-30 Design Strip Layer A at GROUND Floor

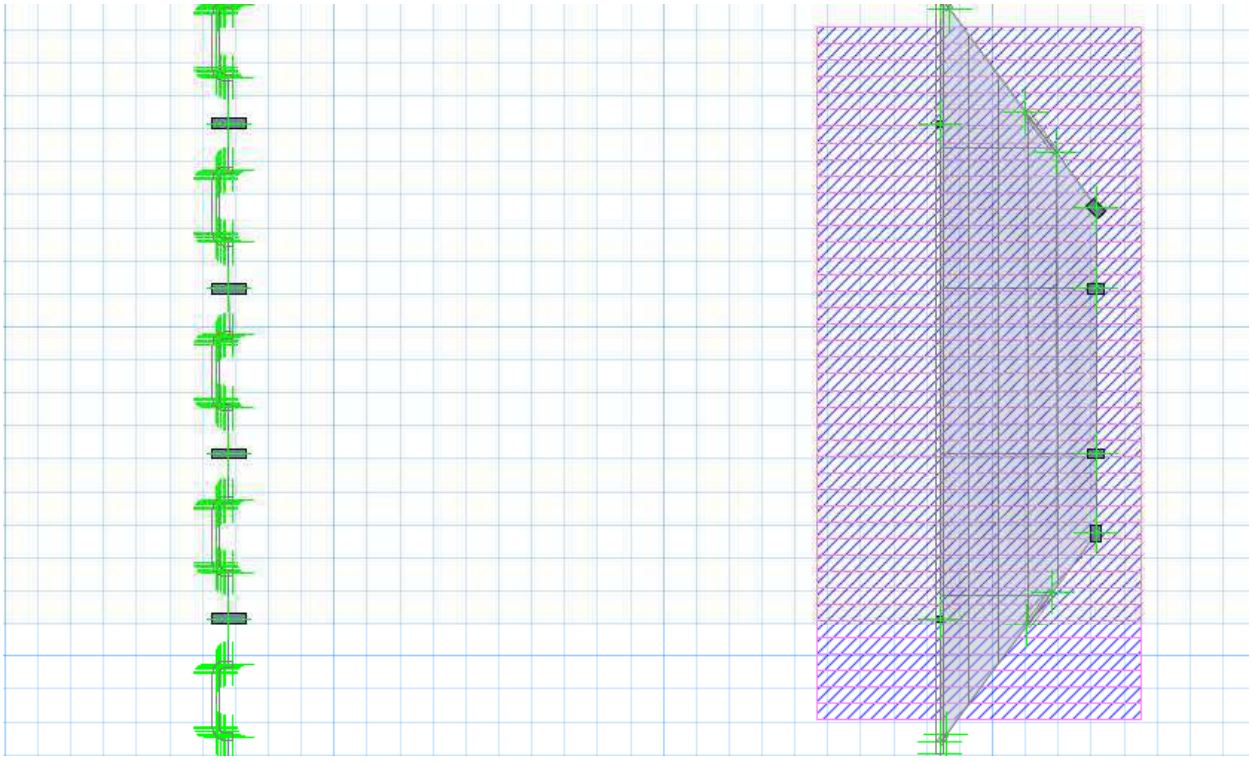


Figure 5-31 Design Strip Layer B at GROUND Floor

I. Roof Floor

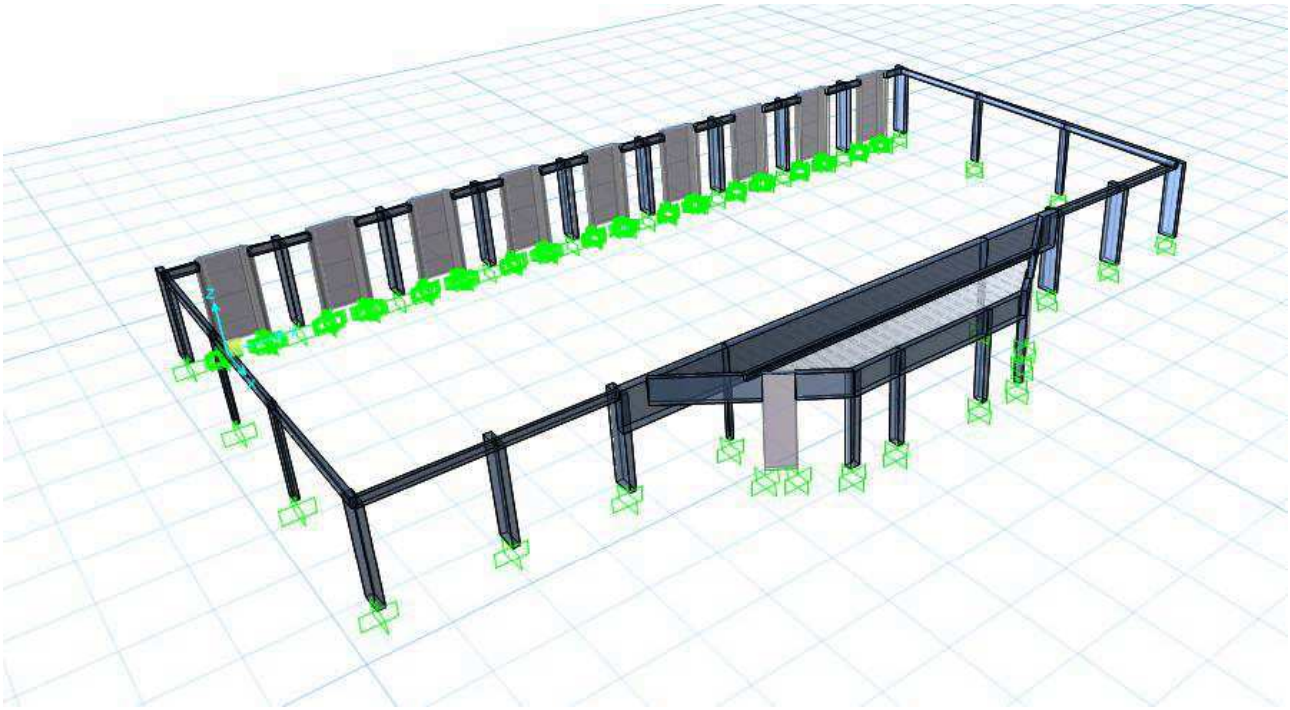


Figure 5-32 3D View at Roof Floor

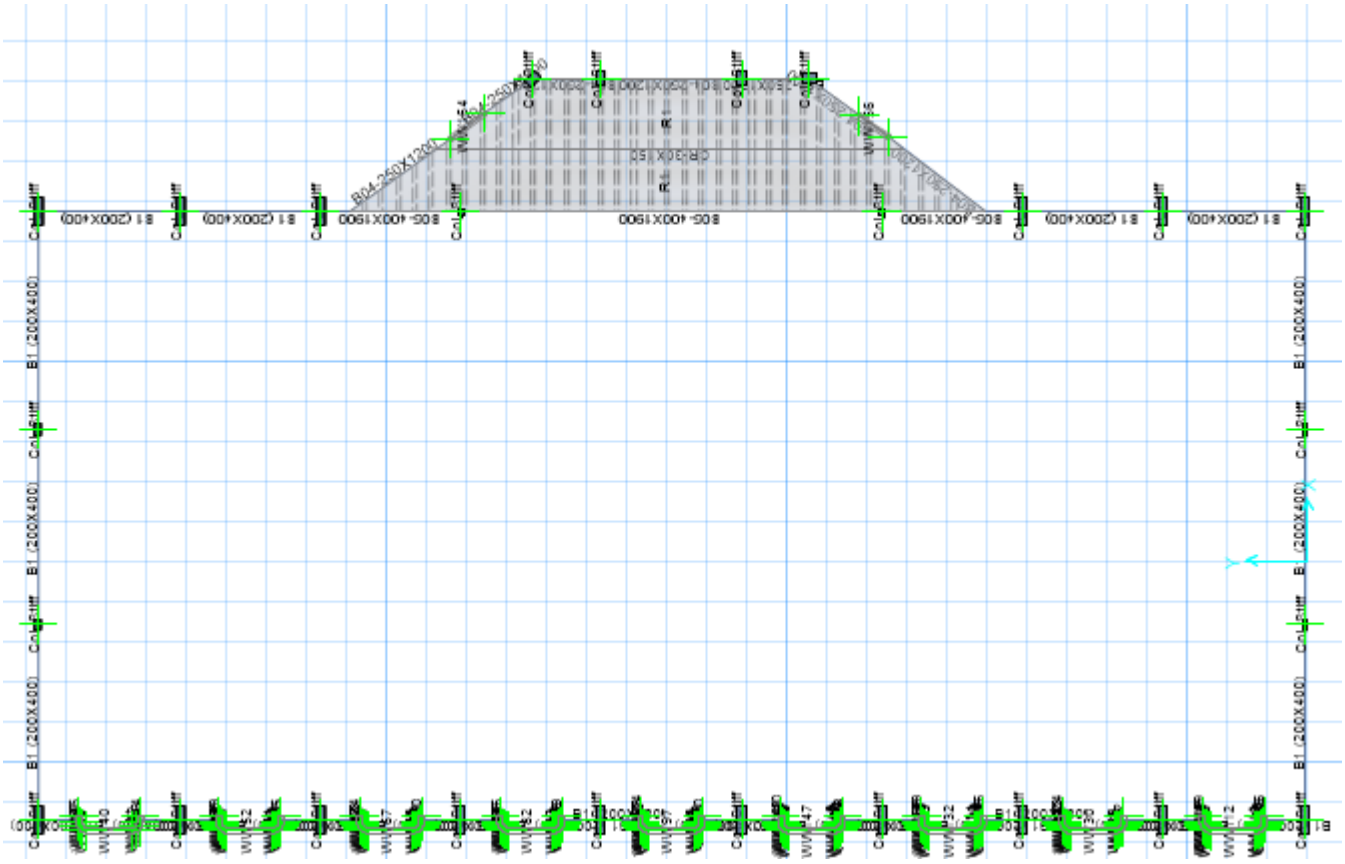


Figure 5-33 Section Assignment Roof Floor

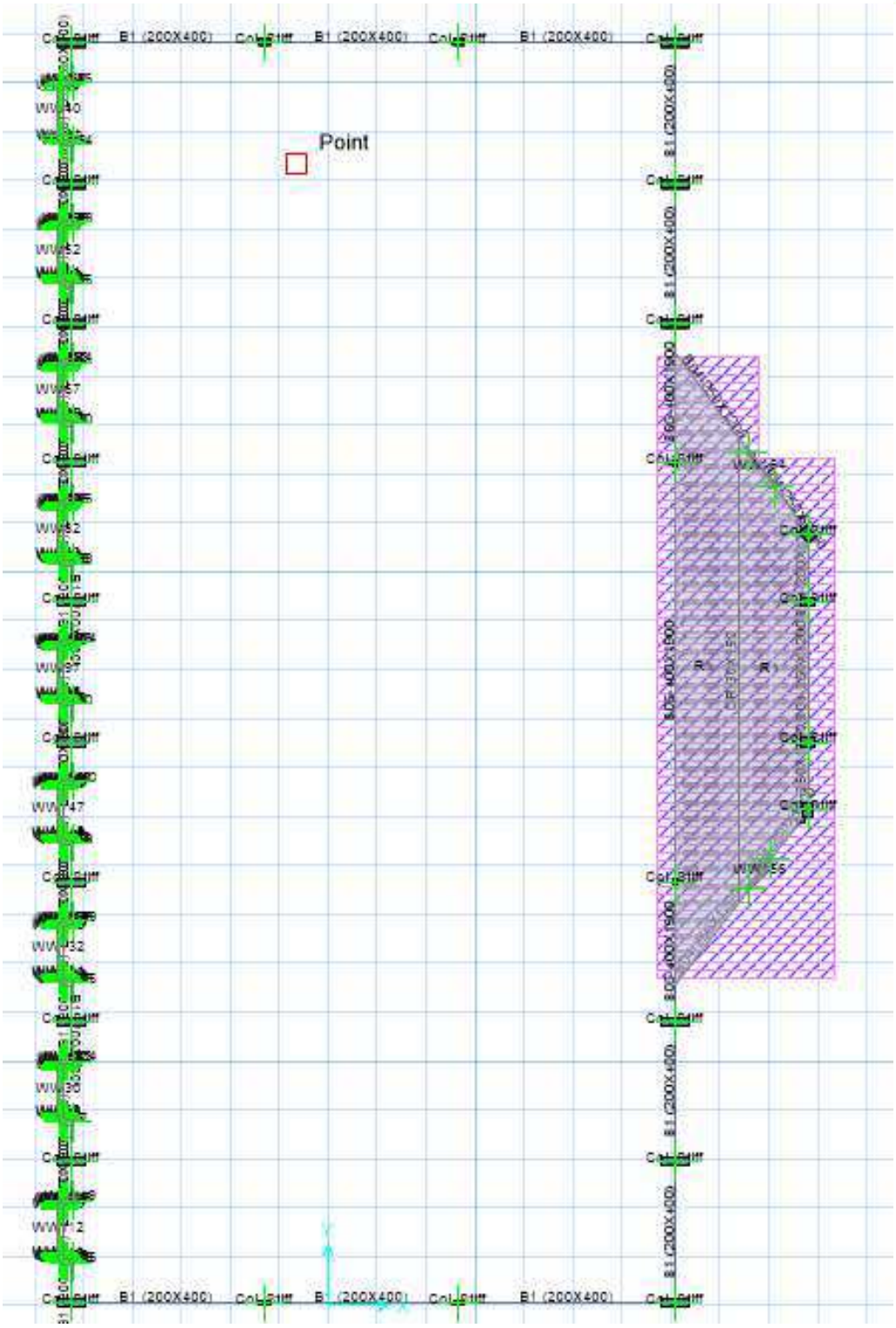


Figure 5-34 Design Strip Layer A at Roof Floor

5.2.2 ADITORIUM PART

I. Ground floor

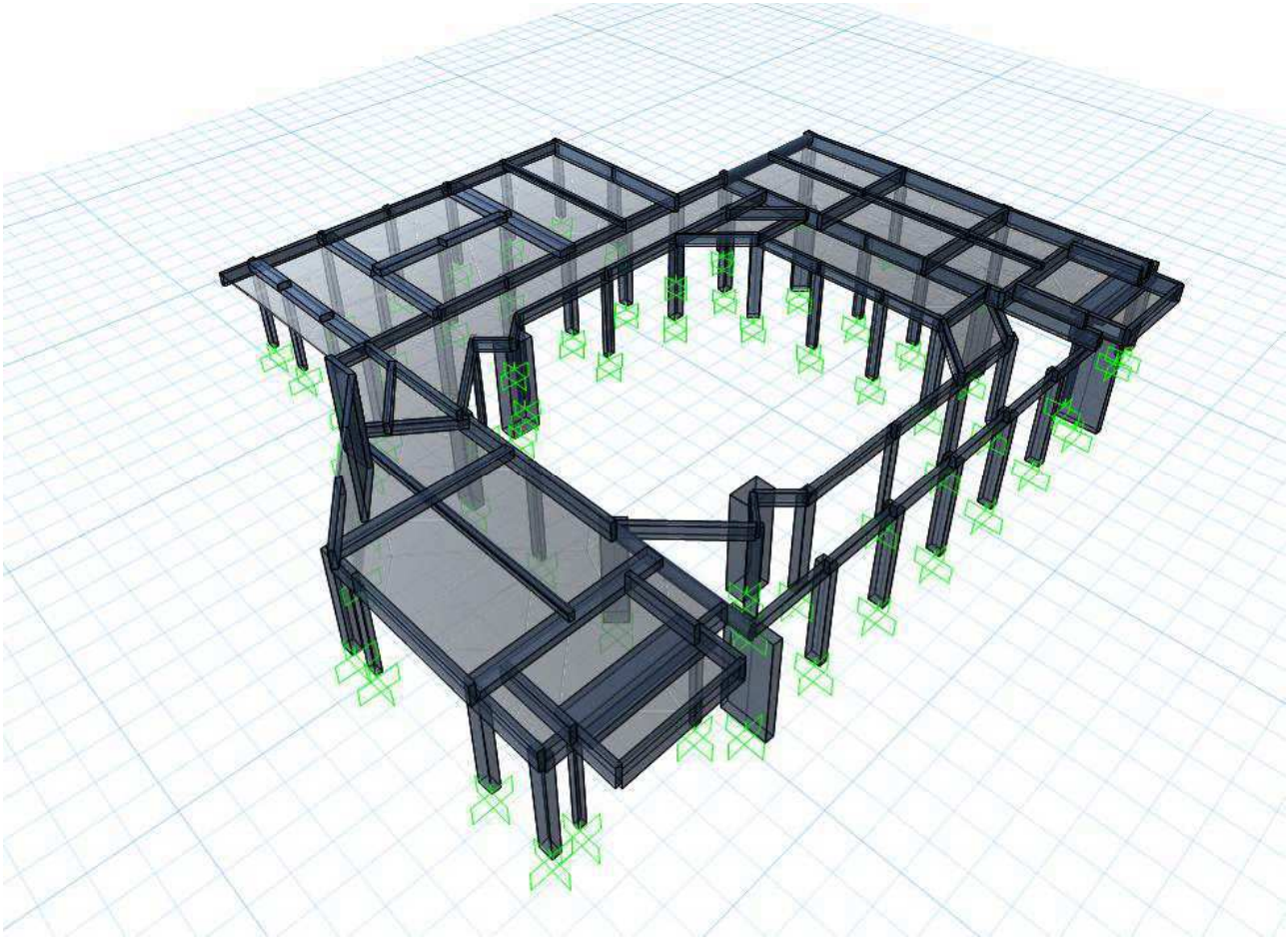


Figure 5-35 3D View at GROUND Floor

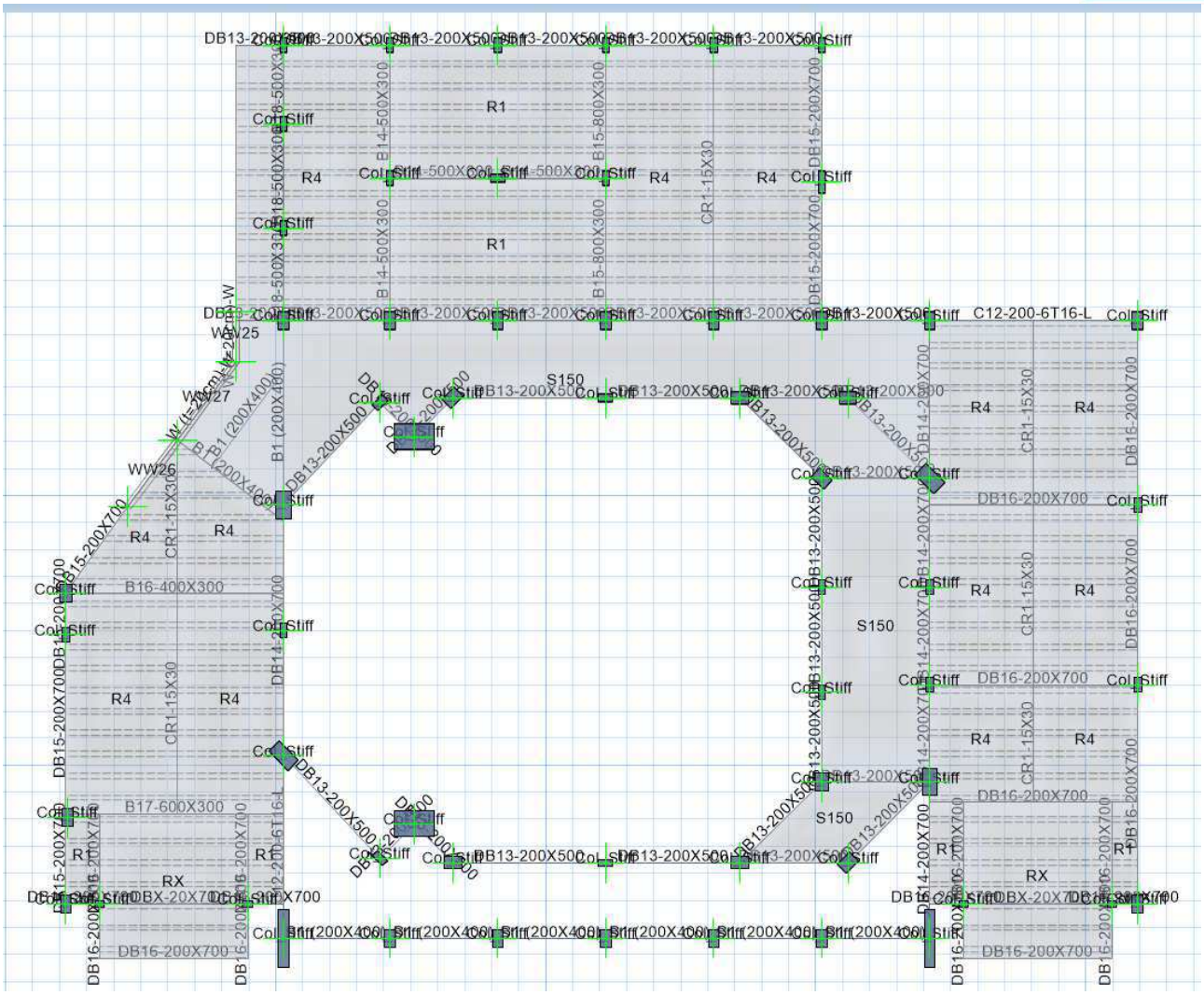


Figure 5-36 Section Assignment at GROUND Floor

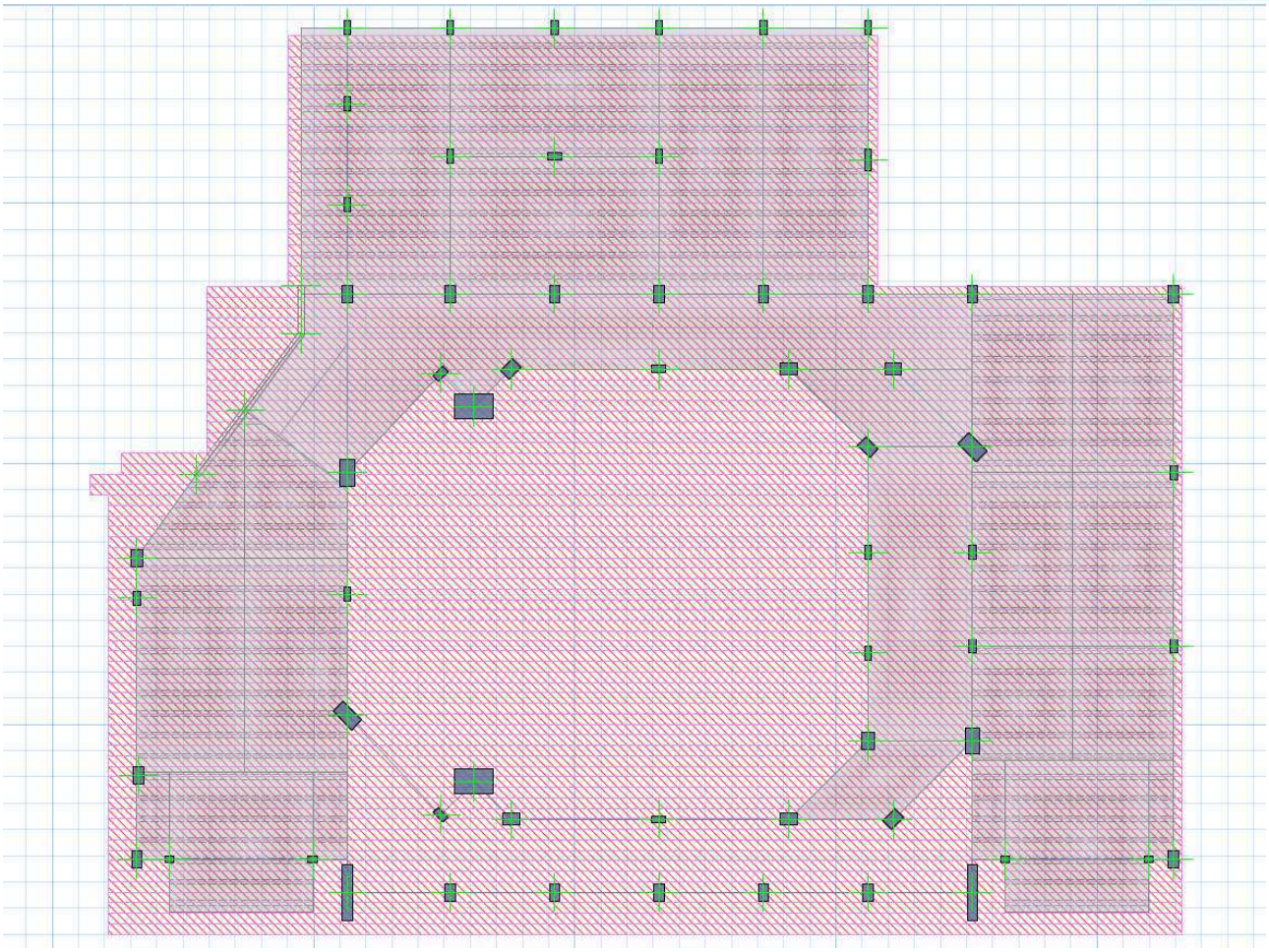


Figure 5-37 Design Strip Layer A at GROUND Floor

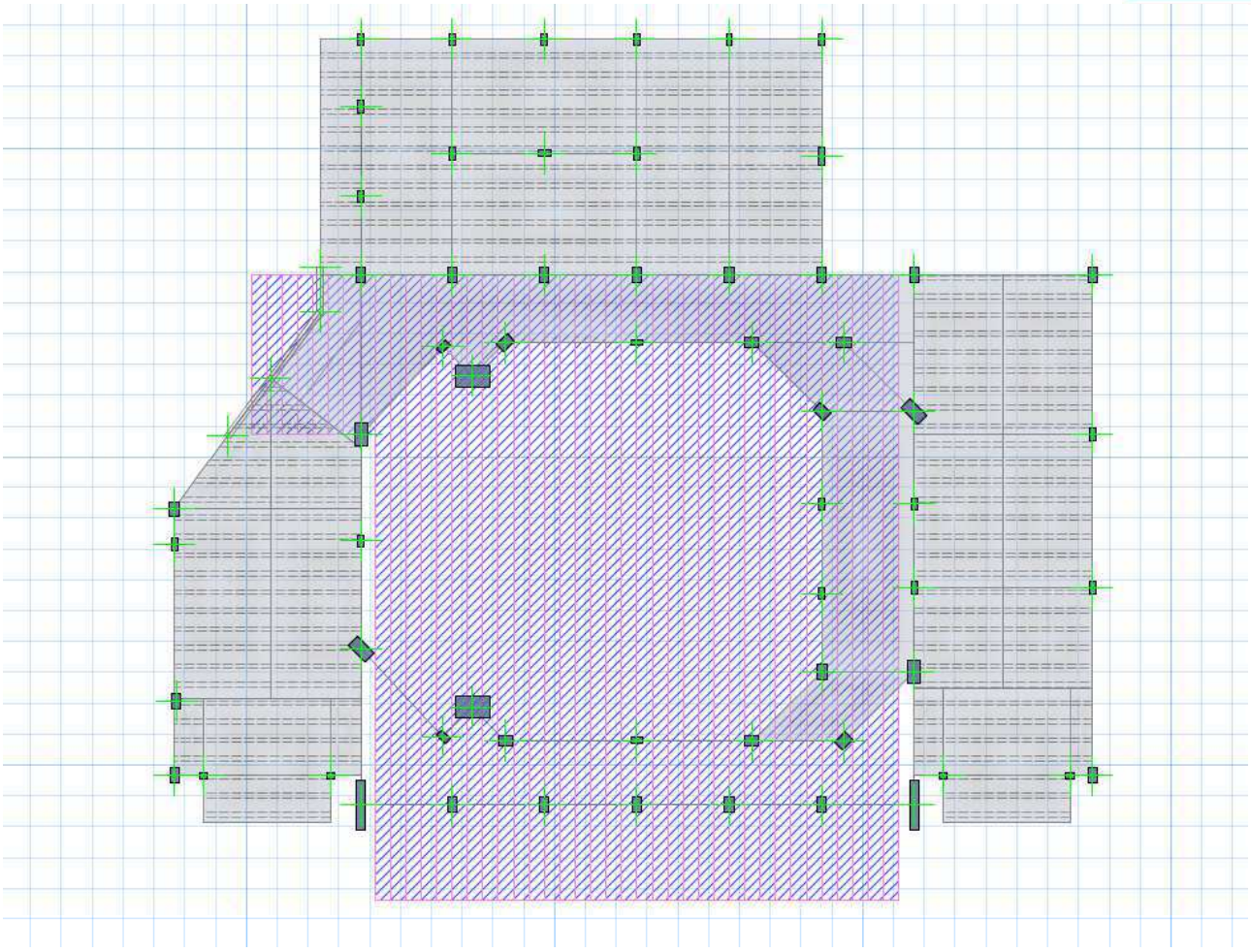


Figure 5-38 Design Strip Layer B at GROUND Floor

II. Roof Floor

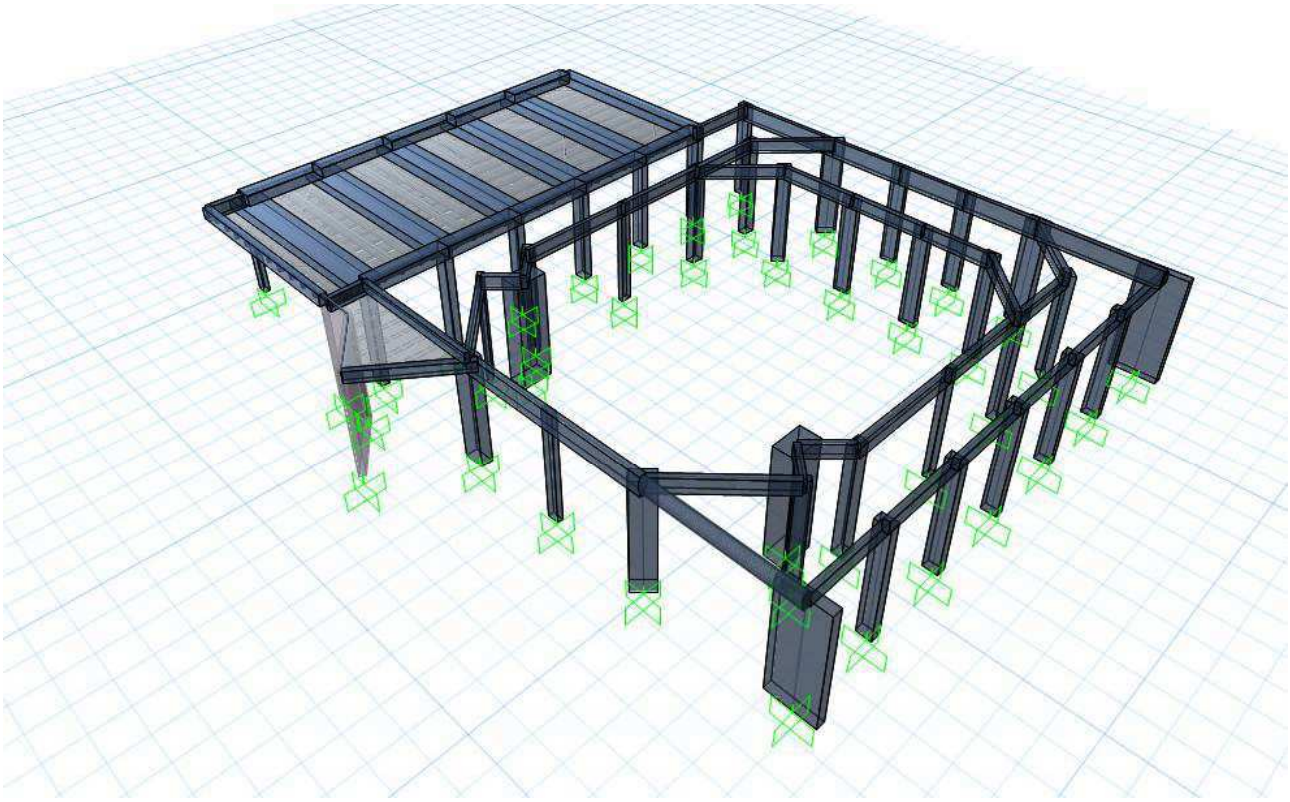


Figure 5-39 3D View at Roof Floor

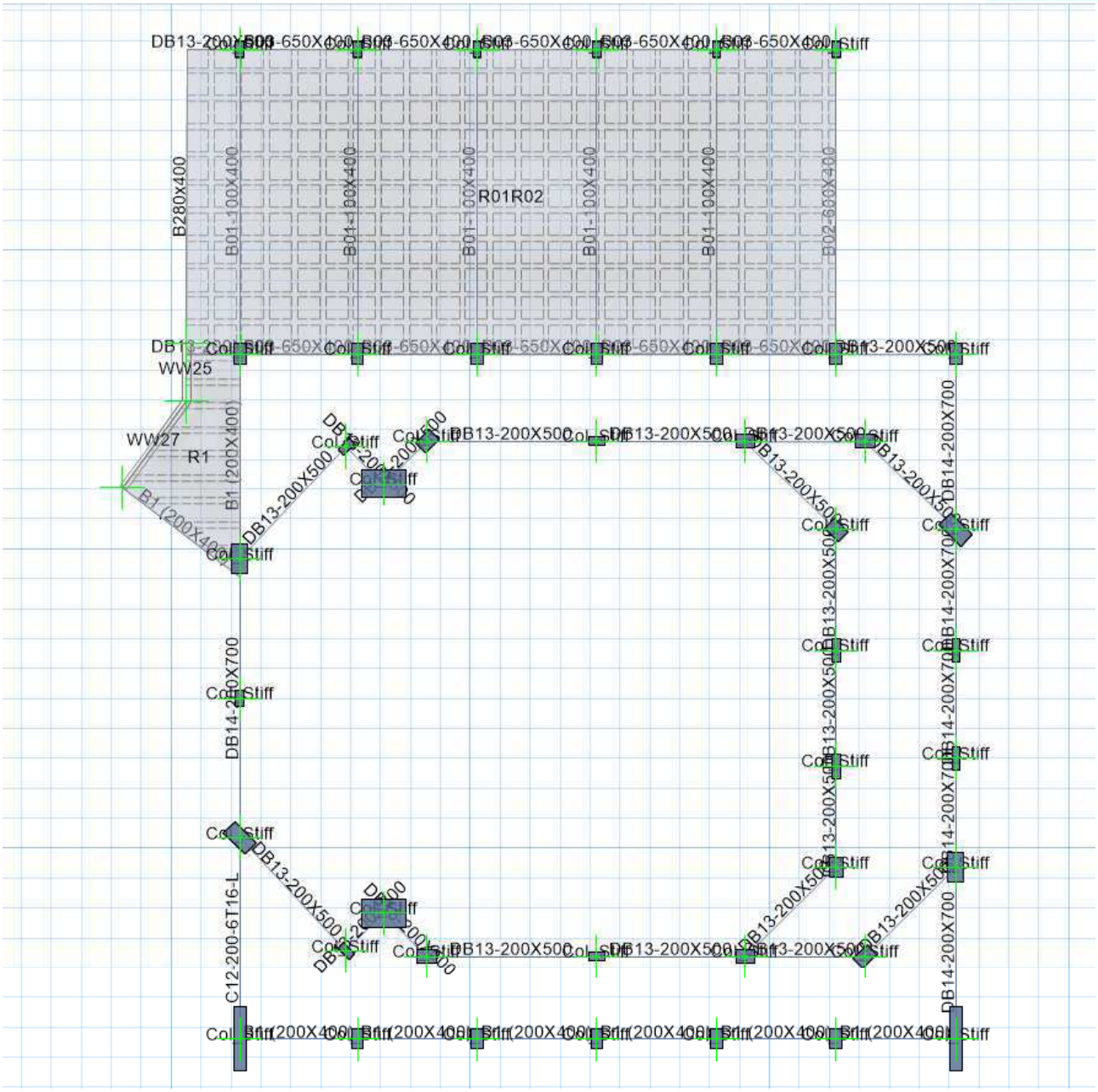


Figure 5-40 Section Assignment Roof Floor

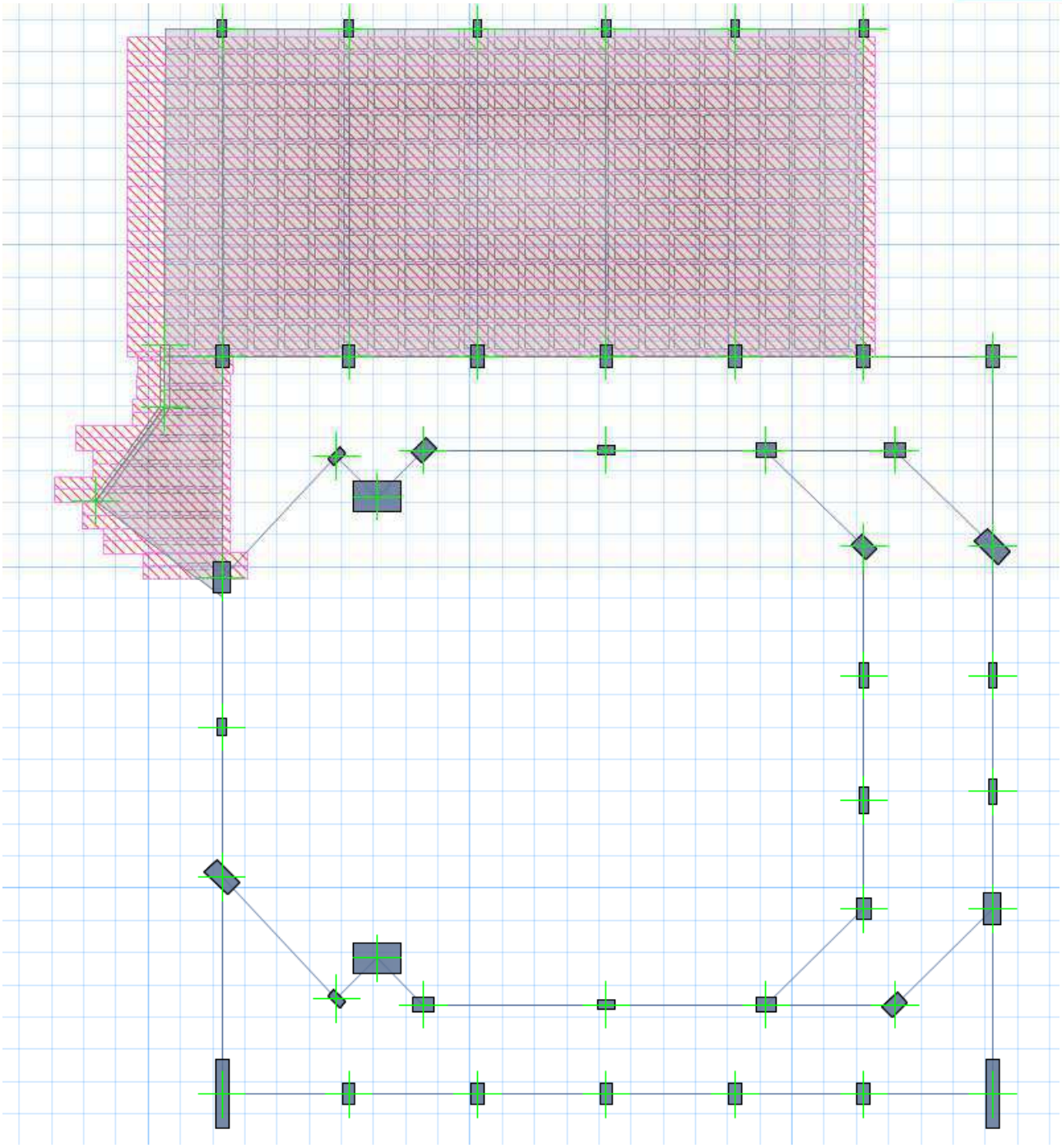


Figure 5-41 Design Strip Layer A at Roof Floor

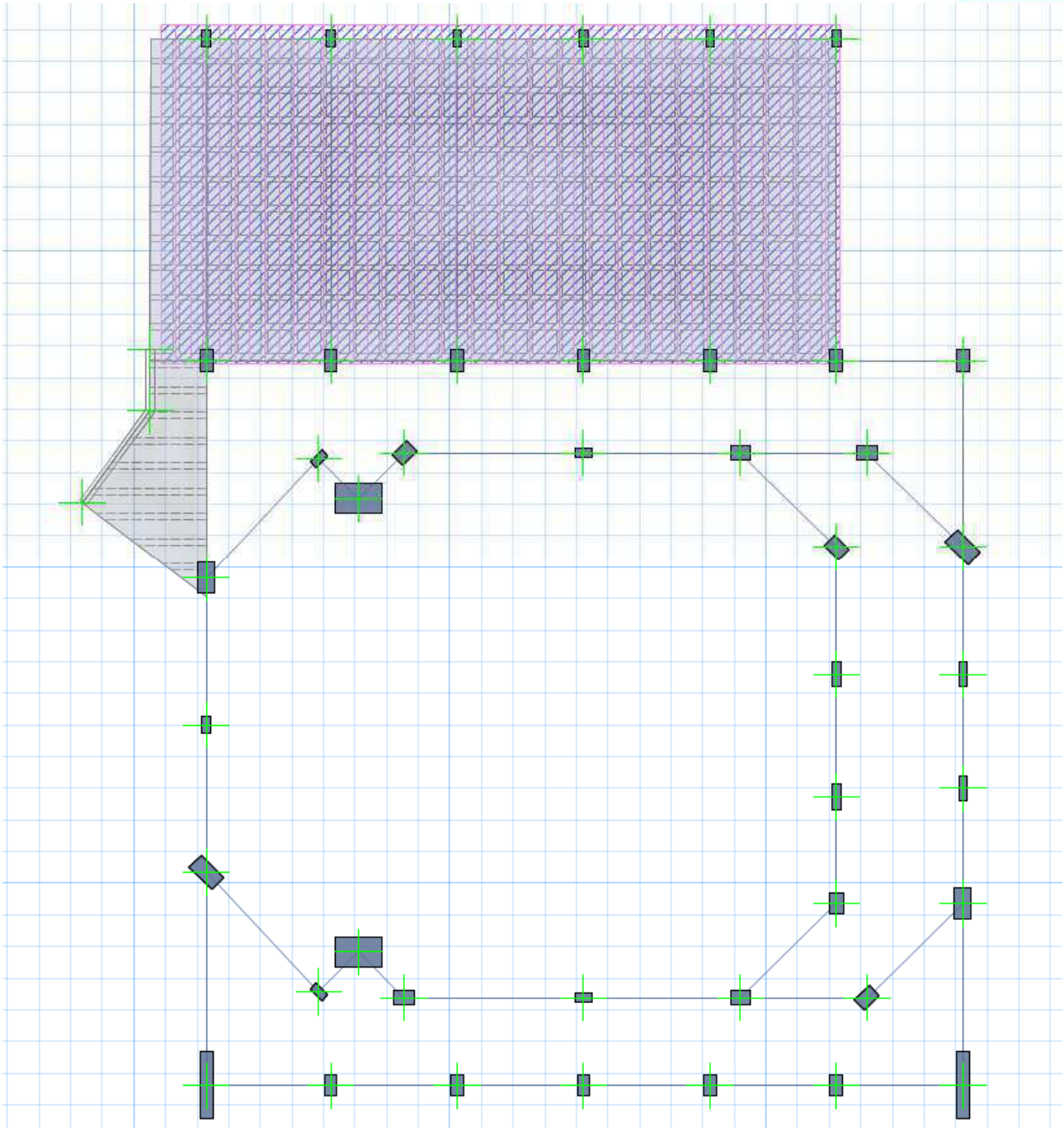


Figure 5-42 Design Strip Layer B at Roof Floor

5.2.3 SWIMMING PART

I. GROUND

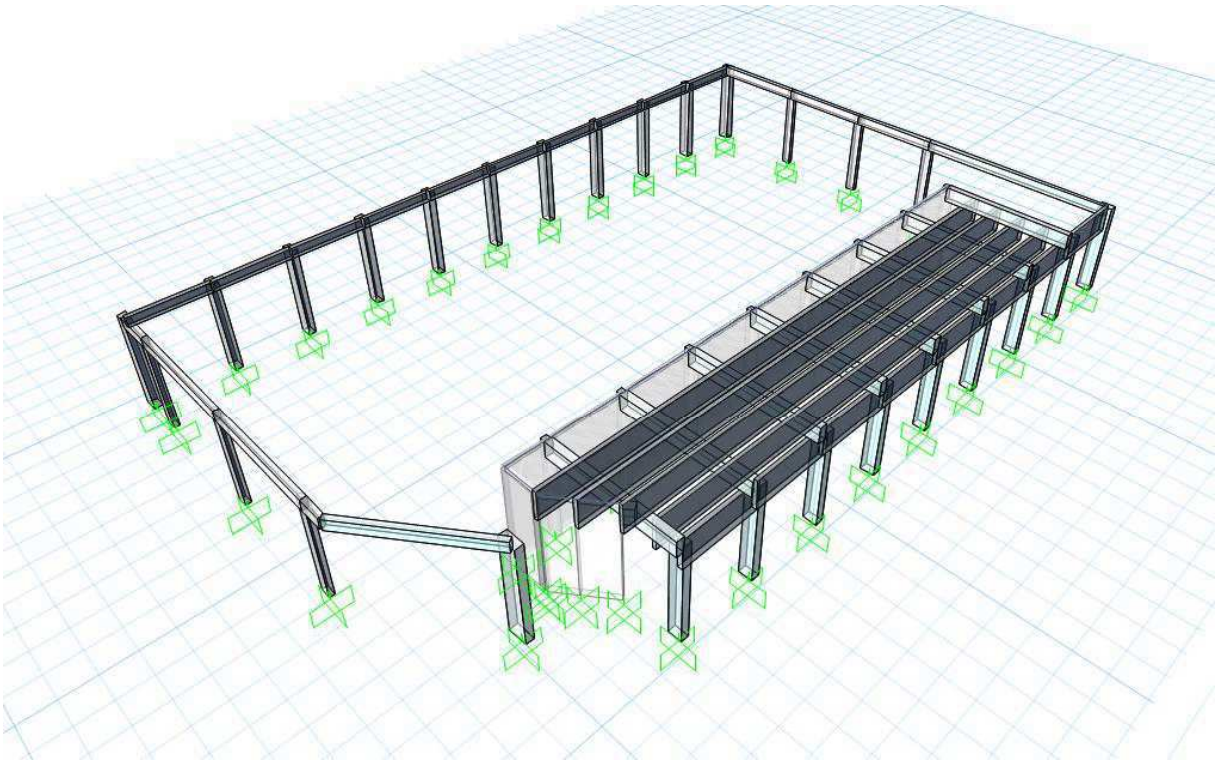


Figure 5-43 3D View at Roof Floor

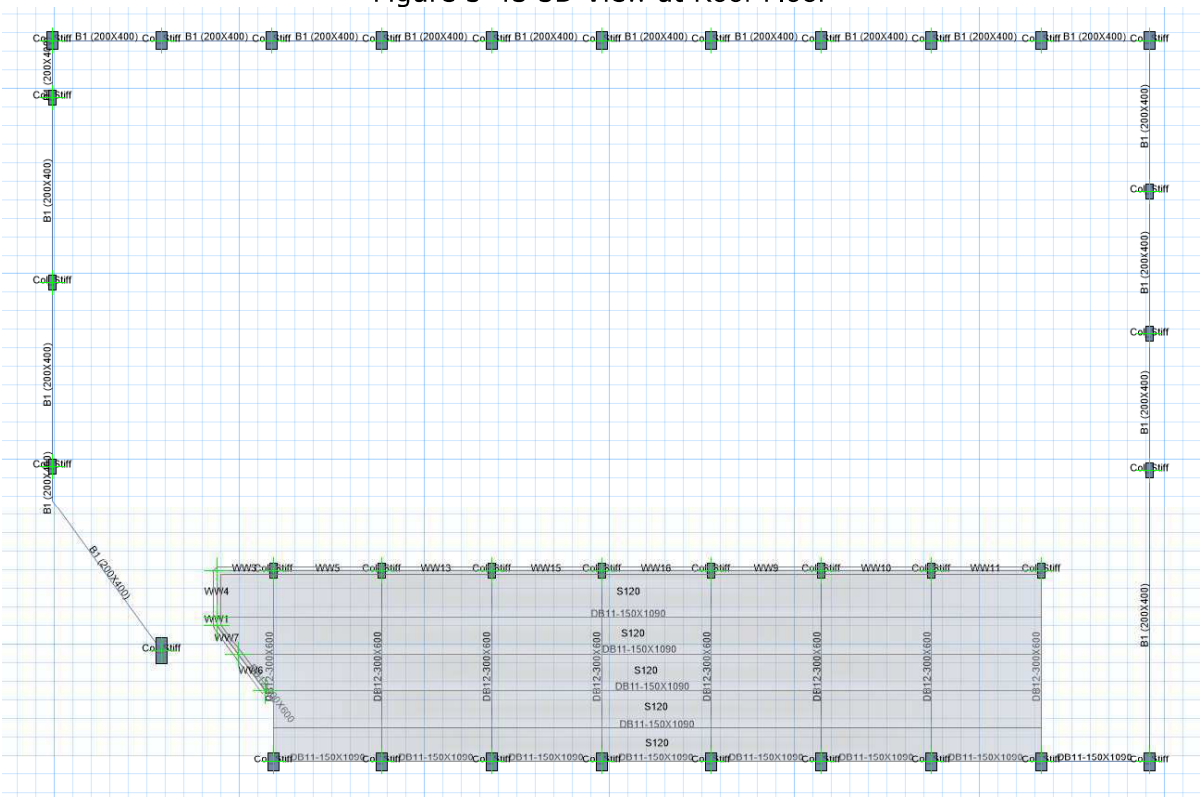


Figure 5-44 Section Assignment Roof Floor

Figure 5-45 Design Strip Layer A at Roof Floor

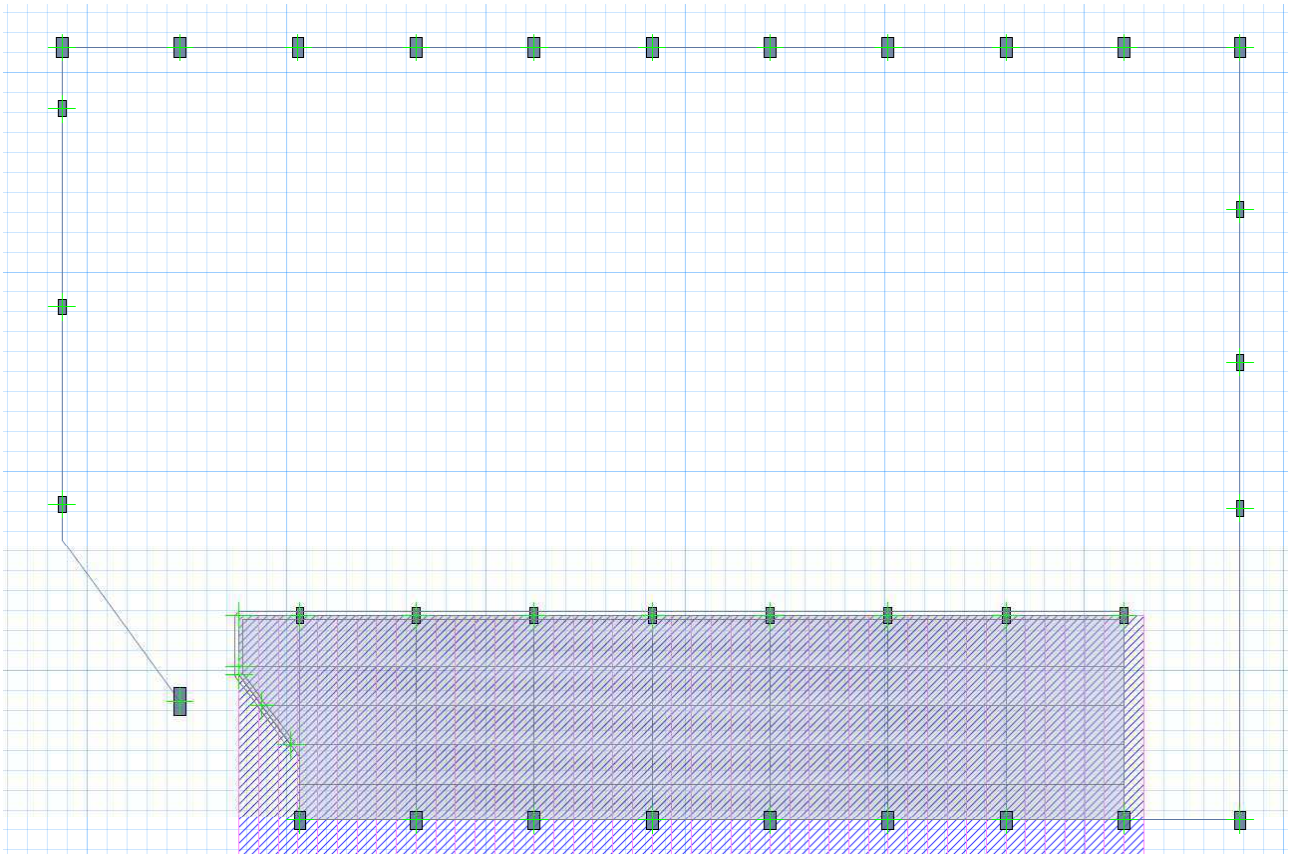


Figure 5-46 Design Strip Layer B at Roof Floor

II. Roof Floor

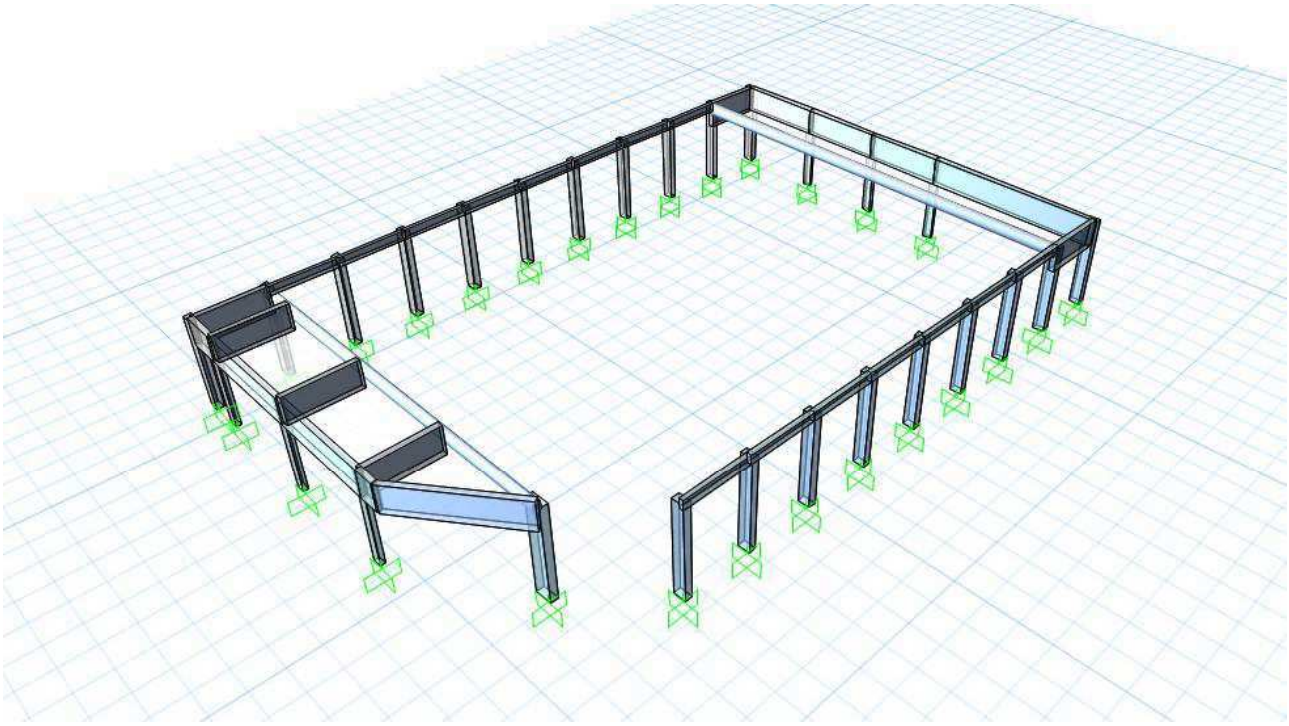


Figure 5-47 3D View at Roof Floor

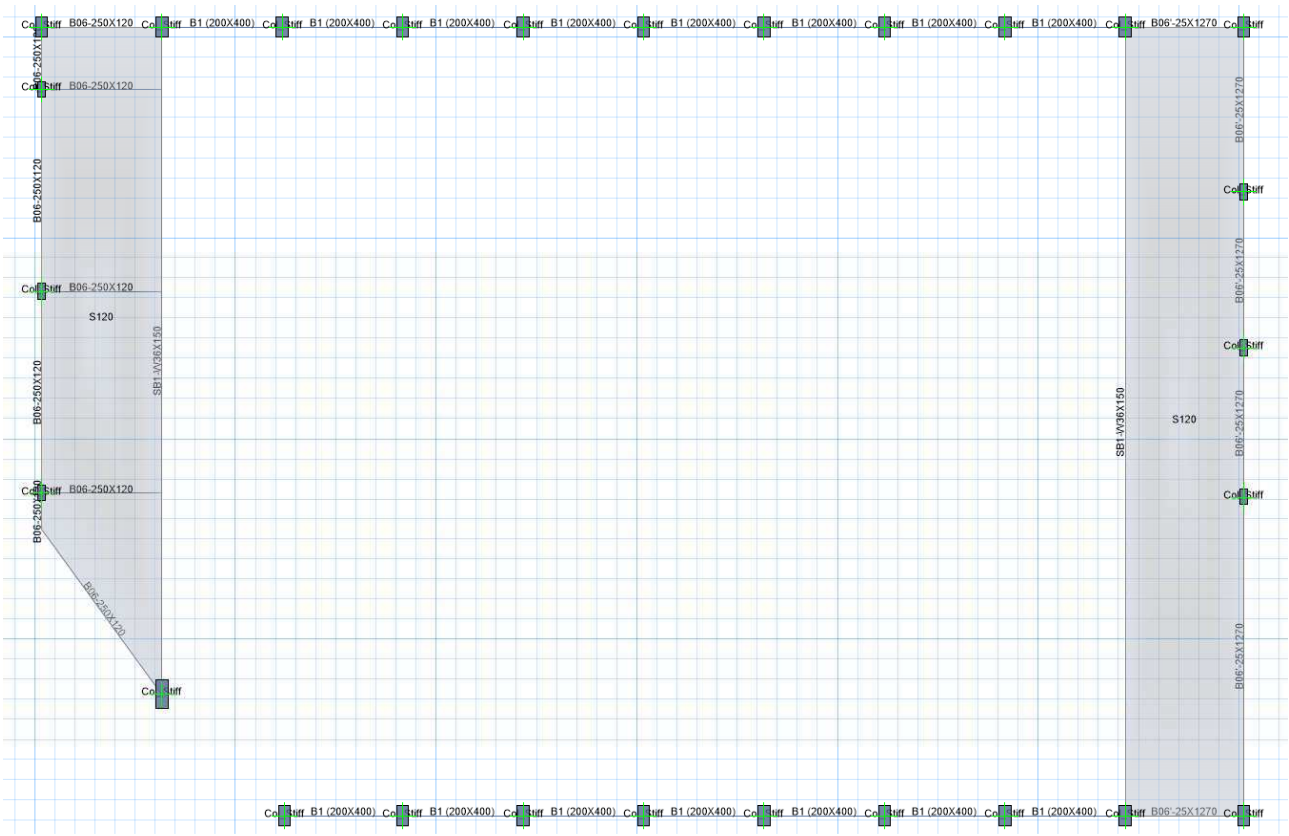


Figure 5-48 Section Assignment Roof Floor

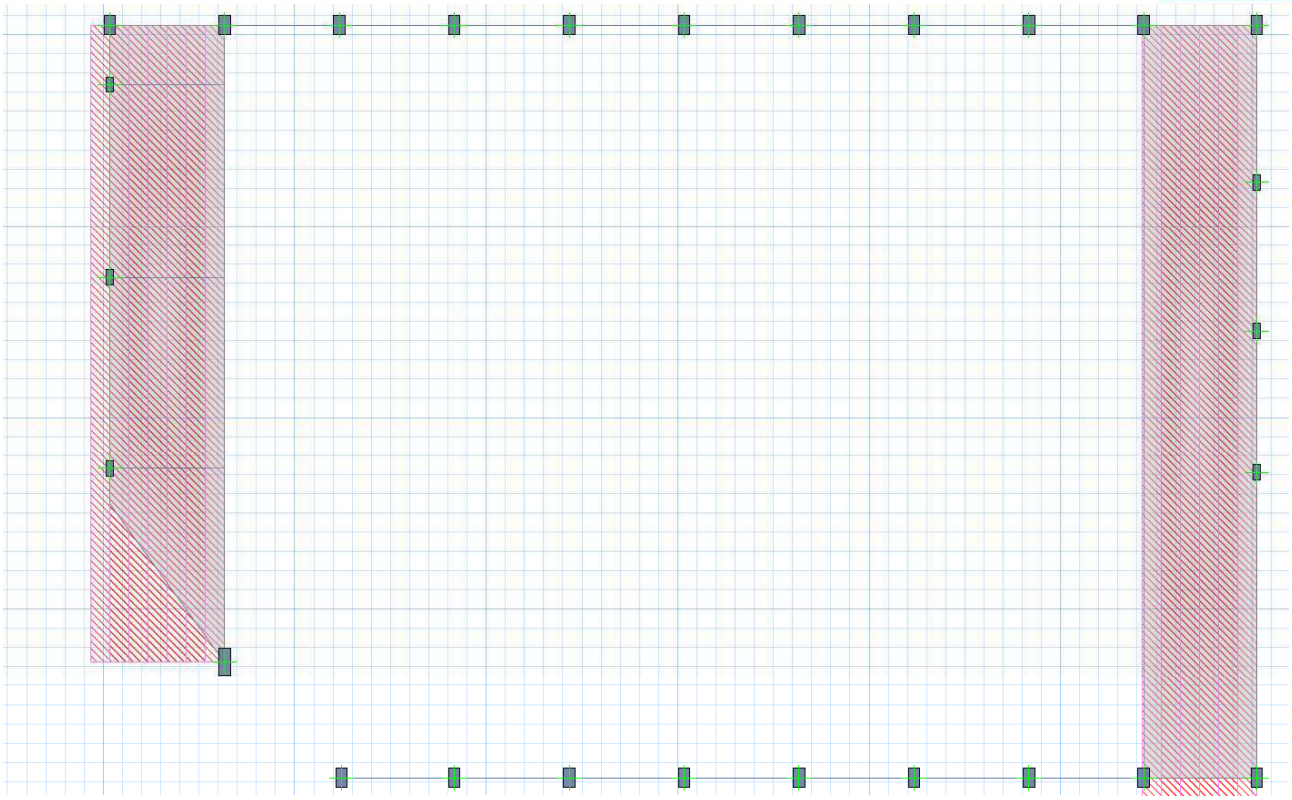


Figure 5-49 Design Strip Layer A at Roof Floor

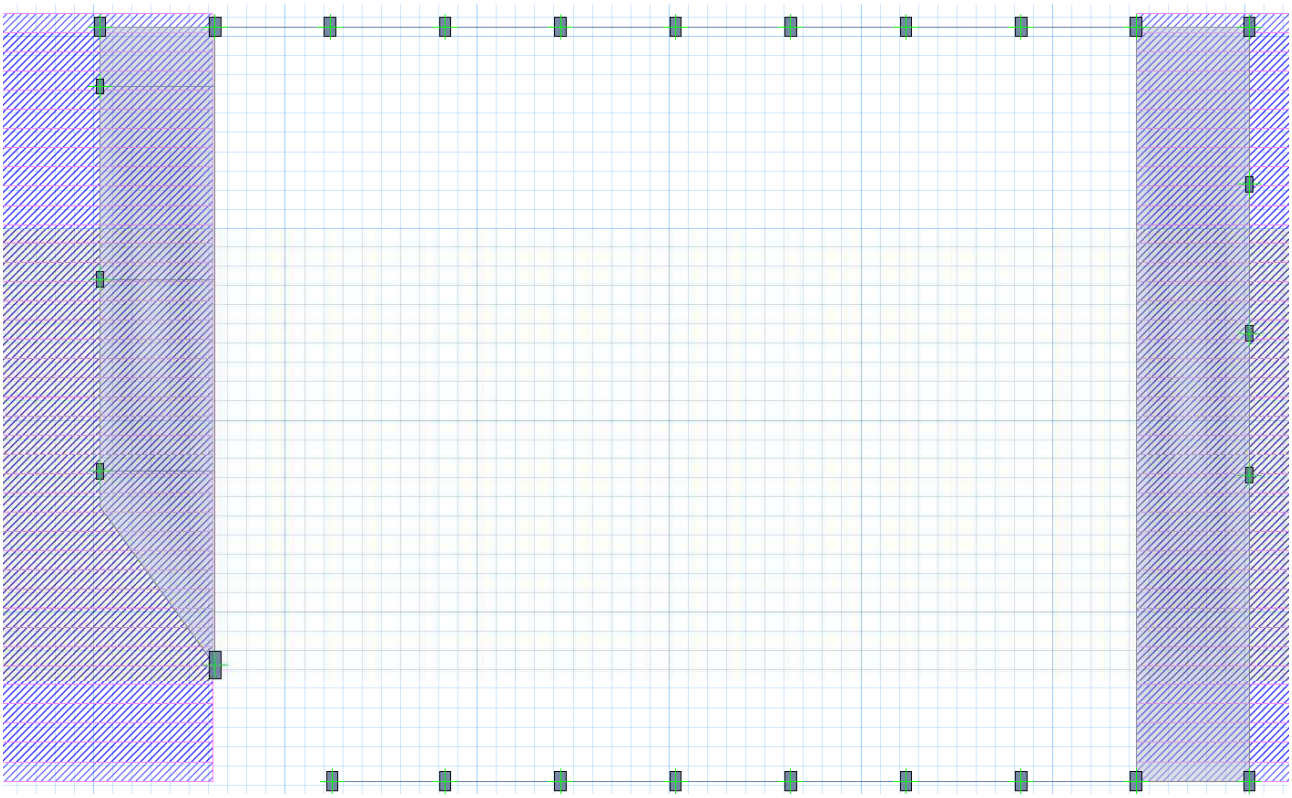


Figure 5-50 Design Strip Layer B at Roof Floor

6 Design Result

6.1 ETABS Design Result (Walls and Columns)

I. Column Design

In the design of concrete columns, longitudinal steel is specified. Then, the program calculates the column stress in terms of a column capacity ratio, which is a factor that gives an indication of the stress condition of the column with respect to the capacity of the column.

The factored axial force and bending moments obtained from each loading combination was used to check the capacity of the column. PMM D/C ratio which is greater than 1.0 indicates that the column is not safe. Based on the design results, all columns at Ground Floor are found to be inadequate wherein PMM ratio exceeded 1.0. due to lower concrete compressive strength and its double height length. In addition, a few columns at Roof floor are also found to be under design. The unsafe columns are highlighted in red shown in Figure 6-1.

For shear reinforcement, the programs determine the required reinforcement considering the effect of the axial force on the concrete shear capacity. The maximum required shear reinforcement is checked with the existing shear reinforcement (2LT8-200 = 500mm^2/m) and found to be sufficient. The required shear reinforcement for both minor and major shear.

6.1.1 GYMNASIUM PART

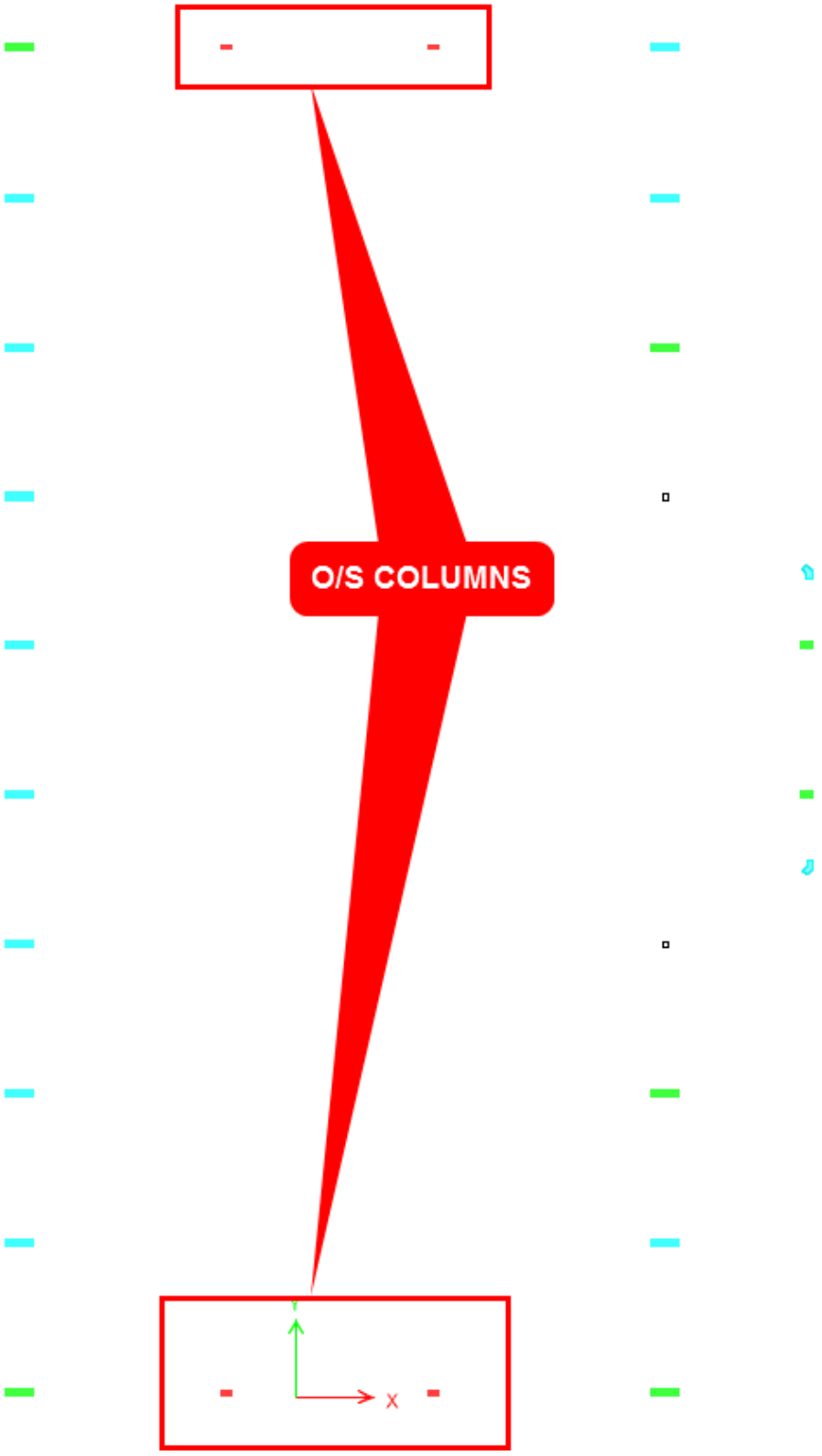


Figure 6-1 Column PMM Ratio at Ground Floor

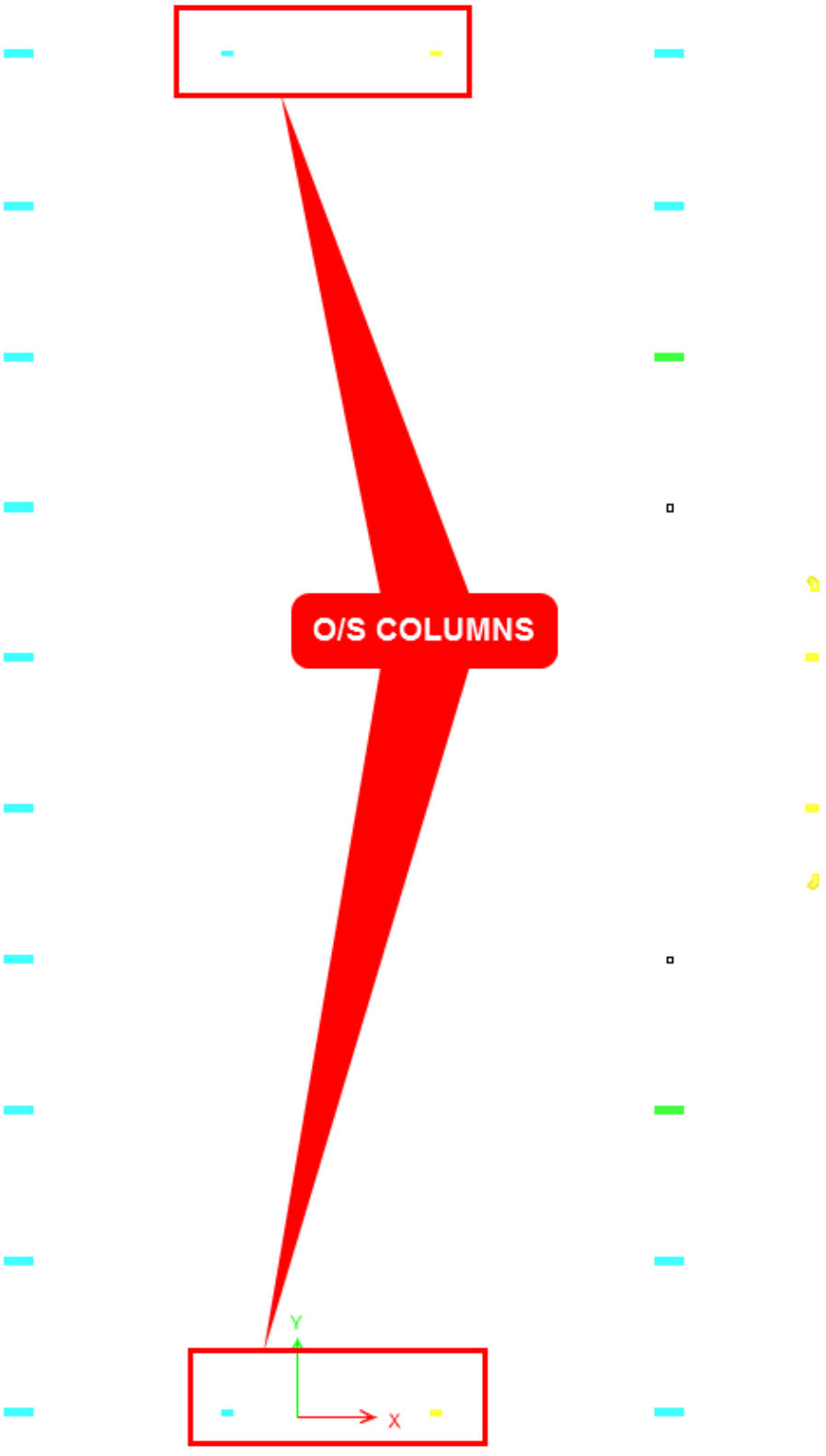


Figure 6-2 Column PMM Ratio at ROOF Floor

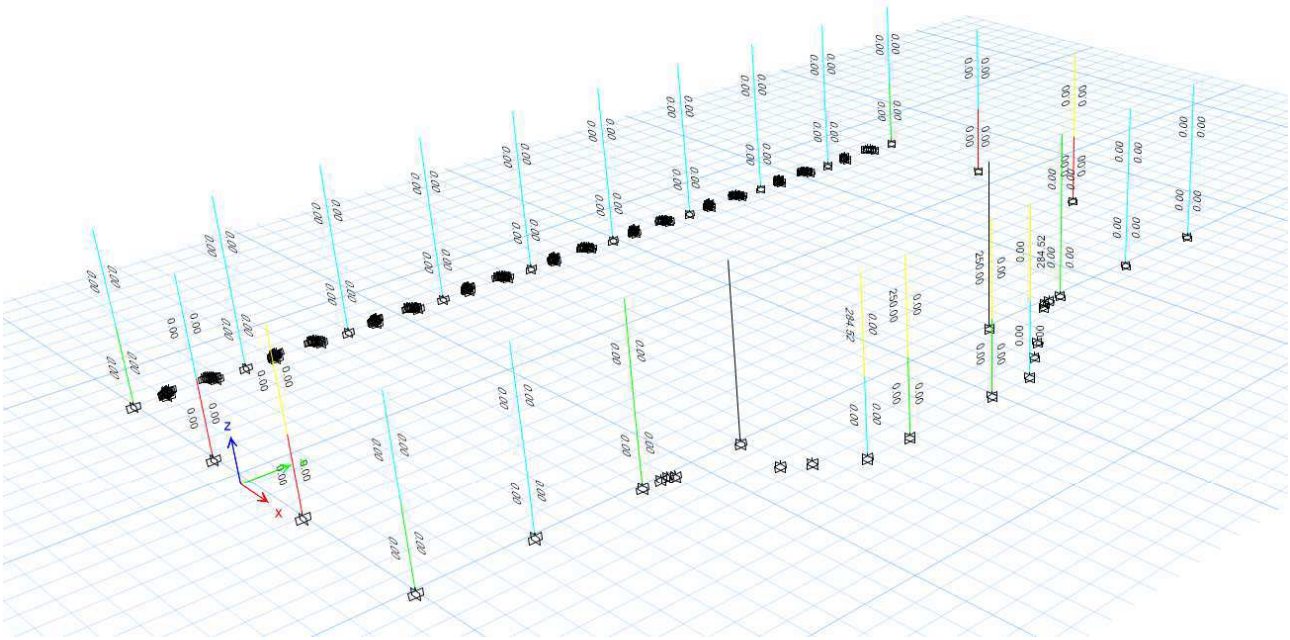


Figure 6-3 Shear Reinforcing

6.1.2 AUDTORIUM PART

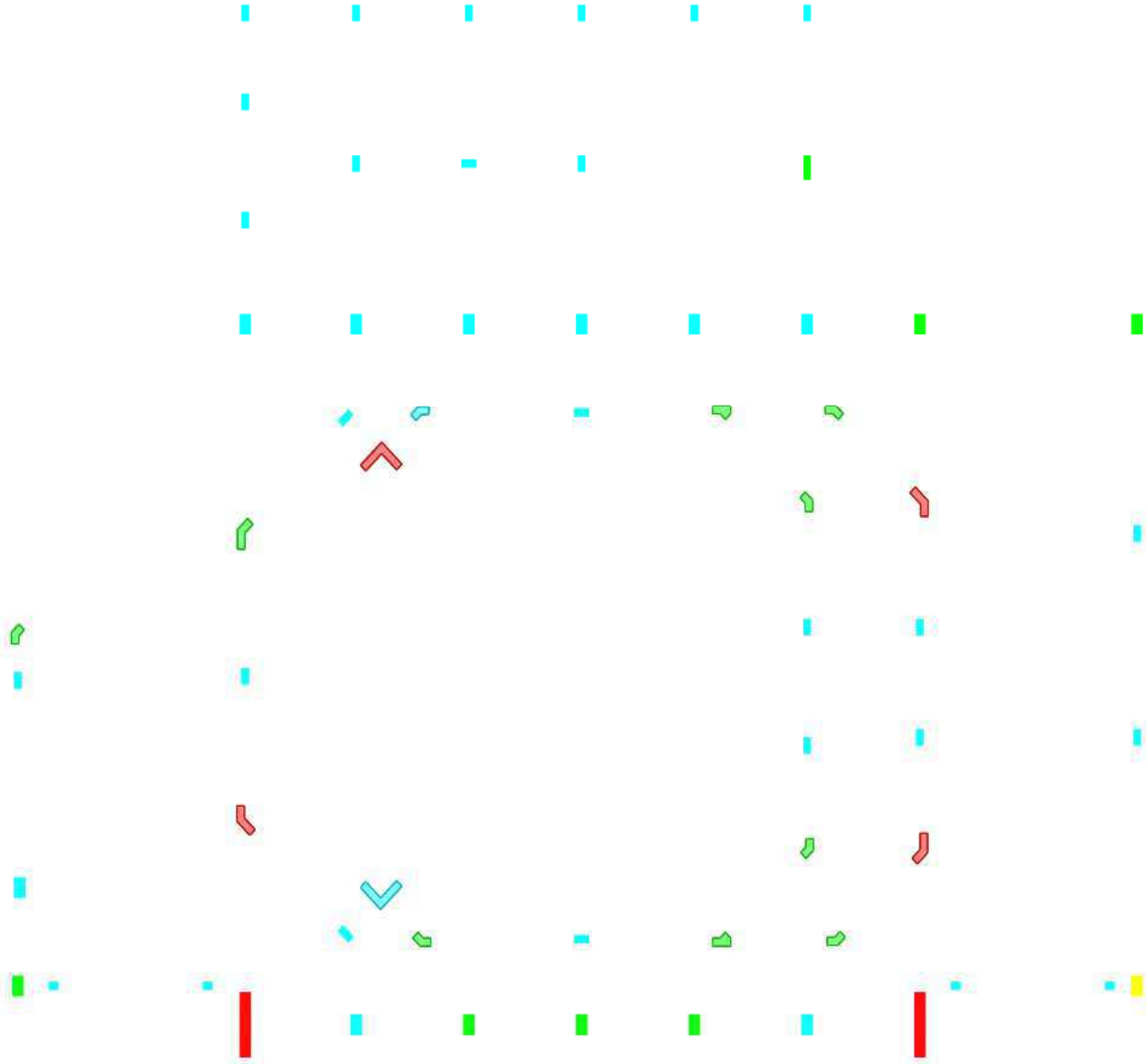


Figure 6-4 Column PMM Ratio at Ground Floor

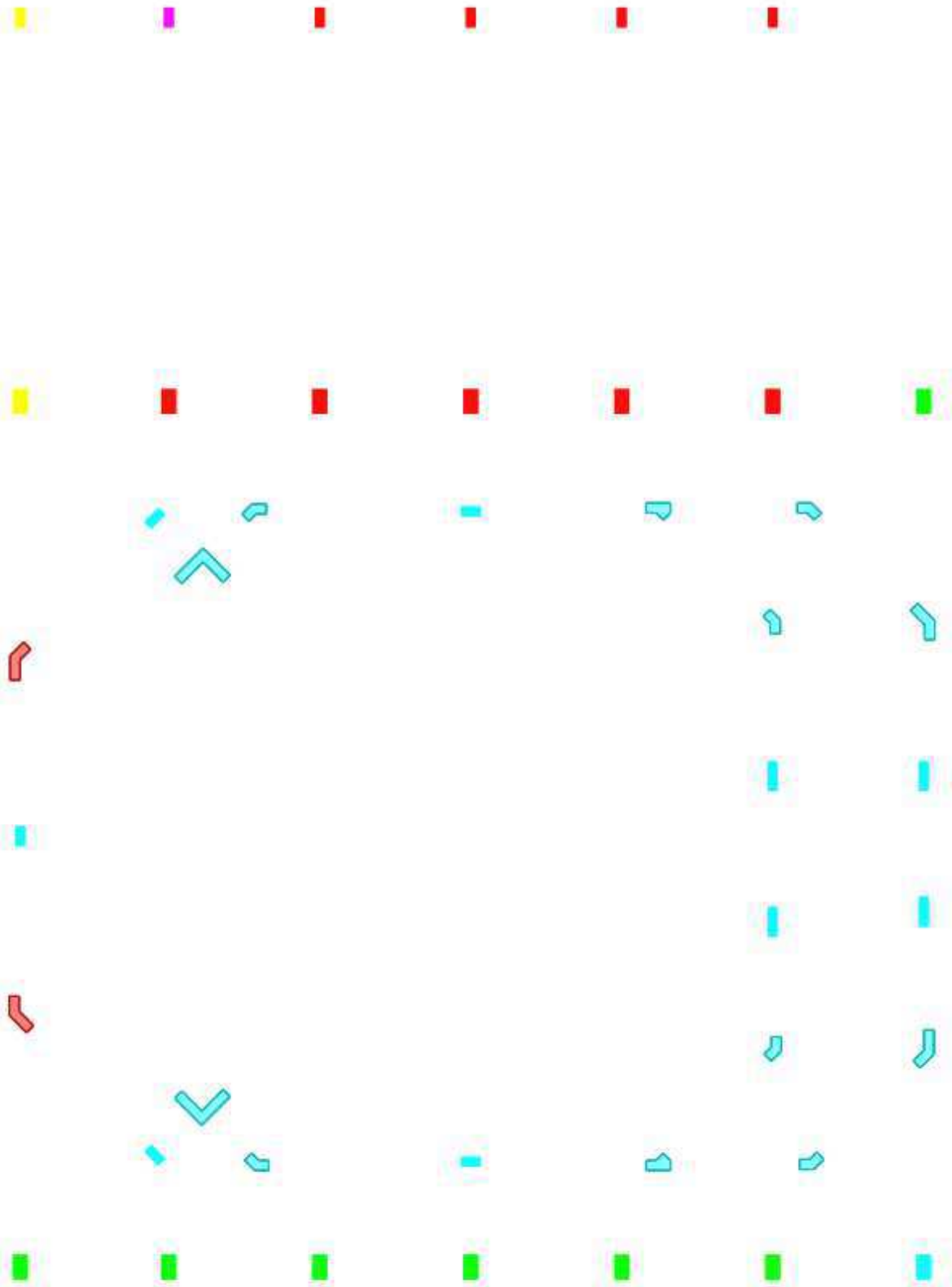


Figure 6-5 Column PMM Ratio at ROOF Floor

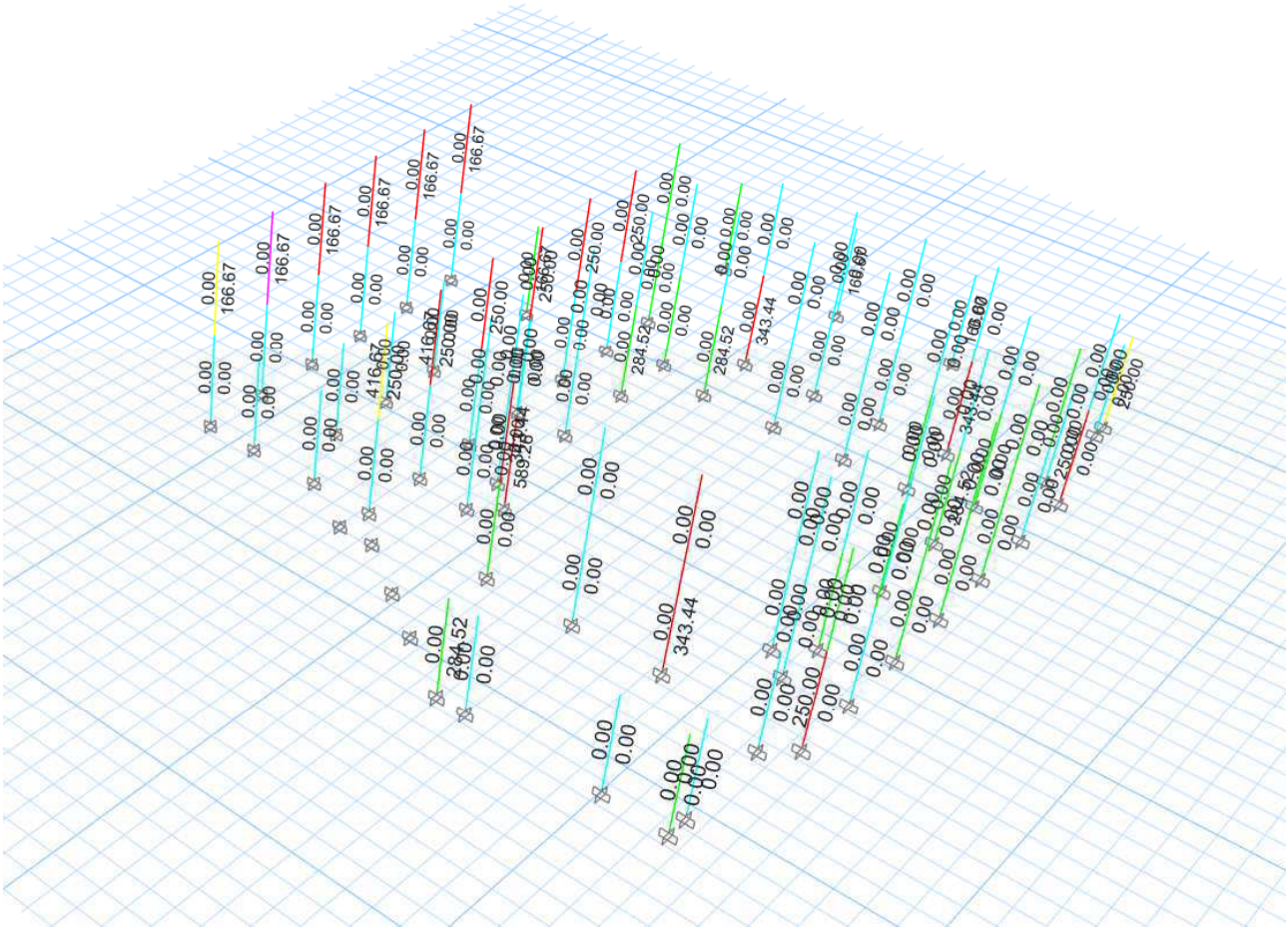


Figure 6-6 Shear Reinforcing

II. Shear Wall Pier Design

Uniform Reinforcing pier section is specified for each wall pier to be checked, the program creates an interaction surface for that pier and uses that interaction surface to determine the critical flexural demand/capacity ratio for the pier. The wall pier demand/capacity ratio is a factor that gives an indication of the stress condition of the wall with respect to the capacity of the wall.

For pier shear reinforcing, the pier horizontal shear reinforcement requirements reported by the program are based purely on shear strength considerations. The minimum shear rebar requirements to satisfy spacing consideration is check independently. The provided shear reinforcement shall satisfy the required shear reinforcement reported by the program.

Based on the results, the existing vertical reinforcement (T12-200) and horizontal reinforcement (T8-200) are sufficient. Therefore, wall pier design is adequate.

The Pier D/S ratio and pier shear reinforcing are shown from Figure 6-4

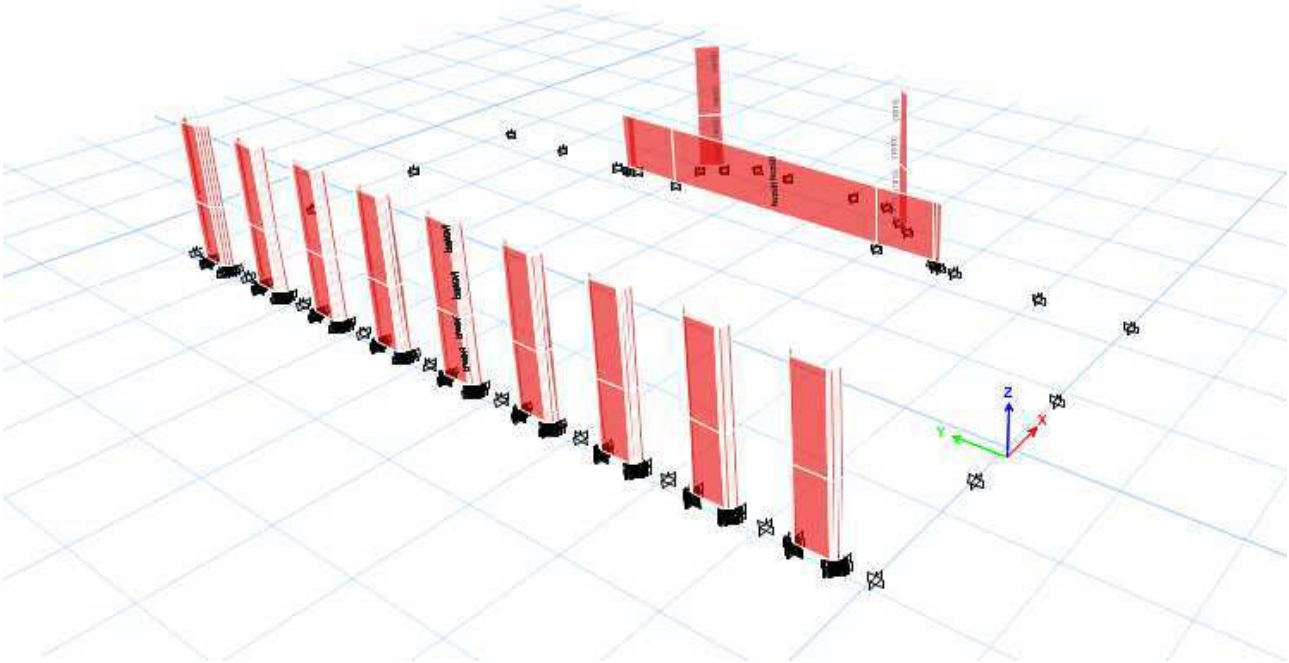


Figure 6-7 Pier D/C Ratio

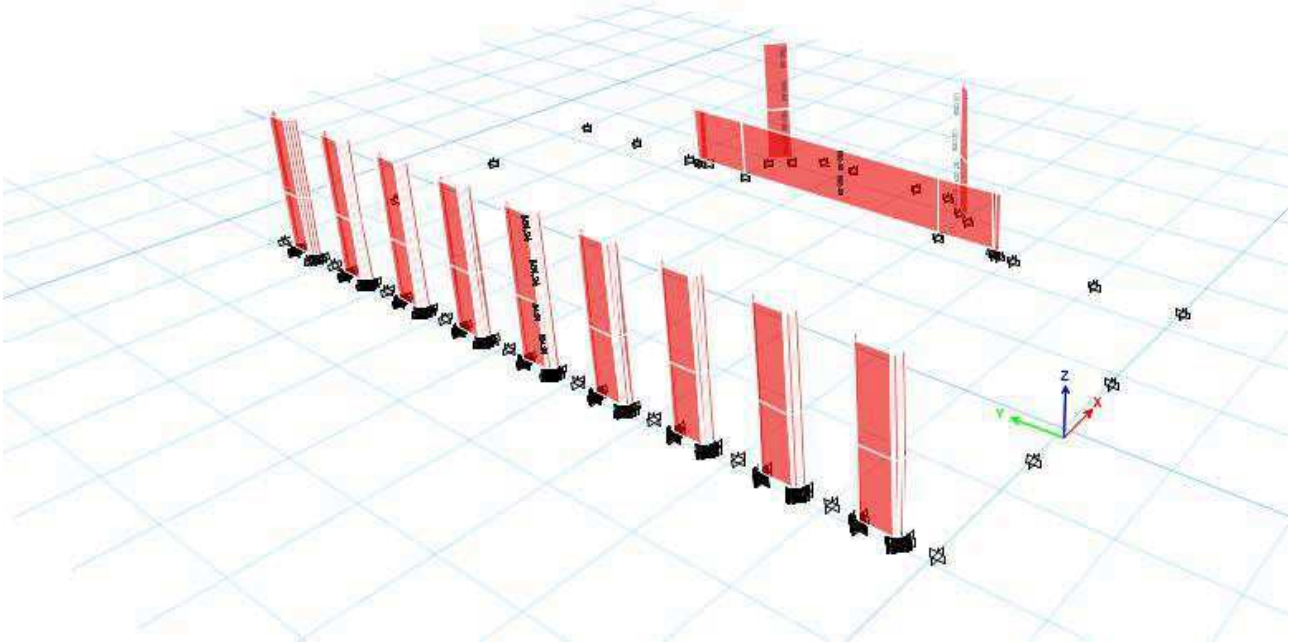


Figure 6-8 Pier Shear Reinforcing

6.1.3 SWIMMING PART

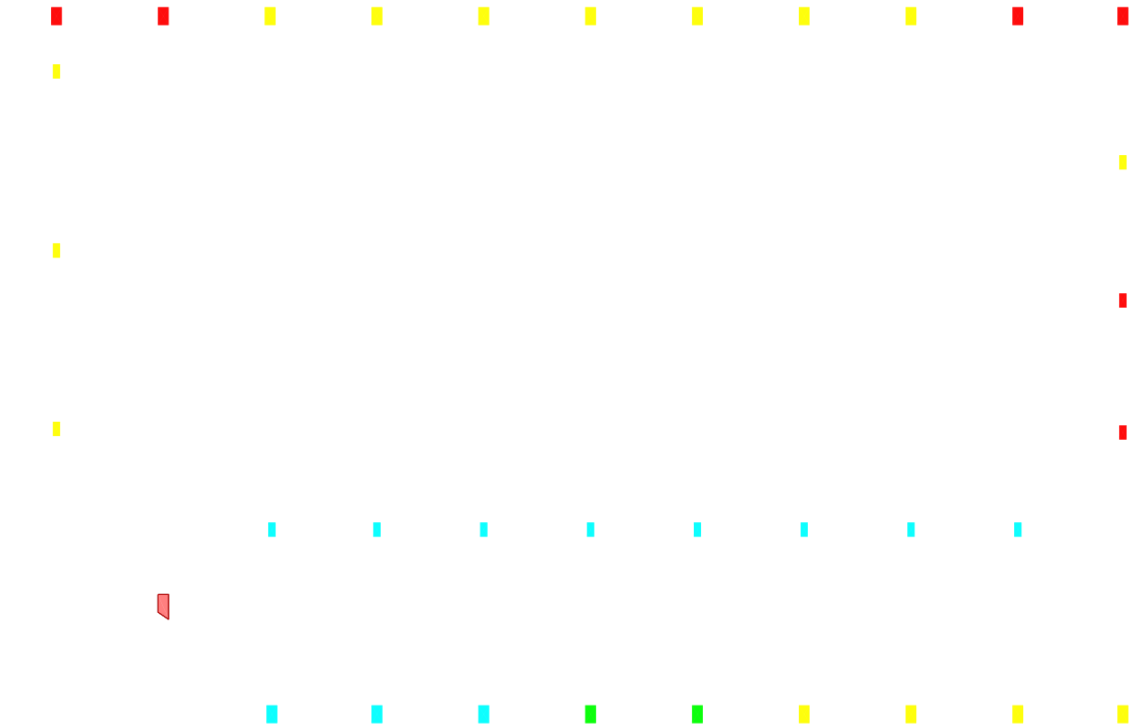


Figure 6-9 Column PMM Ratio at Ground Floor

Figure 6-10 Column PMM Ratio at ROOF Floor

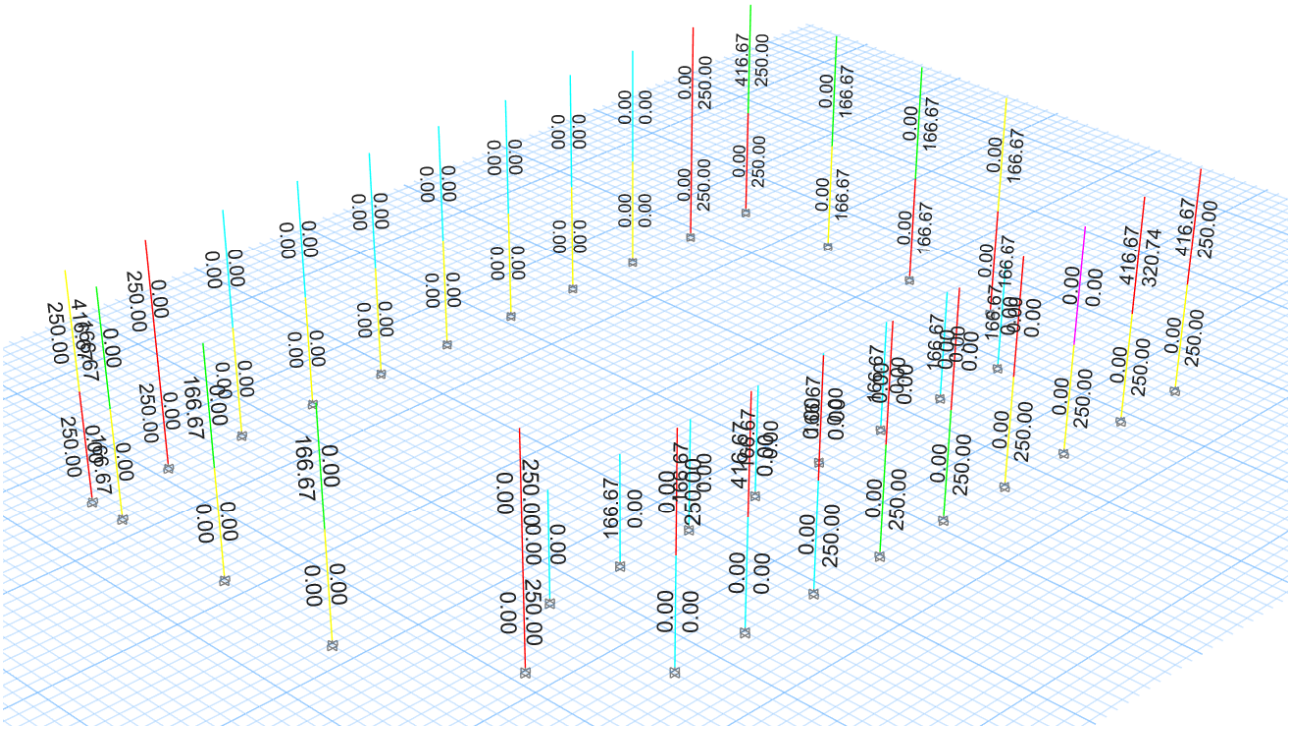


Figure 6-11 Shear Reinforcing

III. Shear Wall Pier Design

Uniform Reinforcing pier section is specified for each wall pier to be checked, the program creates an interaction surface for that pier and uses that interaction surface to determine the critical flexural demand/capacity ratio for the pier. The wall pier demand/capacity ratio is a factor that gives an indication of the stress condition of the wall with respect to the capacity of the wall.

For pier shear reinforcing, the pier horizontal shear reinforcement requirements reported by the program are based purely on shear strength considerations. The minimum shear rebar requirements to satisfy spacing consideration is check independently. The provided shear reinforcement shall satisfy the required shear reinforcement reported by the program.

Based on the results, the existing vertical reinforcement (T12-200) and horizontal reinforcement (T8-200) are sufficient. Therefore, wall pier design is adequate.

The Pier D/S ratio and pier shear reinforcing are shown from Figure 6-12

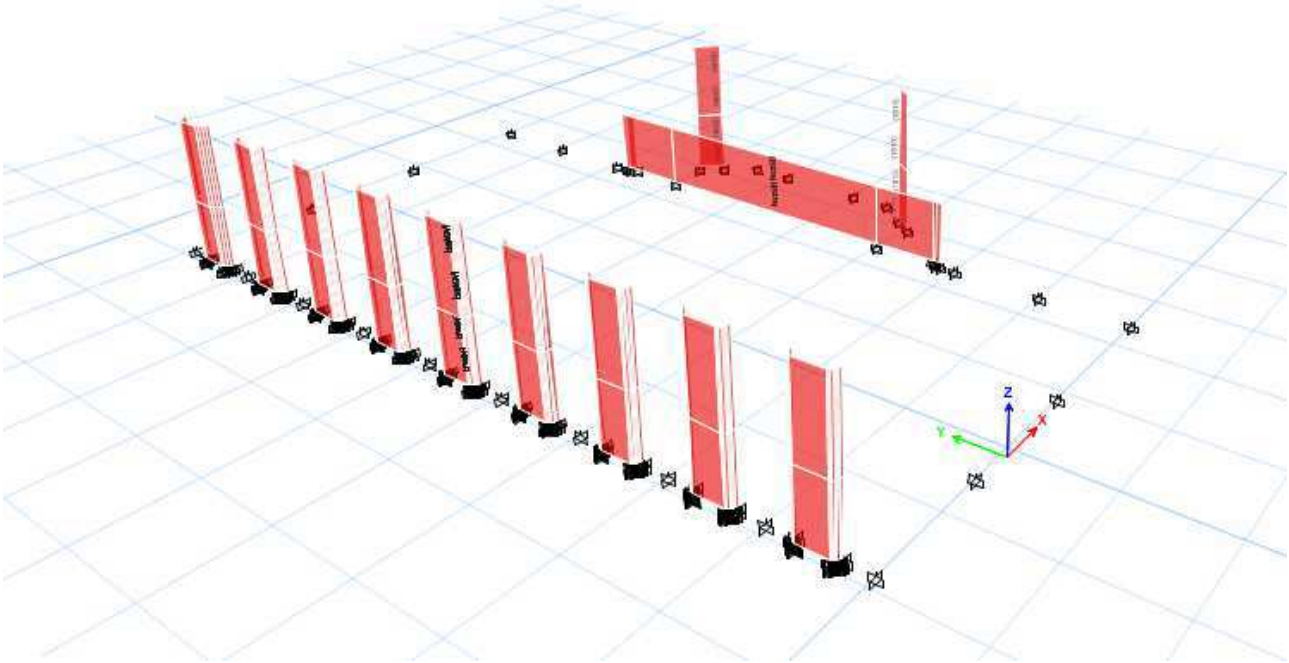


Figure 6-12 Pier D/C Ratio at gymnasium part

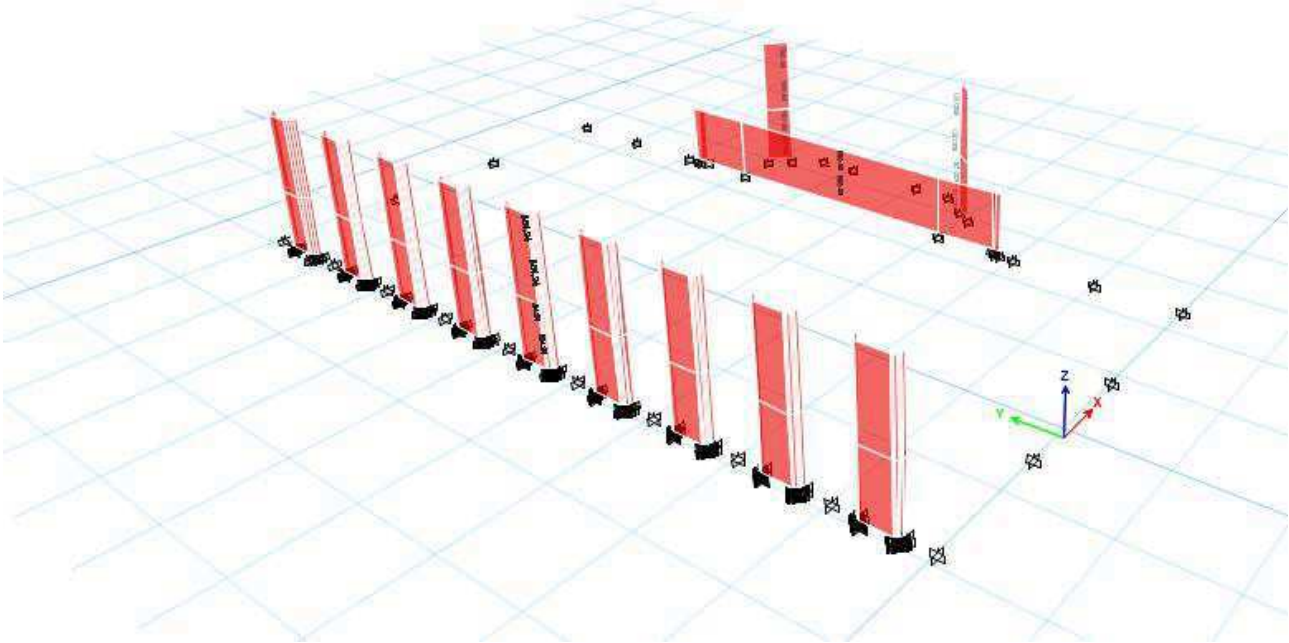


Figure 6-13 Pier Shear Reinforcing at gymnasium part

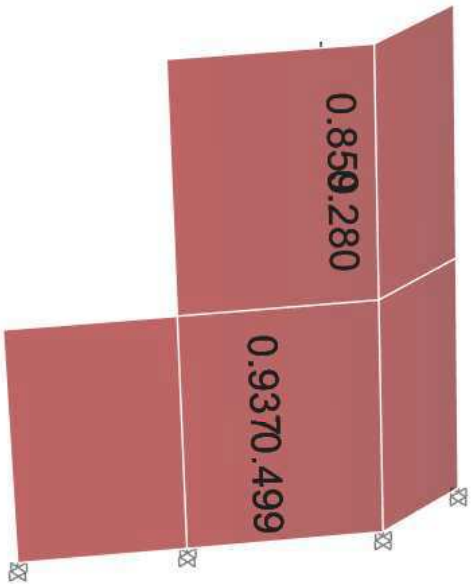


Figure 6-14 Pier D/C Ratio at Auditrium part

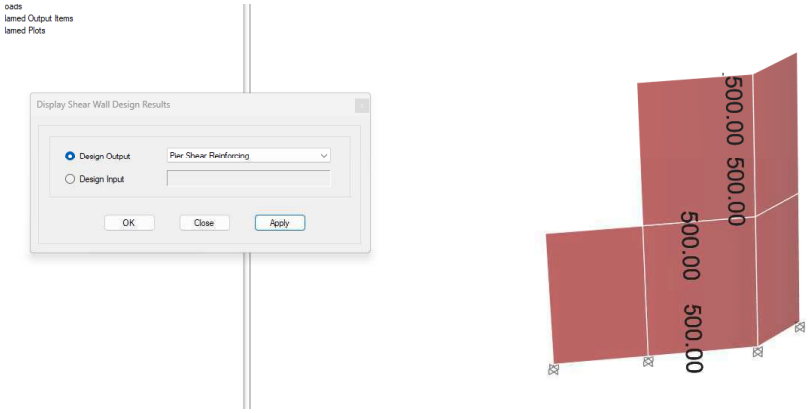


Figure 6-15 Pier Shear Reinforcing at Auditrium part

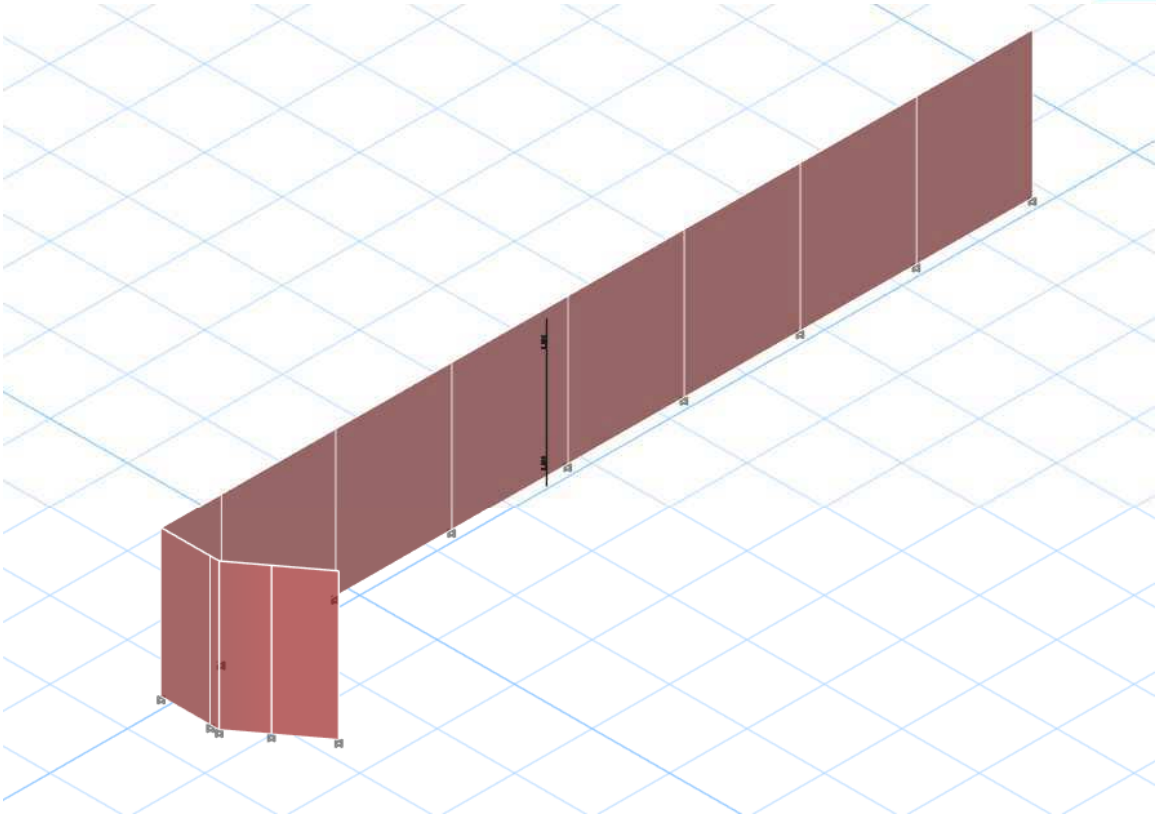


Figure 6-16 Pier D/C Ratio at Swimming Part

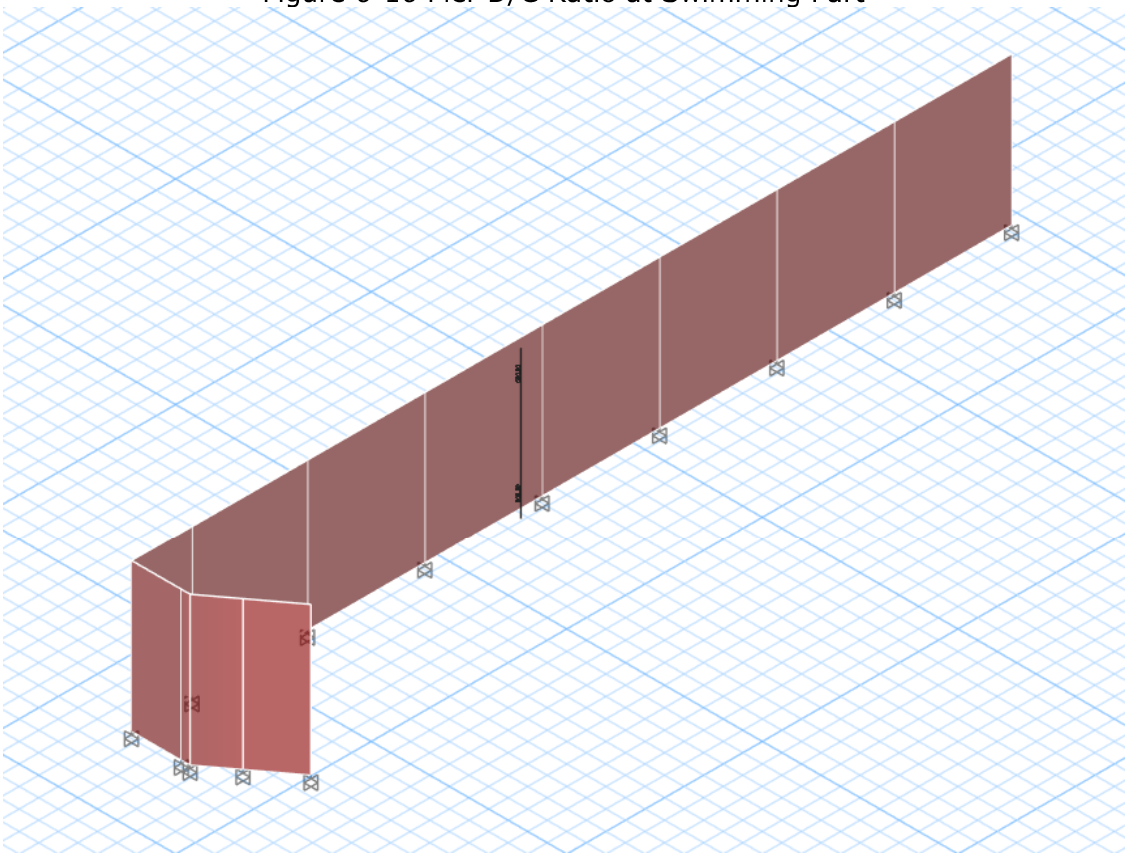


Figure 6-17 Pier Shear Reinforcing at Swimming Part

6.2 SAFE Design Result (Slabs and Beams)

6.2.1 *Slab Design*

The slab design has been carried out by checking the long-term deflection, Crack width and flexure. The Ground floor slab, Typical Floor slab and Roof floor slab are exported by ETABS and analyze using SAFE software.

Long term deflection is checked with the allowable deflection limit of L/240. The long-term deflection for each floor is found to be within the allowable limit.

For flexure, the slab design procedure involves defining sets of strips in two directions. The locations of the strips are based on the location of the rib slab. The moments for a particular strip are recovered from the analysis, and a flexural design is carried out based on the ultimate strength design method (ACI 318-14) for reinforced concrete as described in the following sections. The slab design moments were integrated across design strips and design the required reinforcement. The required flexural reinforcement of the existing slab is calculated and checked with the provided reinforcement (refer to Approved structural drawing nos. AD/23/76/S101 and AD/23/76/S09). The flexural reinforcement for each design strip is checked and found to be sufficient. Therefore, the slab design is adequate.

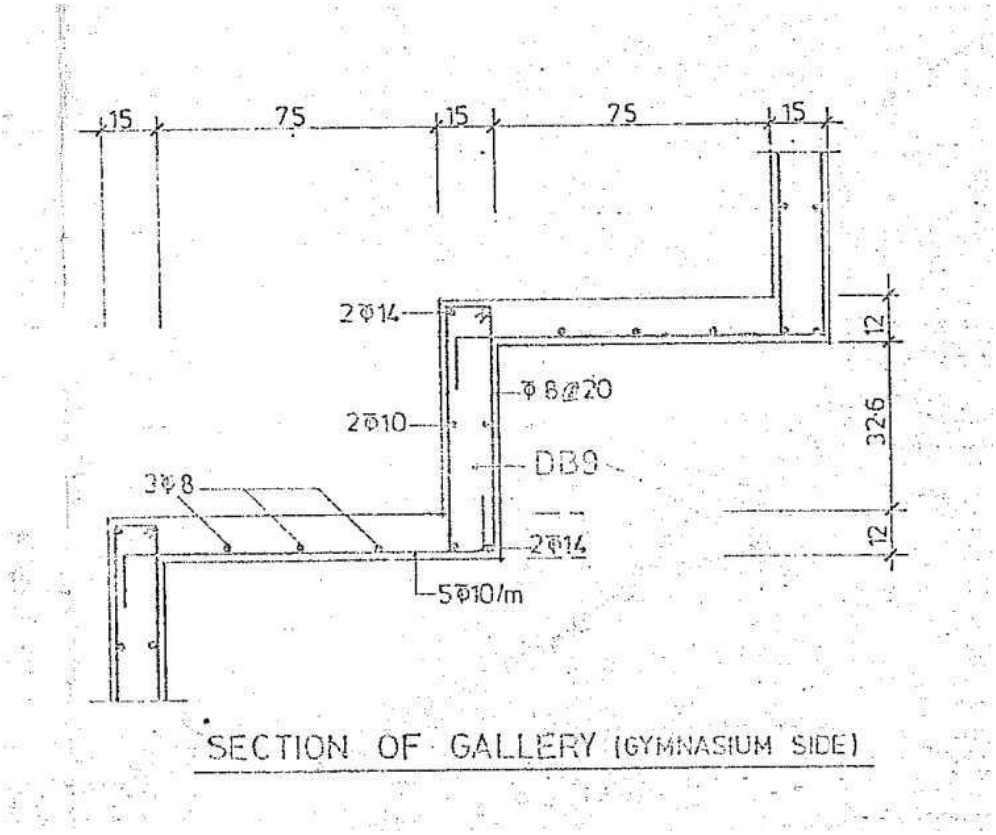


Figure 6-18 Reinforcement at Ground Floor Level as per as-built drawings refer to **APPINDIX B**

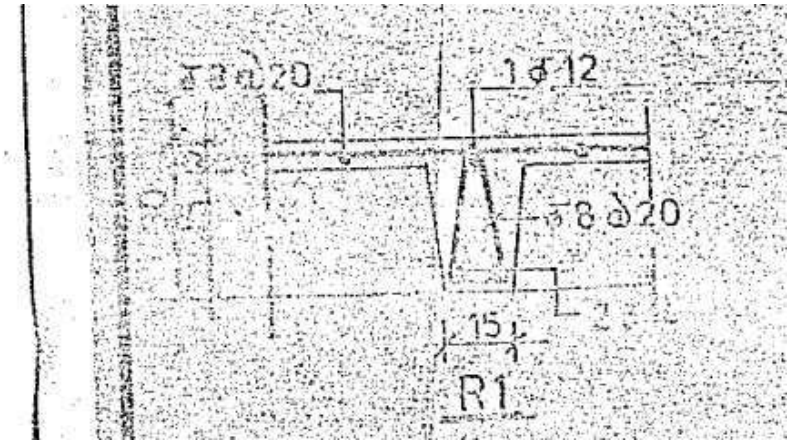


Figure 6-19 Reinforcement at Roof Floor Level for Ribbed slab-(R1) as per as-built drawings refer to **APPINDIX B**

6.2.1.1 Gymnasium part

A. Ground Floor

The computed maximum deflection at Ground Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	5.0	20.83	11.5	Computed Deflection is within the allowable deflection

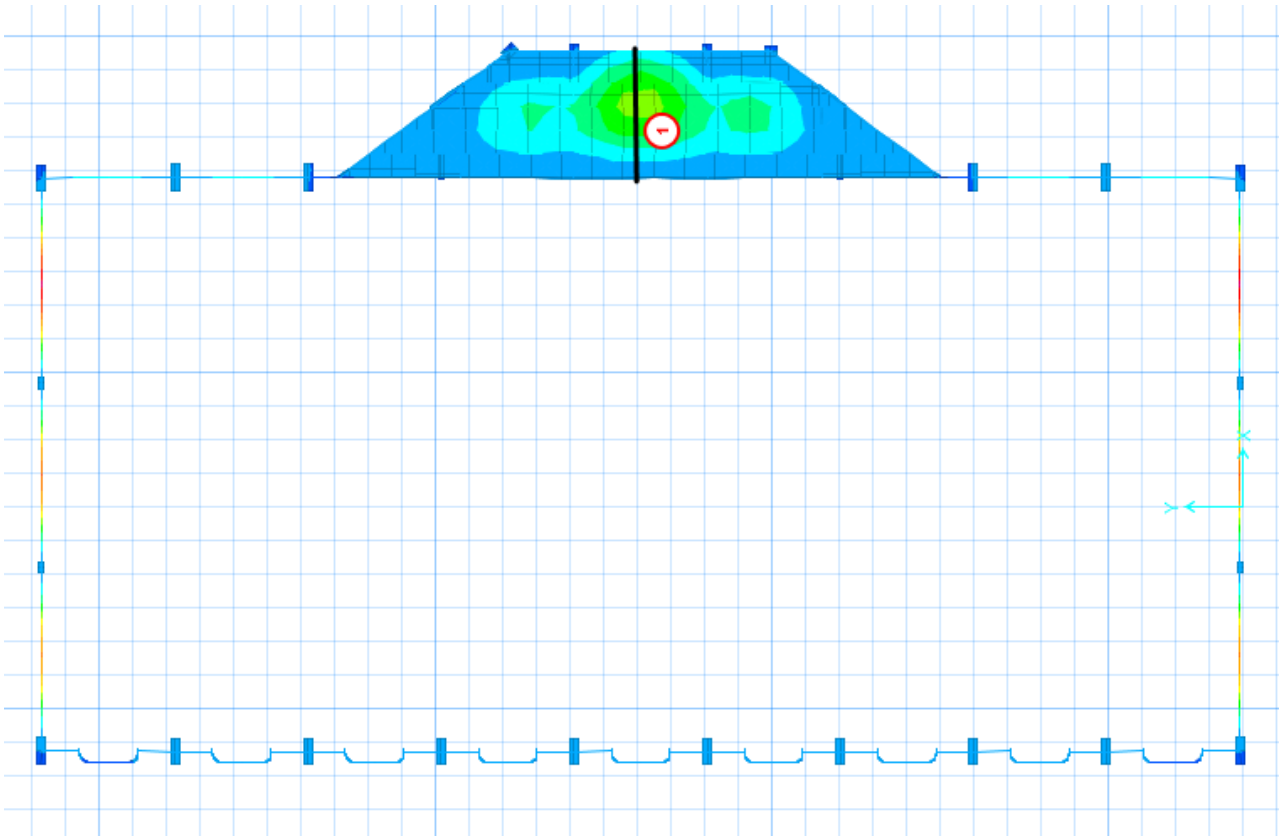


Figure 6-20 Long-Term Deflection at Ground Floor Level

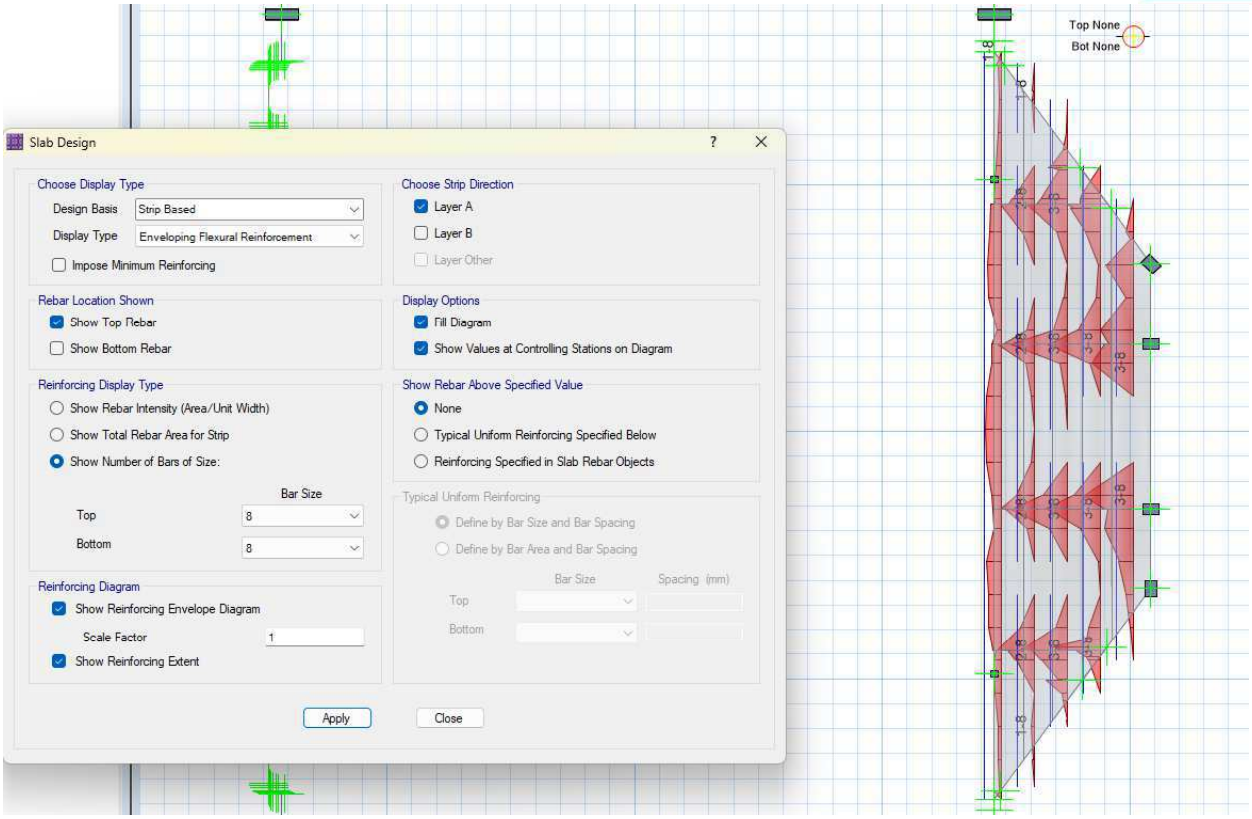


Figure 6-21 Slab Strip Design – Layer A – Top Reinforcing –3T8 mesh at Ground Floor Level as per as-built Drawings refer to **Appendix B**

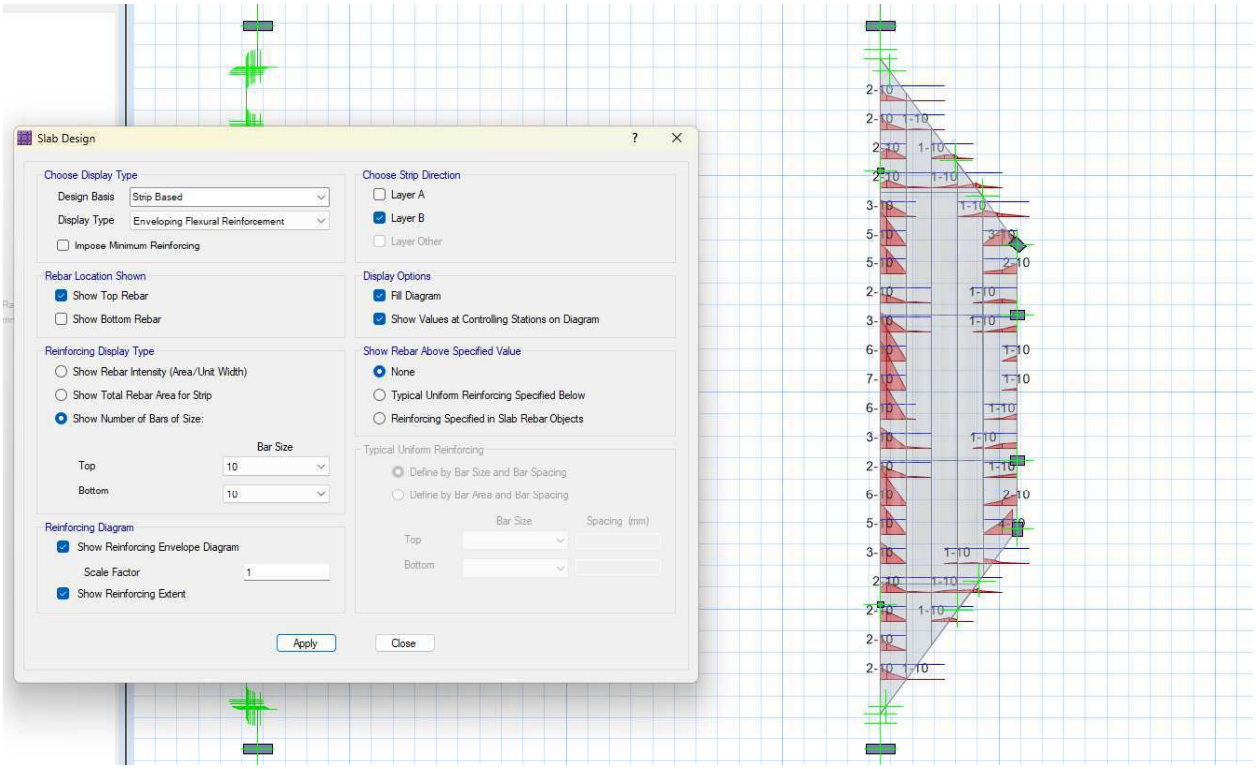


Figure 6-22 Slab Strip Design – Layer B – Top Reinforcing –5T10-mesh at Ground Floor Level as per as-built Drawings refer to **Appendix B**

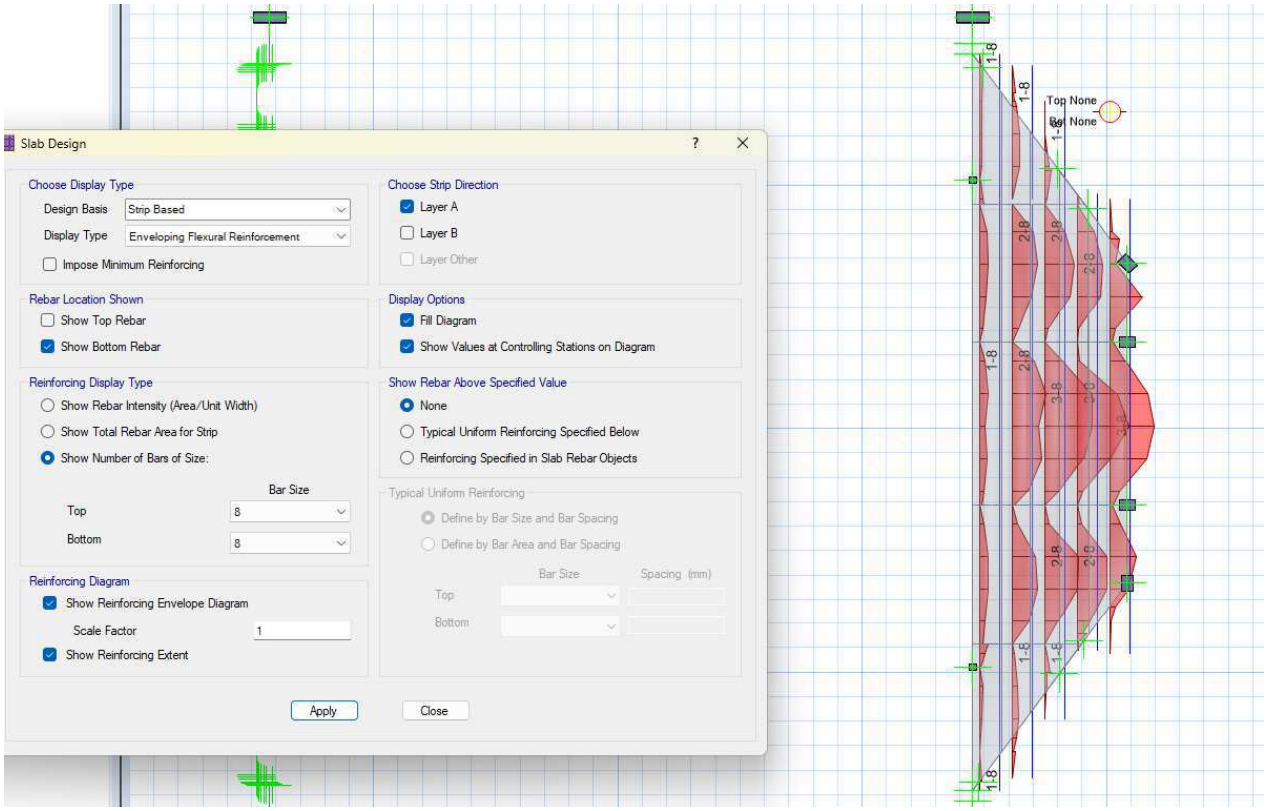


Figure 6-23 Slab Strip Design – Layer A – Top Reinforcing –3T8 mesh –Bottom Reinforcing at ground Floor Level as per as-built Drawings refer to **Appendix B**

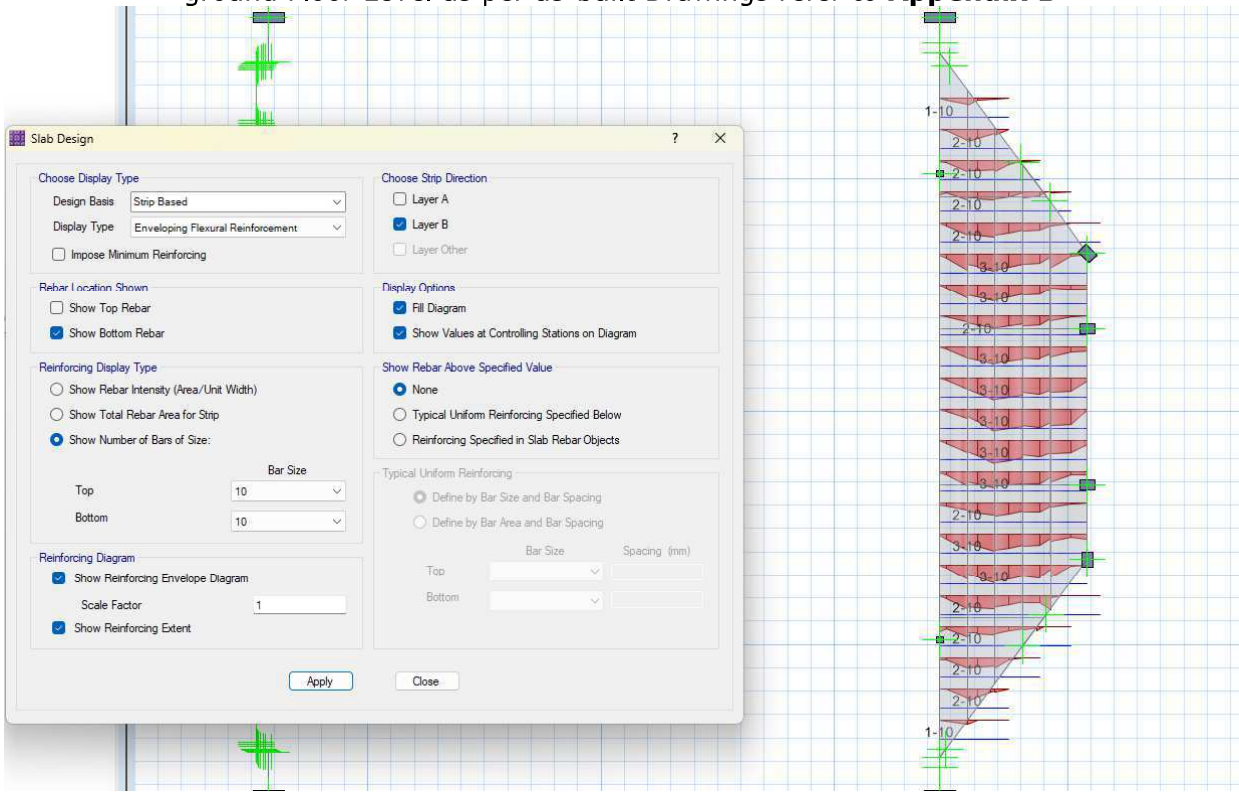


Figure 6-24 Slab Strip Design – Layer B –5T10 mesh –Bottom Reinforcing at ground Floor Level as per as-built Drawings refer to **Appendix B**

B. Roof Floor

The computed maximum deflection at Roof Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	5.00	20.1	7.8	Computed Deflection is within the allowable deflection

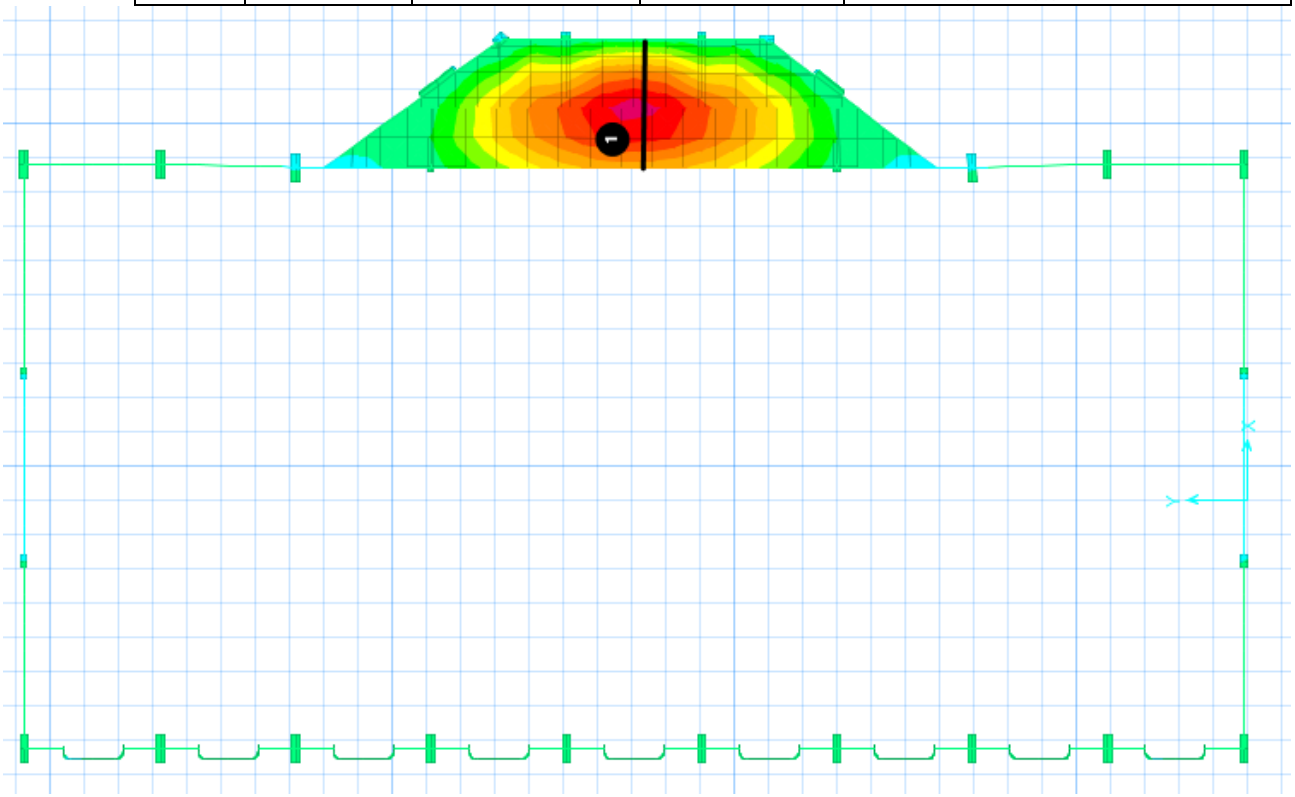


Figure 6-25 Long-Term Deflection at Roof Floor Level

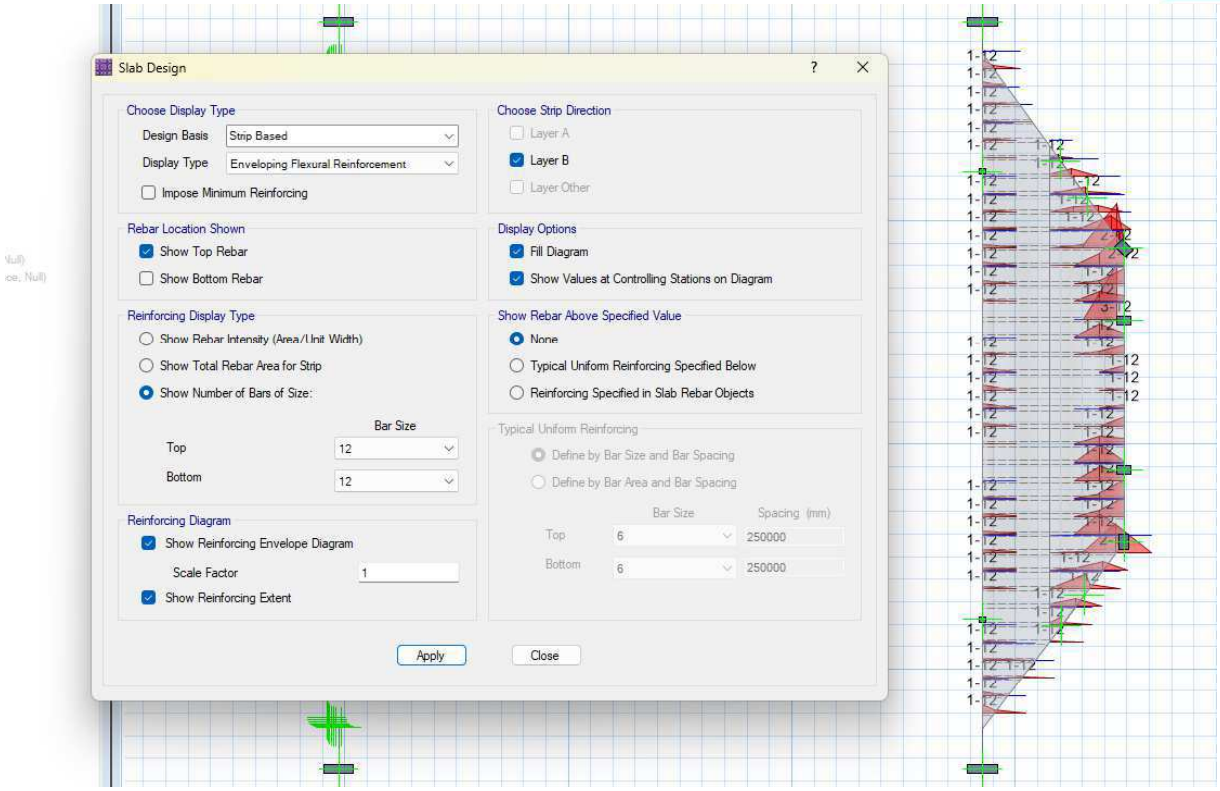


Figure 6-26 Slab Strip Design – Layer A – Top Reinforcing – Roof Floor Level

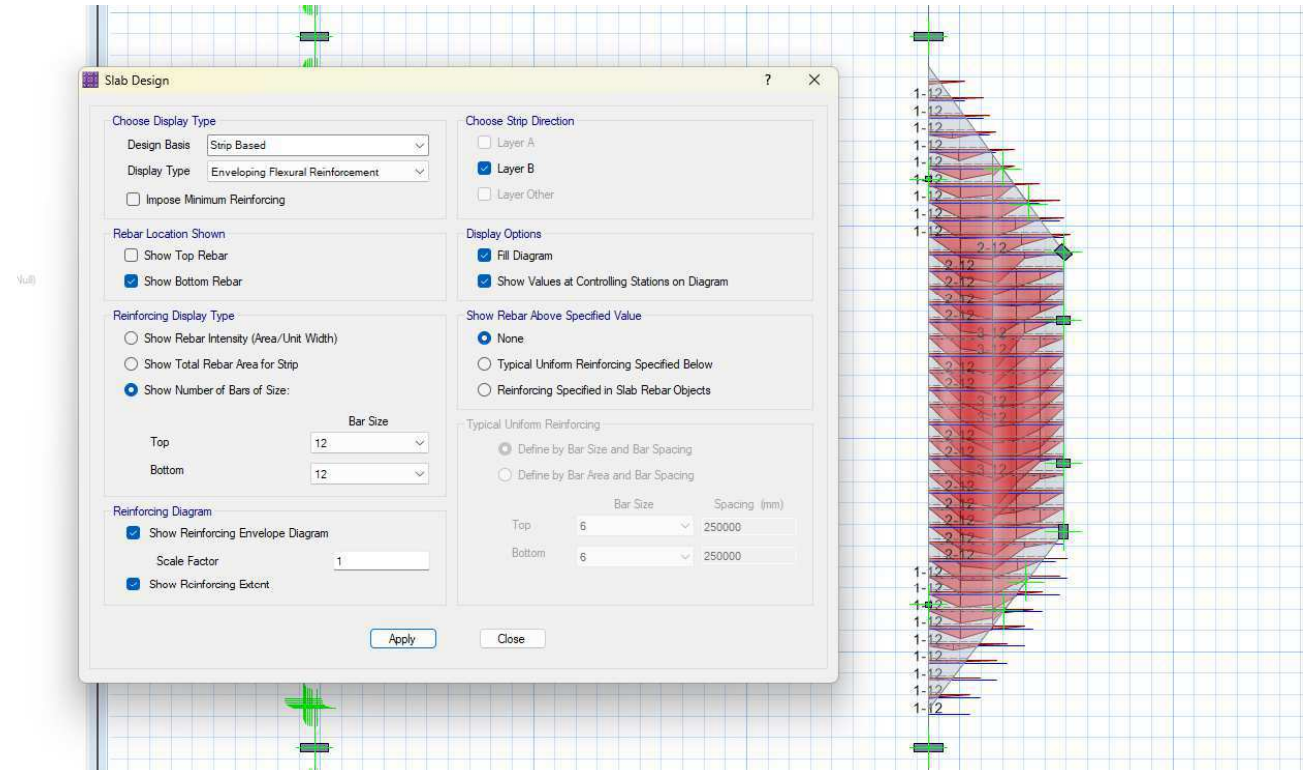


Figure 6-27 Slab Strip Design – Layer A –Bottom Reinforcing at Roof Floor Level

6.2.1.2 Auditorium part

A. Ground Floor

The computed maximum deflection at Ground Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	6.0	25.00	19.51	Computed Deflection is within the allowable deflection

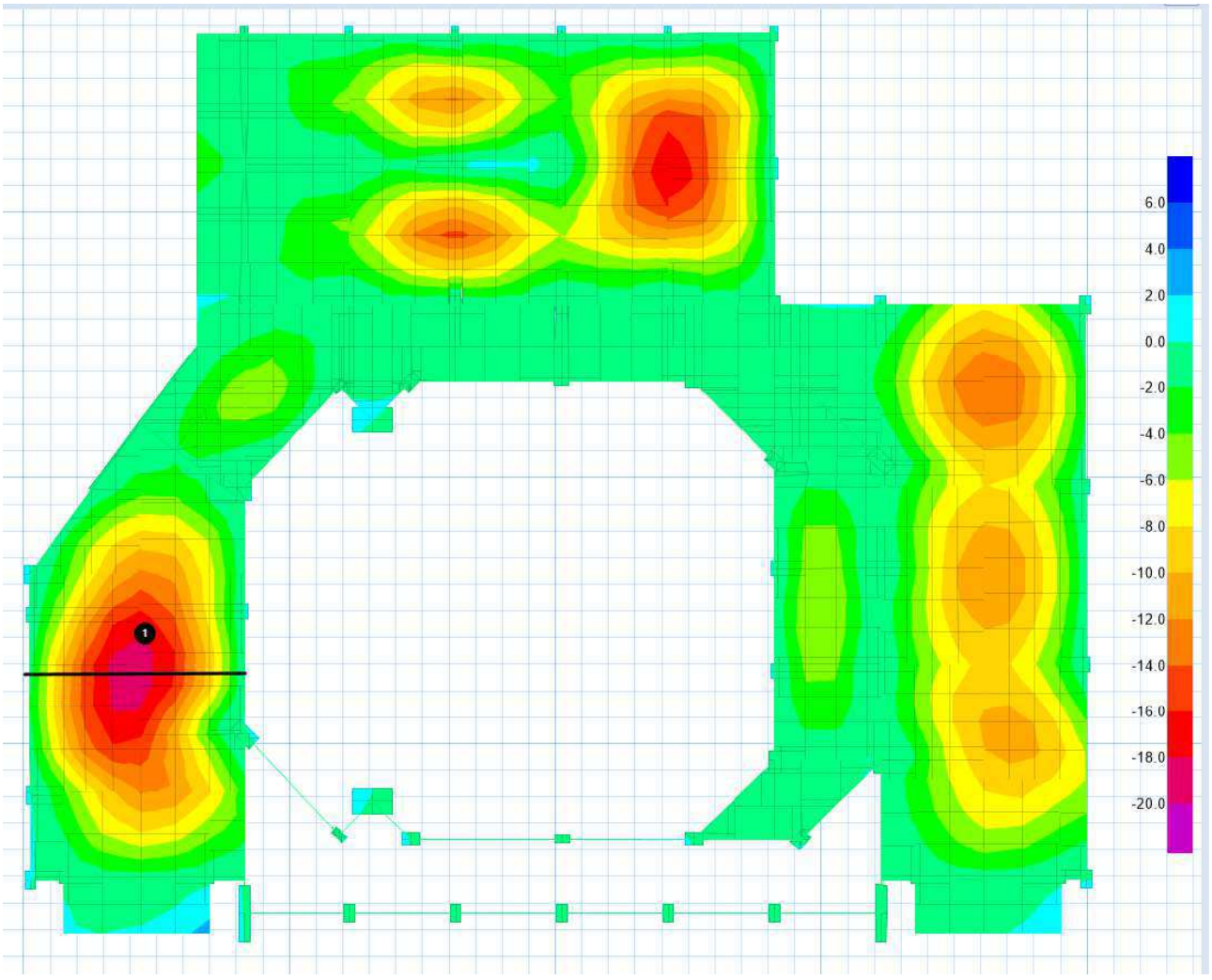


Figure 6-28 Long-Term Deflection at Ground Floor Level

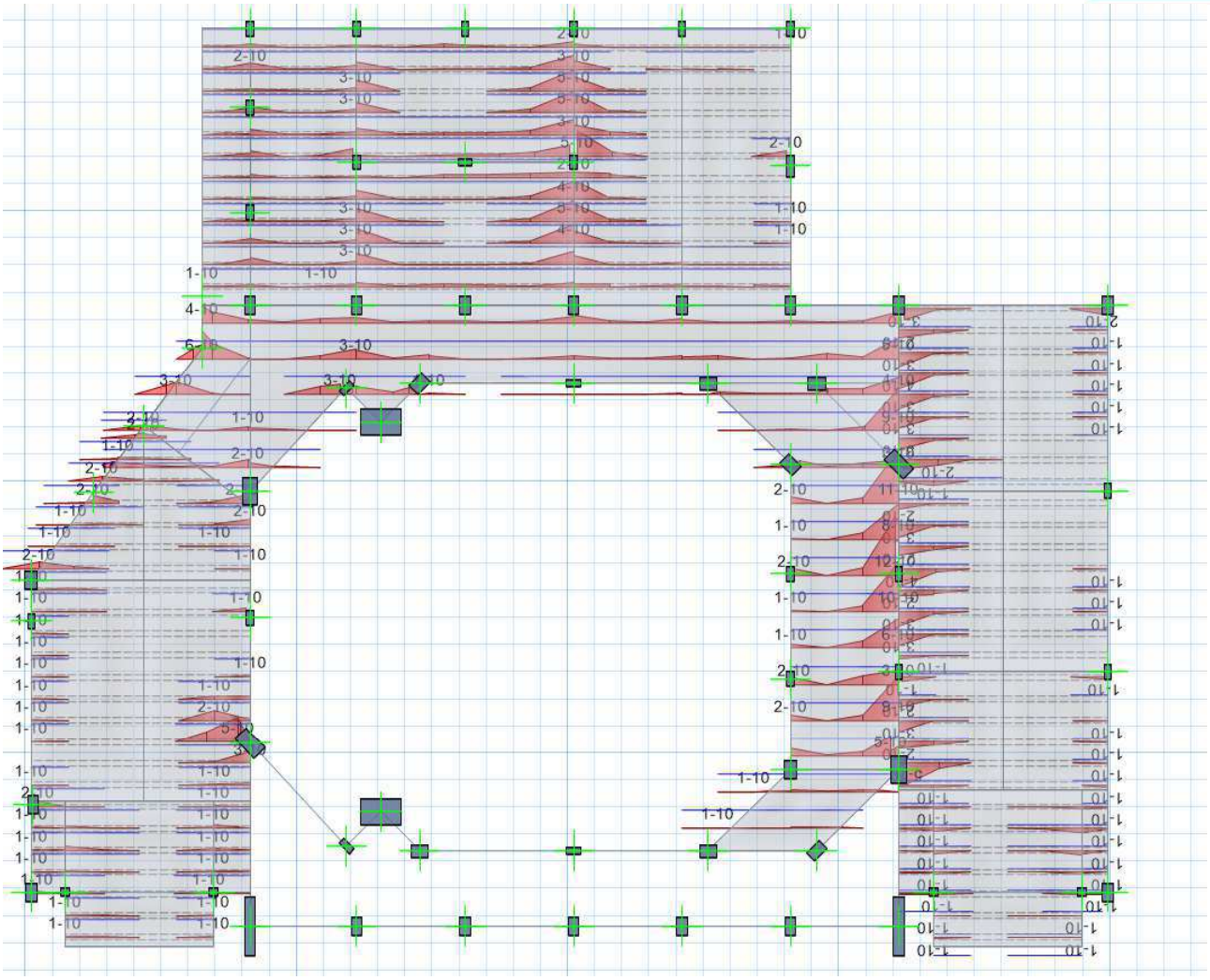


Figure 6-29 Slab Strip Design – Layer A – Top Reinforcing –5T8 for Ribs and 5T10 mesh for solid slab at GROUND Floor Level as per as-built Drawings refer to **Appendix B**

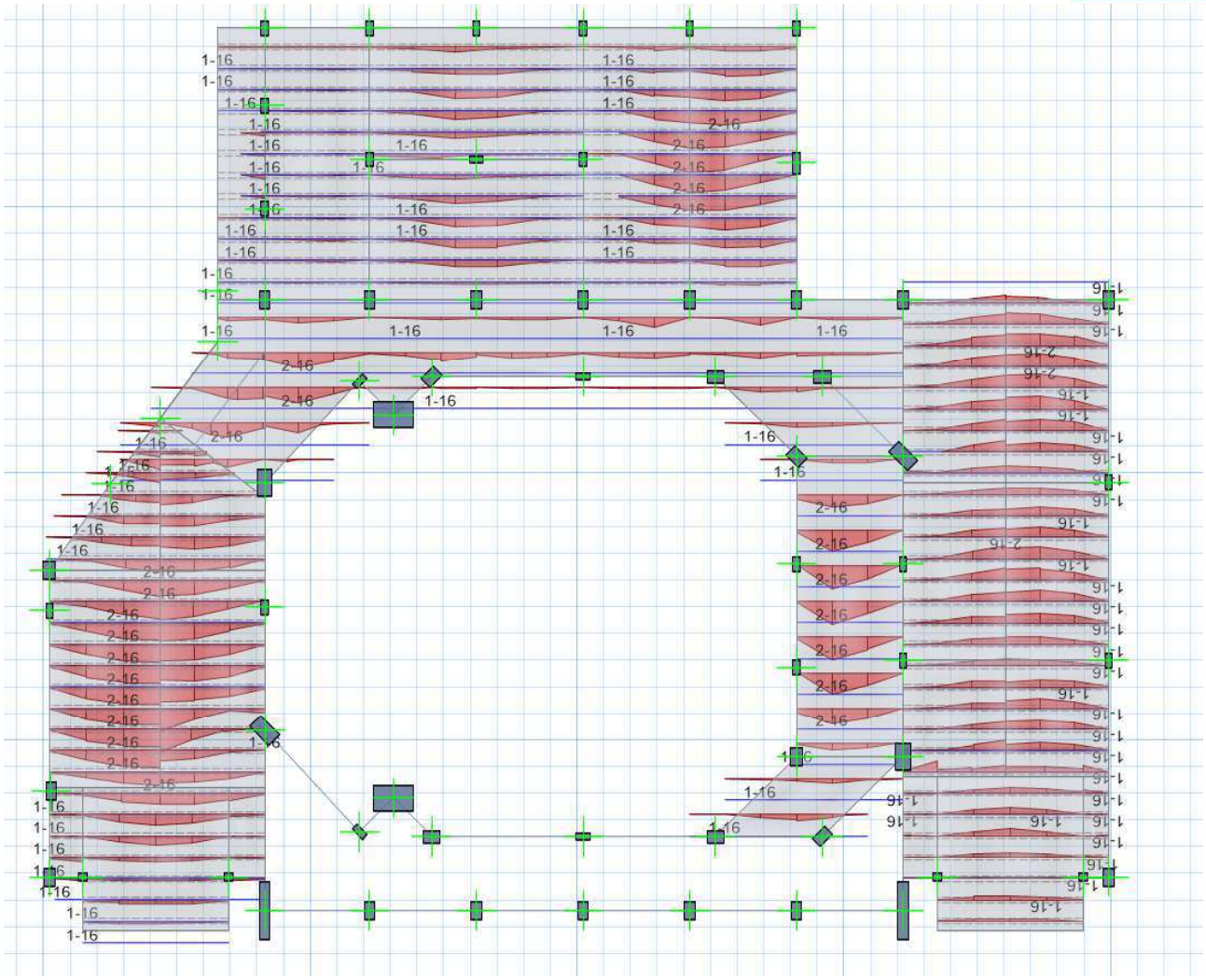


Figure 6-30 Slab Strip Design – Layer A – bottom Reinforcing –2T16-mesh at ground Floor Level as per as-built Drawings refer to **Appendix B**

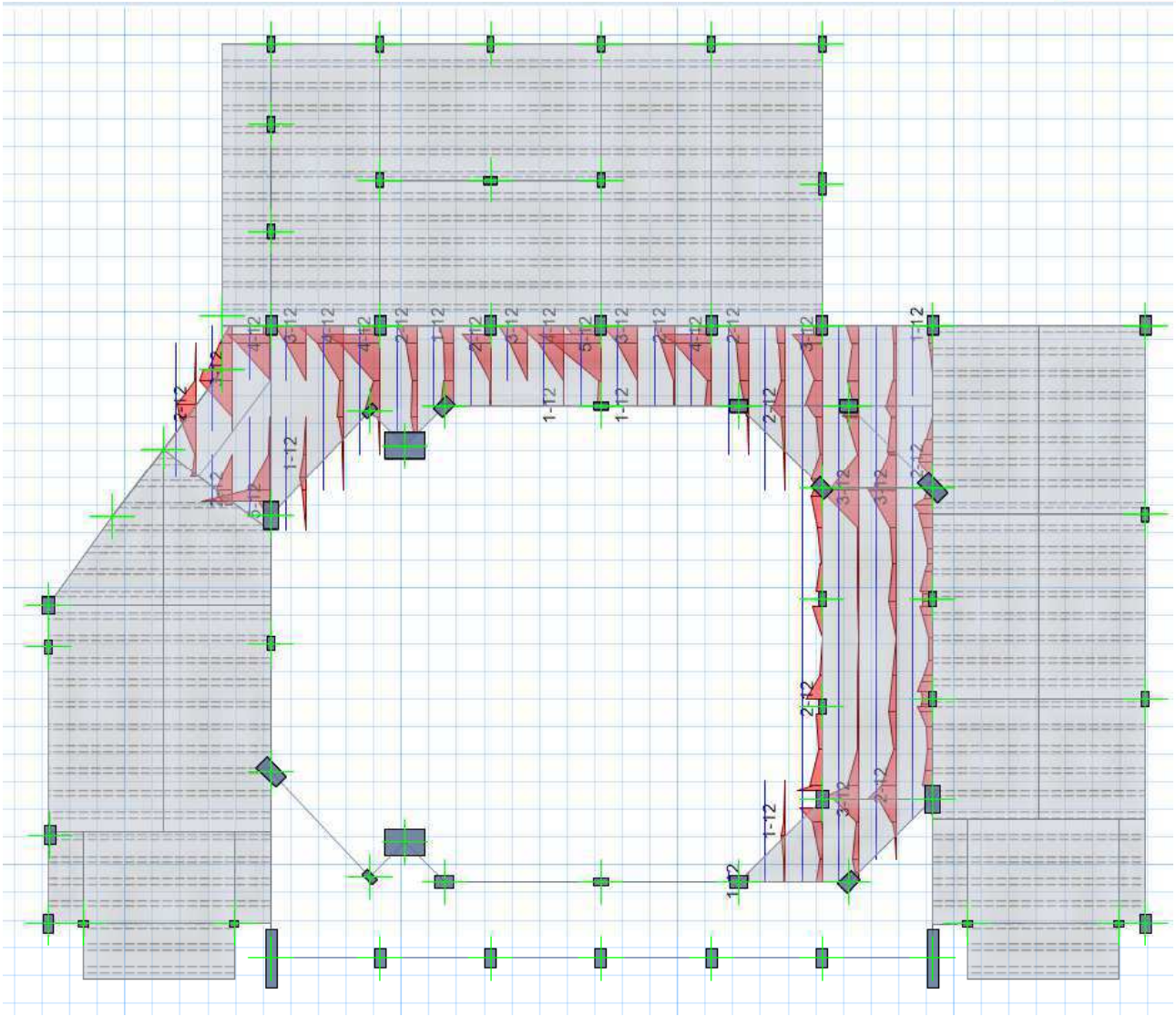


Figure 6-31 Slab Strip Design – Layer B – Top Reinforcing –6T12 mesh –Bottom Reinforcing at ground Floor Level as per as-built Drawings refer to **Appendix B**

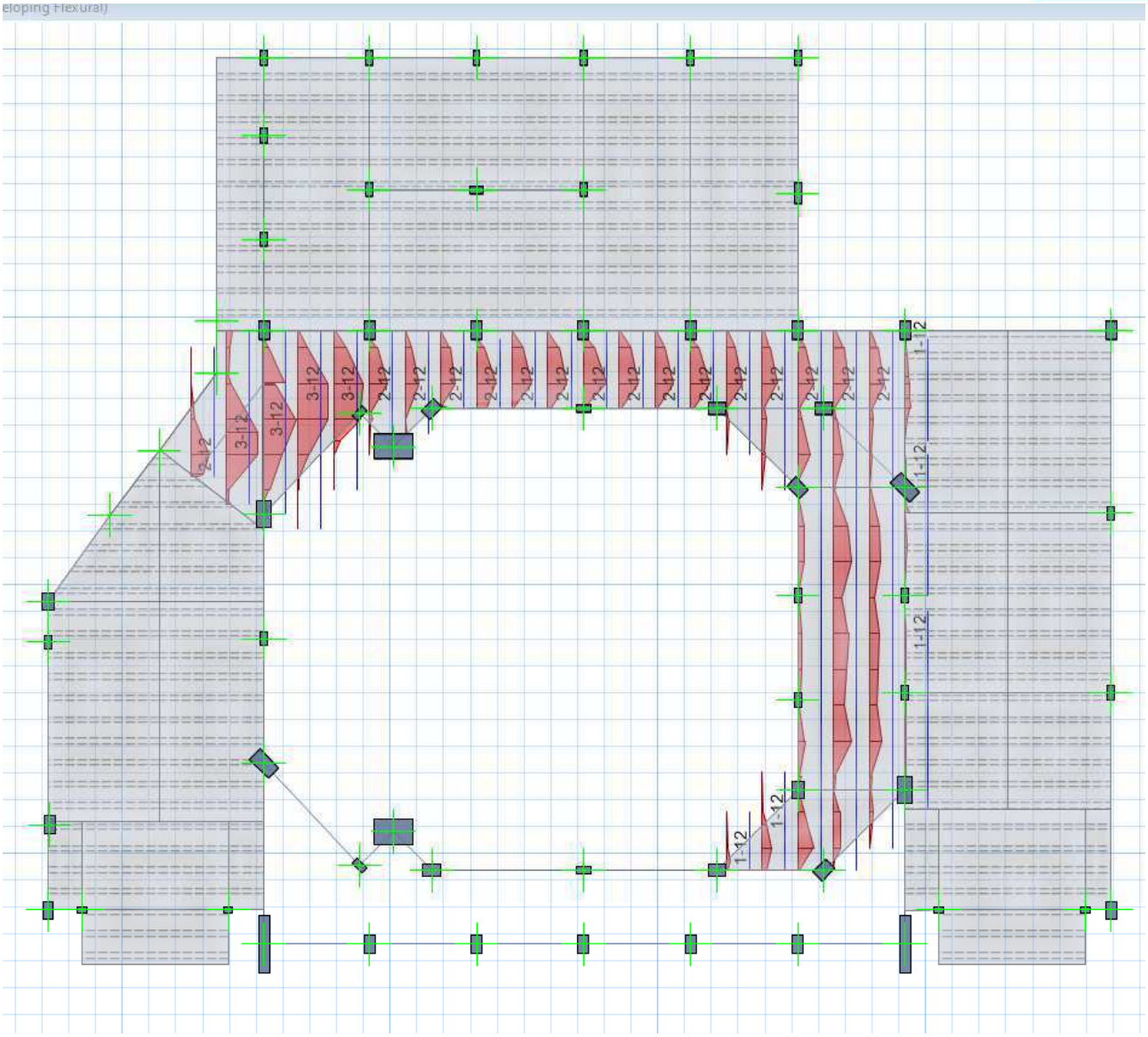


Figure 6-32 Slab Strip Design – Layer B –6T12 mesh –Bottom Reinforcing at Ground Floor Level as per as-built Drawings refer to **Appendix B** at Ground Floor Level

B. Roof Floor

The computed maximum deflection at Roof Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	7.85	32.7	18.5	Computed Deflection is within the allowable deflection

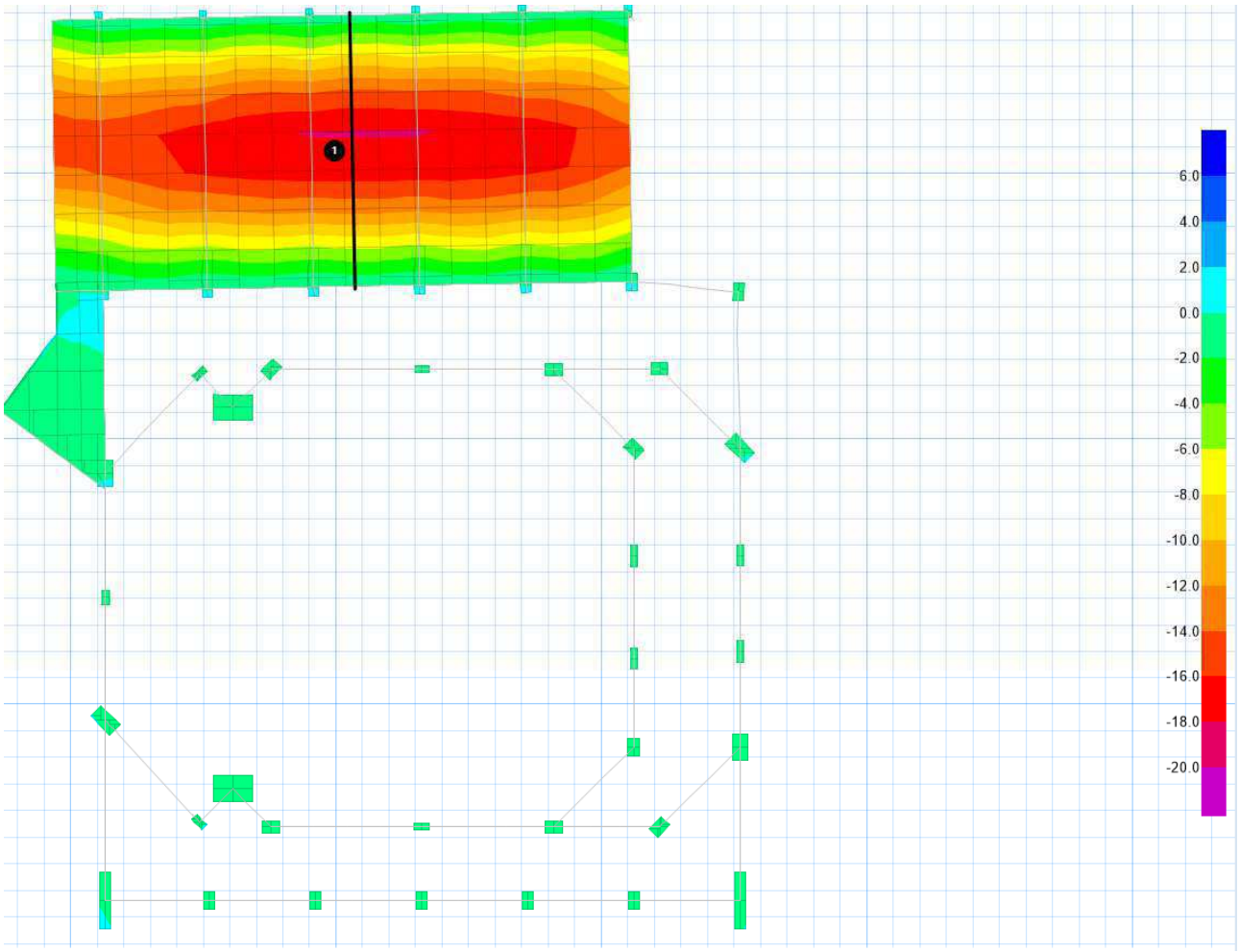


Figure 6-33 Long-Term Deflection at Roof Floor Level

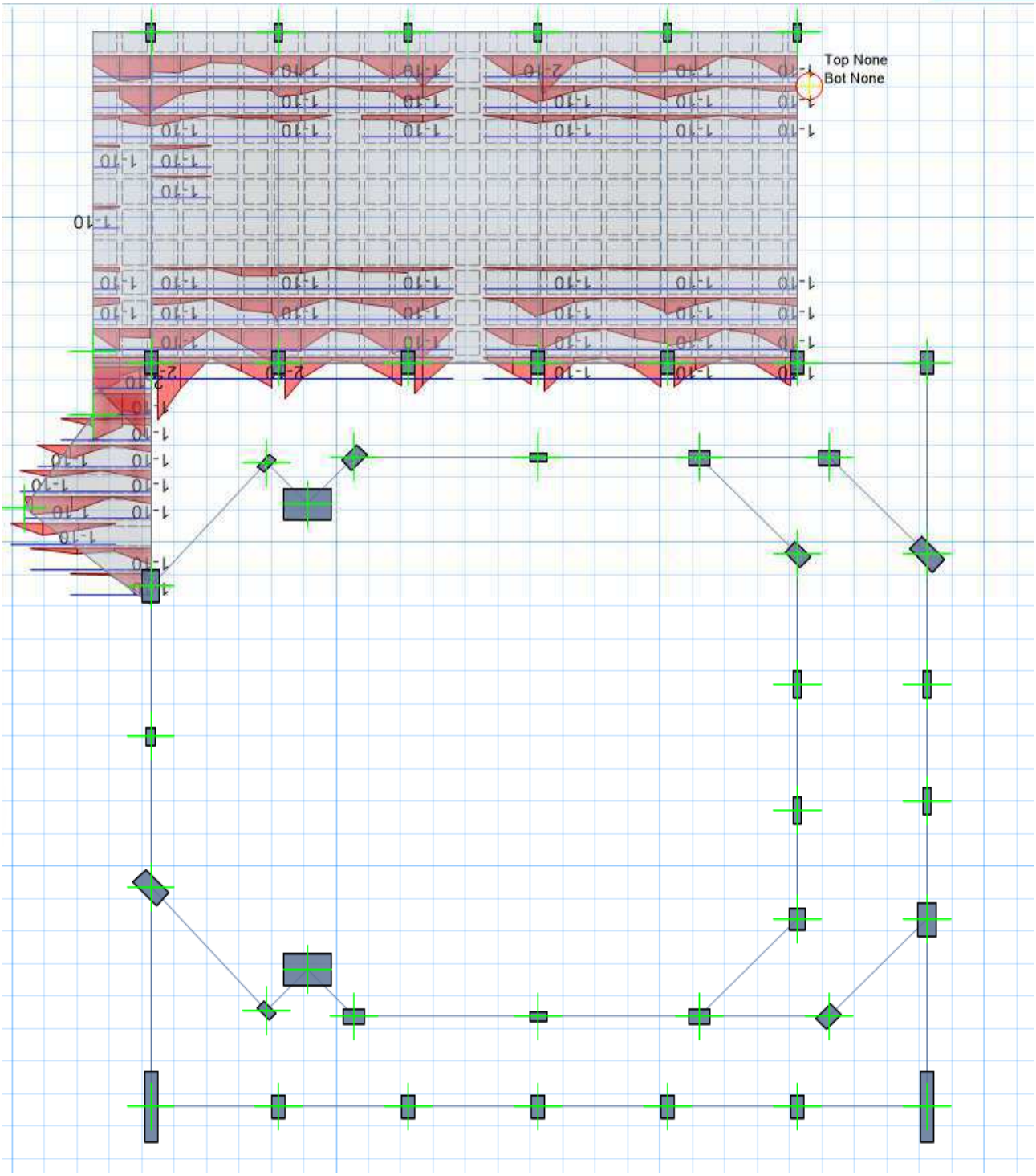


Figure 6-34 Slab Strip Design – Layer A – Top Reinforcing – 5T10 for Ribs at Roof Floor Level as per as-built Drawings refer to **Appendix B**

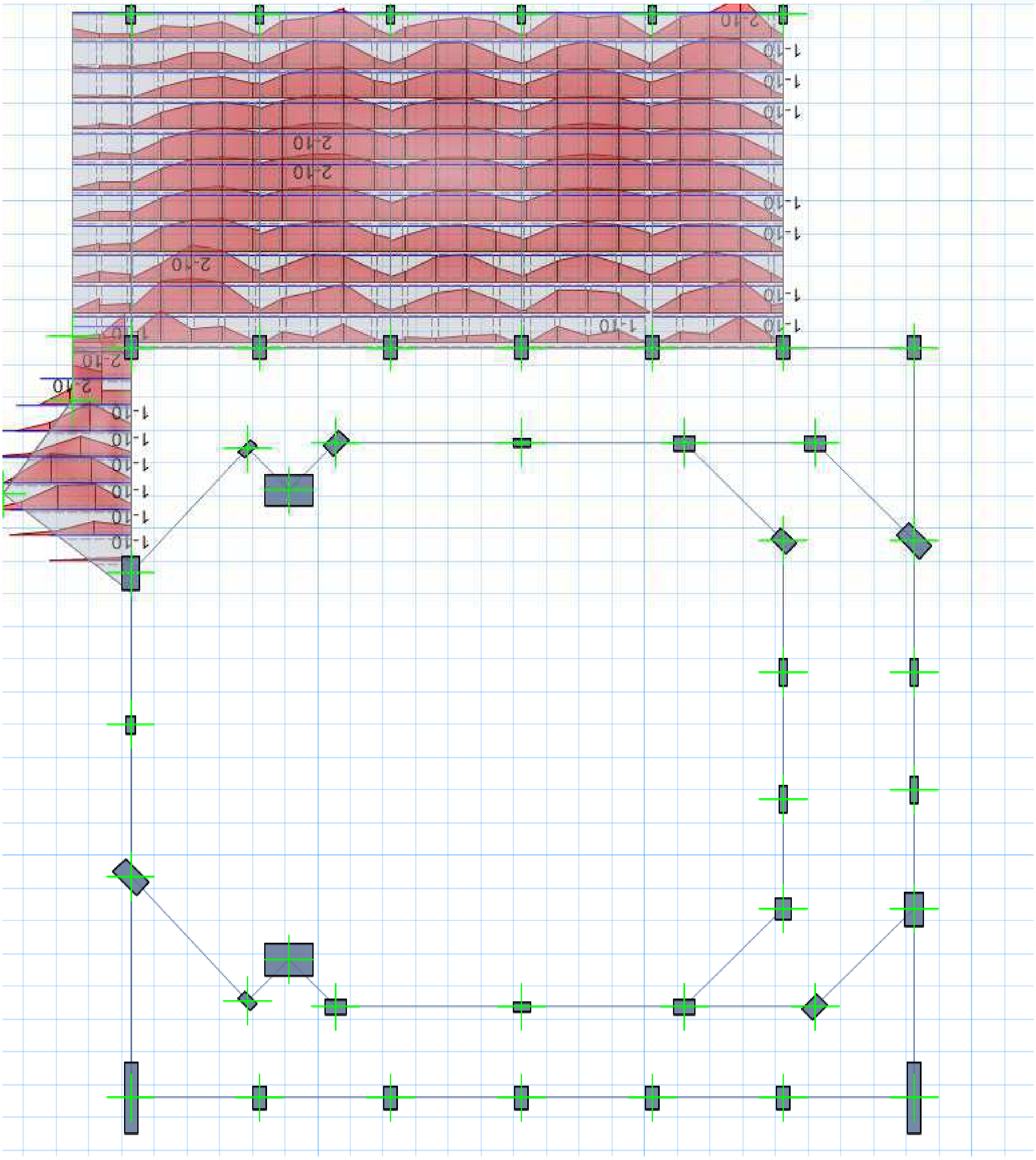


Figure 6-35 Slab Strip Design – Layer A –2T10 for Ribs at Bottom Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

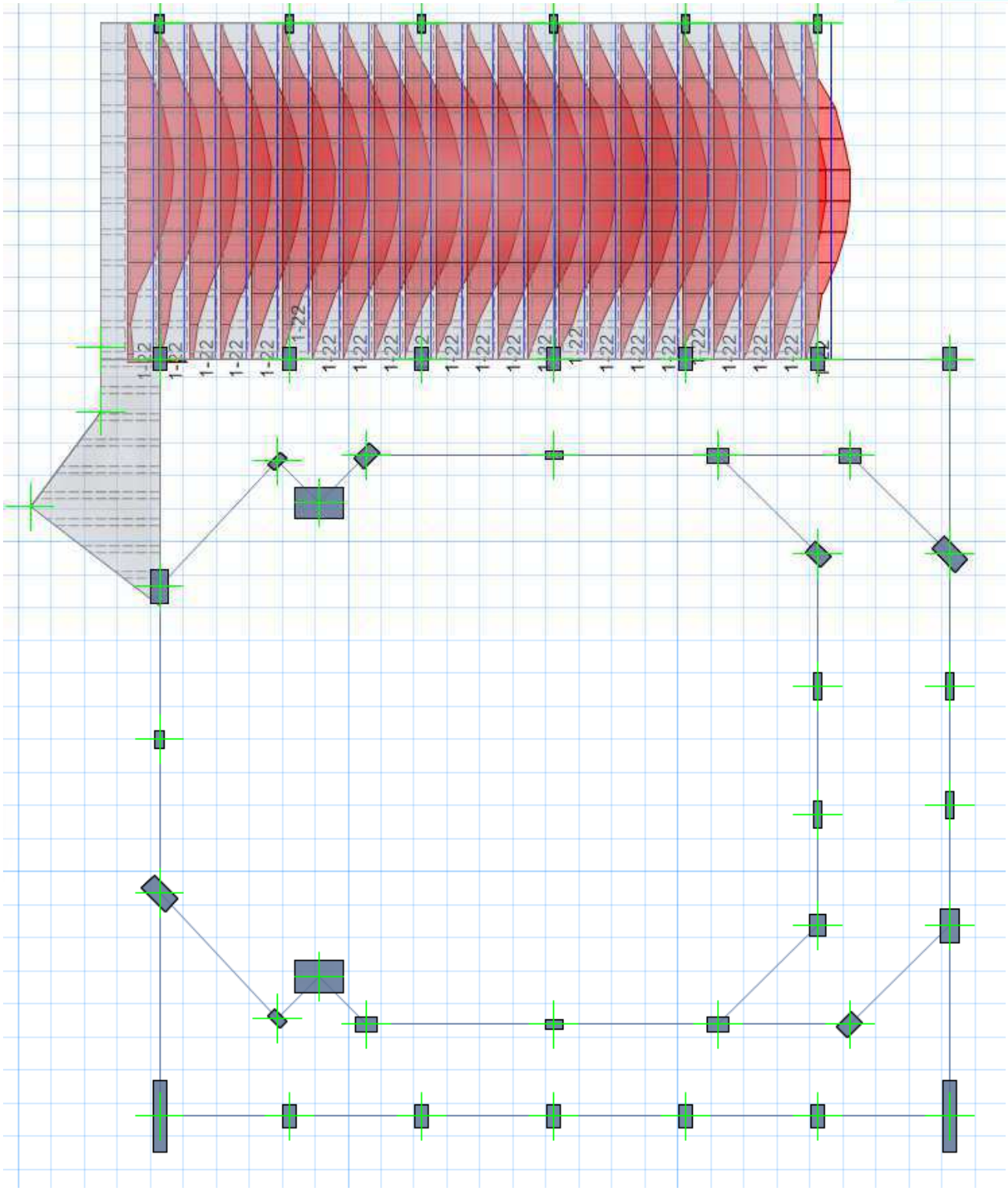


Figure 6-36 Slab Strip Design – Layer B –2T12 for Ribs at Bottom Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

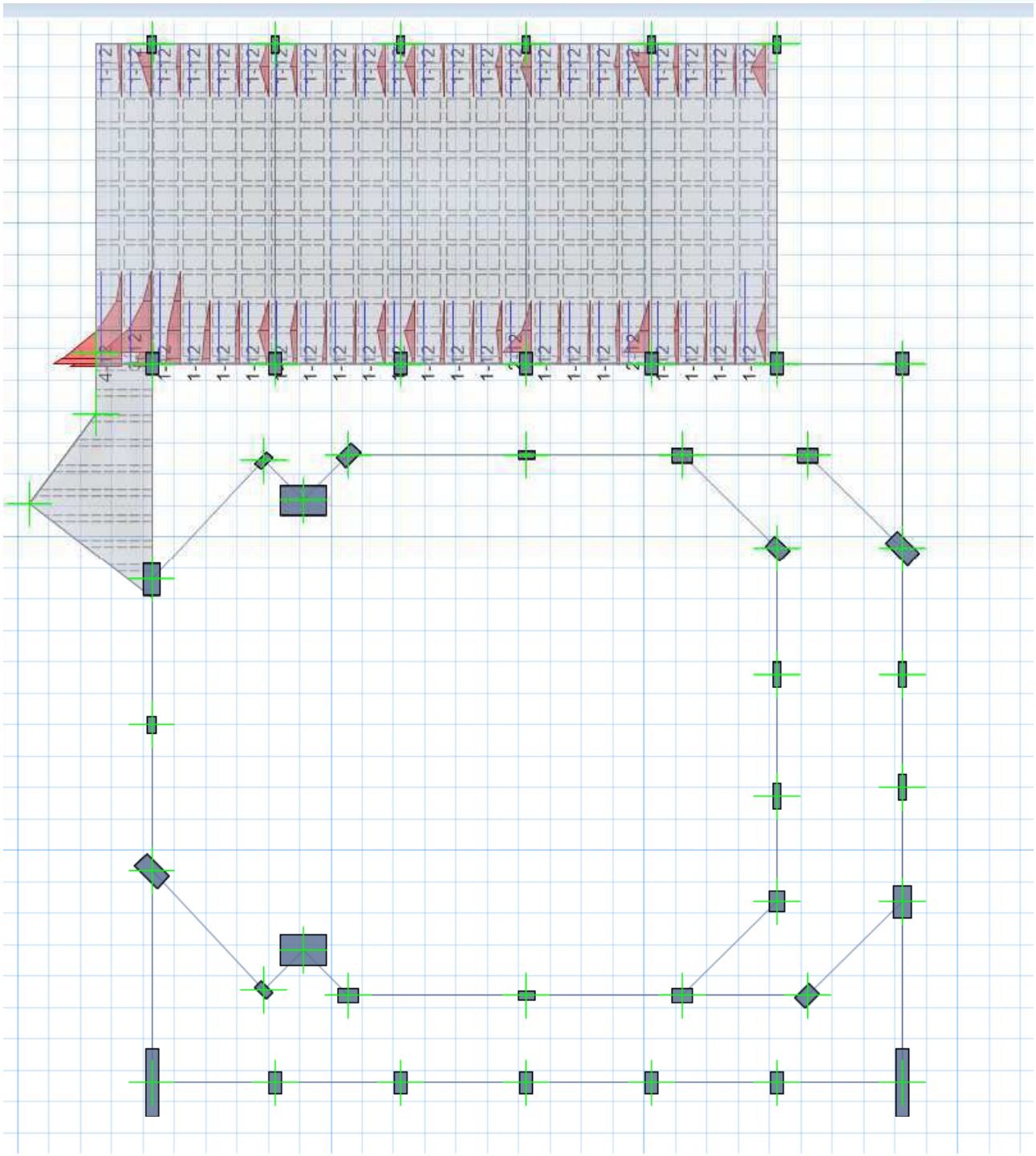


Figure 6-37 Slab Strip Design – Layer A –2T12 for Ribs at Top Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

6.2.1.3 Swimming Part

A. Ground Floor

The computed maximum deflection at Ground Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	5.0	20.8	6.8	Computed Deflection is within the allowable deflection

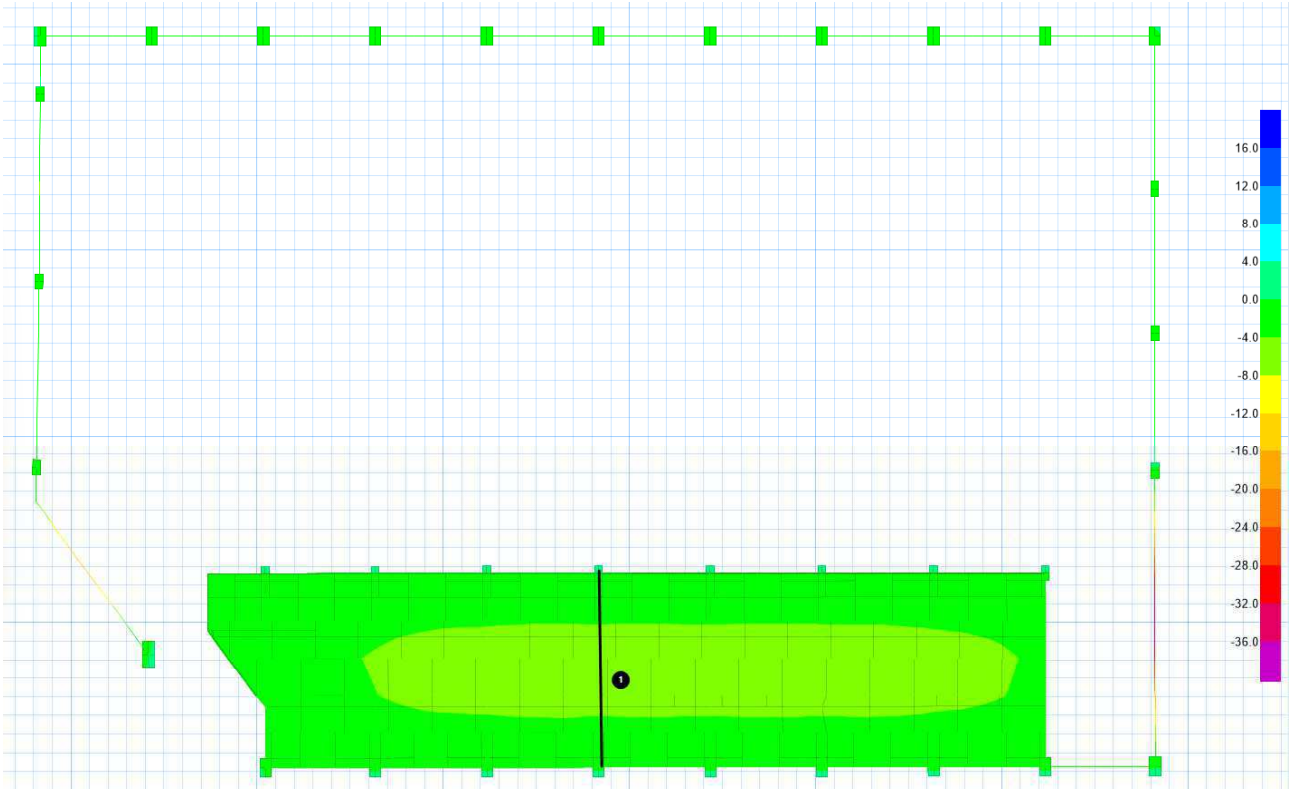


Figure 6-38 Long-Term Deflection at Ground Floor Level

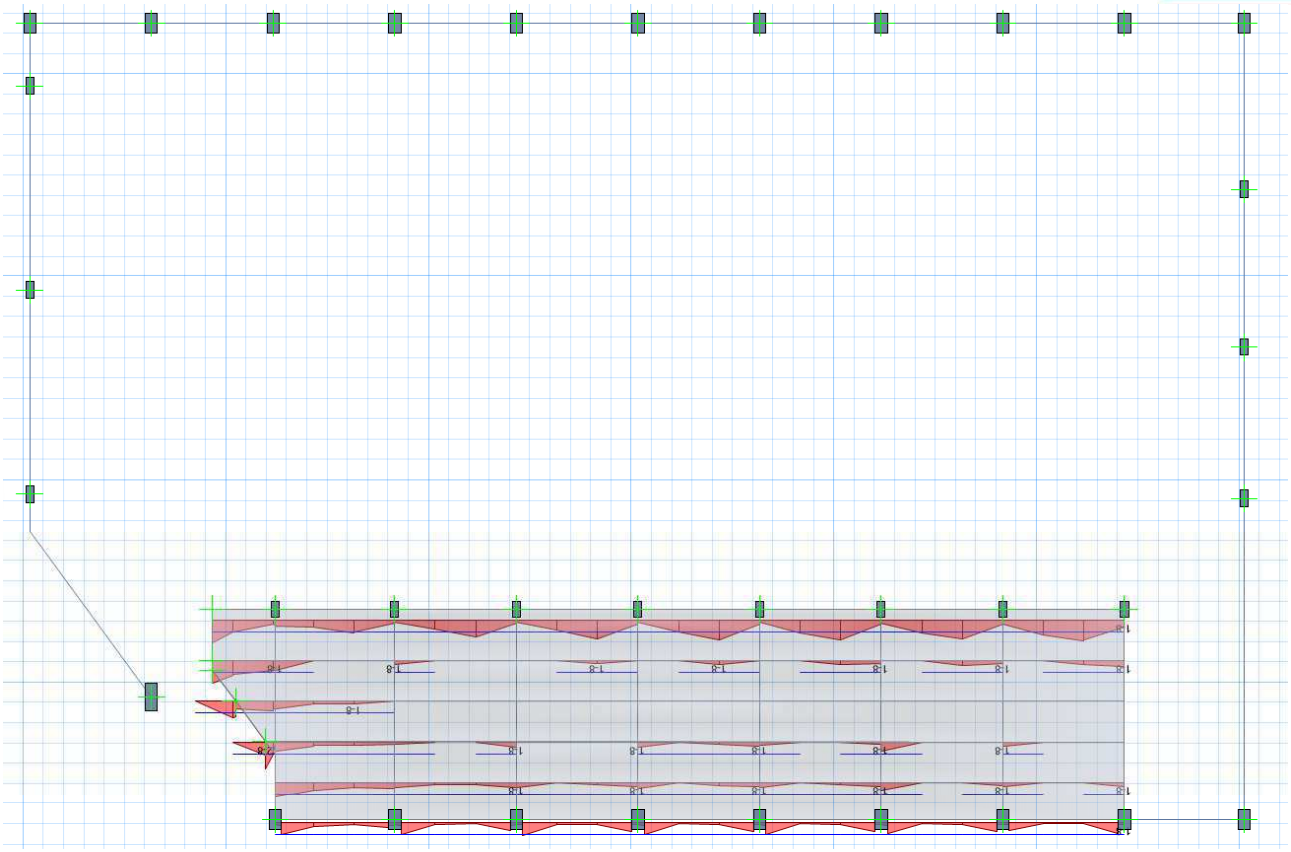


Figure 6-39 Slab Strip Design – Layer A – Top Reinforcing –4T8 for Ribs and 5T10 mesh for solid slab at GROUND Floor Level as per as-built Drawings refer to **Appendix B**

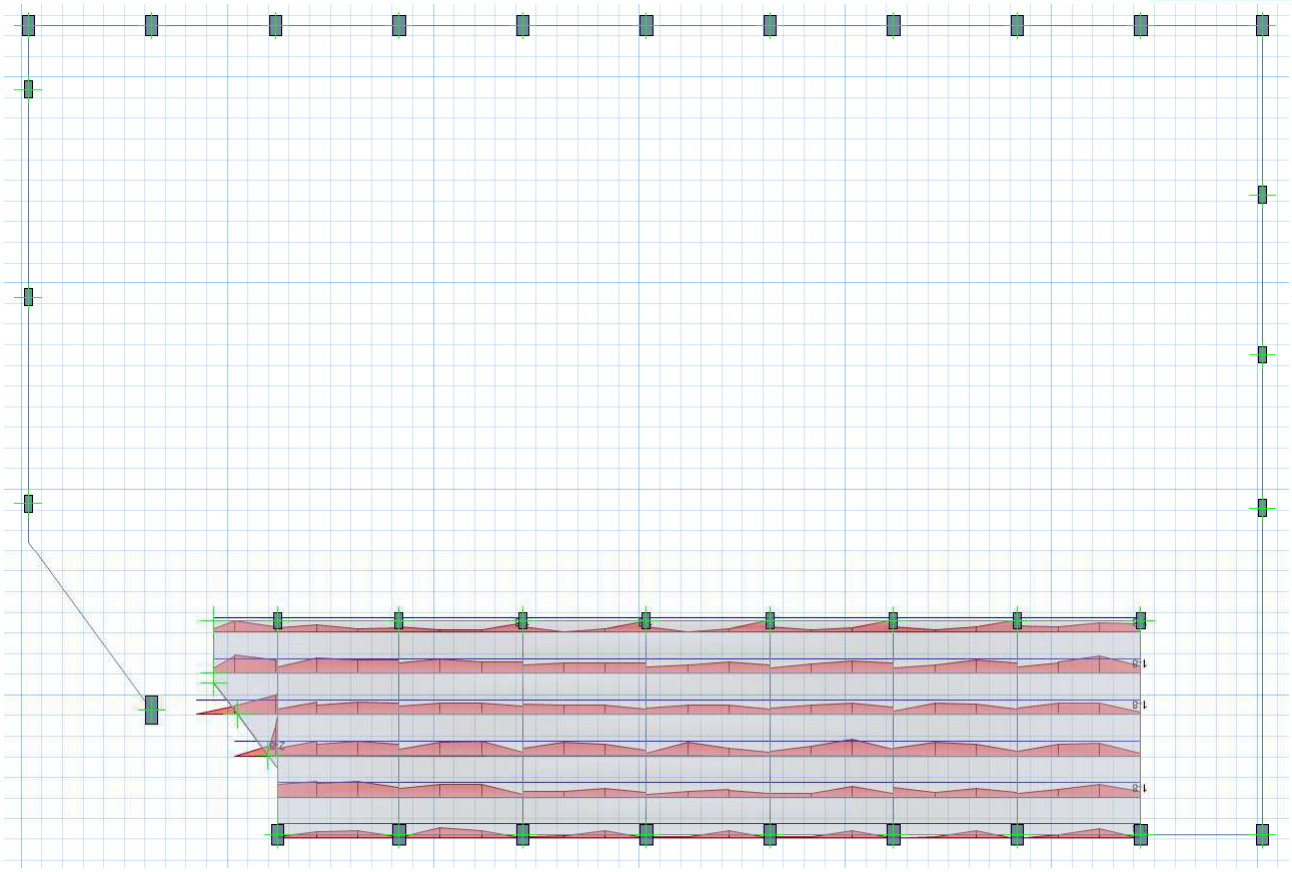


Figure 6-40 Slab Strip Design – Layer A – bottom Reinforcing –4T8-mesh at ground Floor Level as per as-built Drawings refer to **Appendix B**

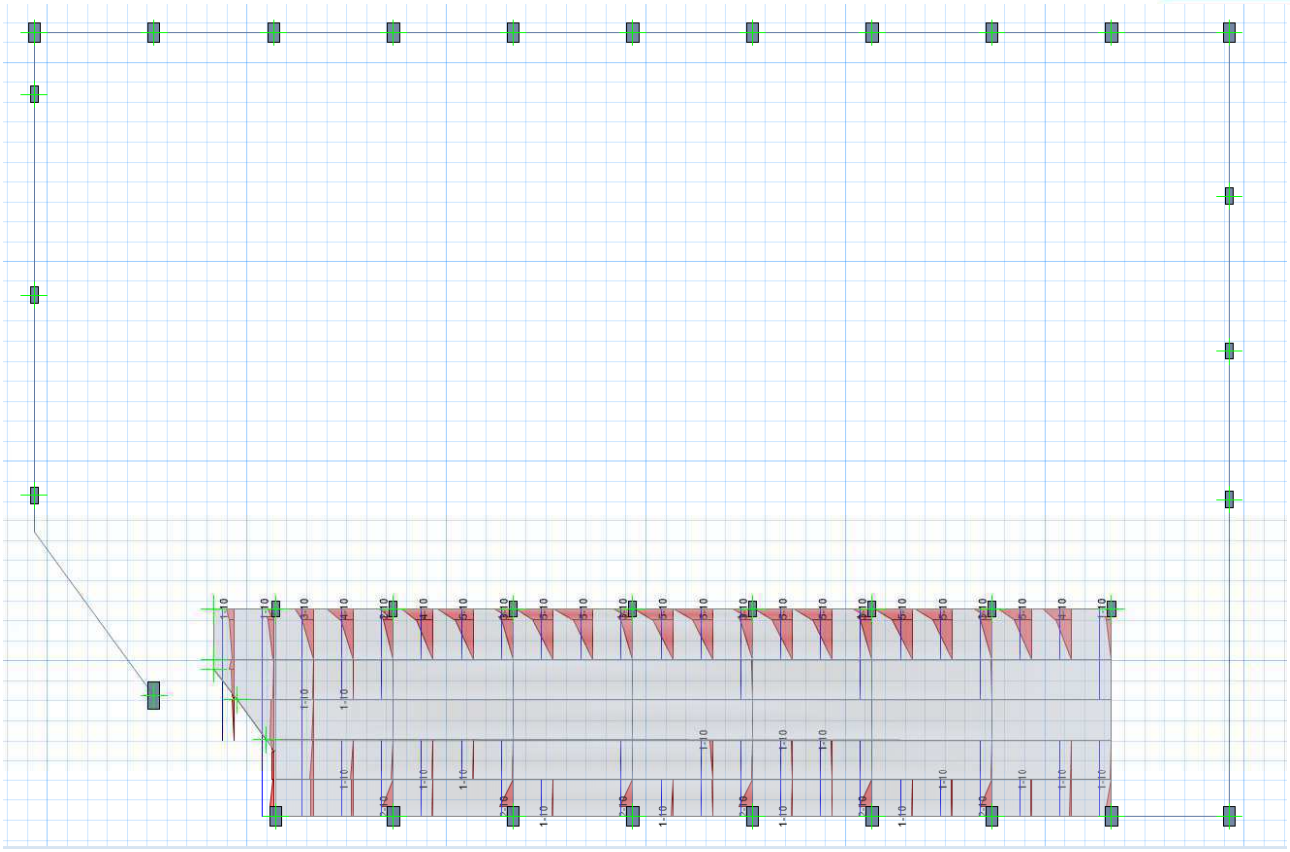


Figure 6-41 Slab Strip Design – Layer B – Top Reinforcing –5T10 mesh –Bottom Reinforcing at ground Floor Level as per as-built Drawings refer to **Appendix B**

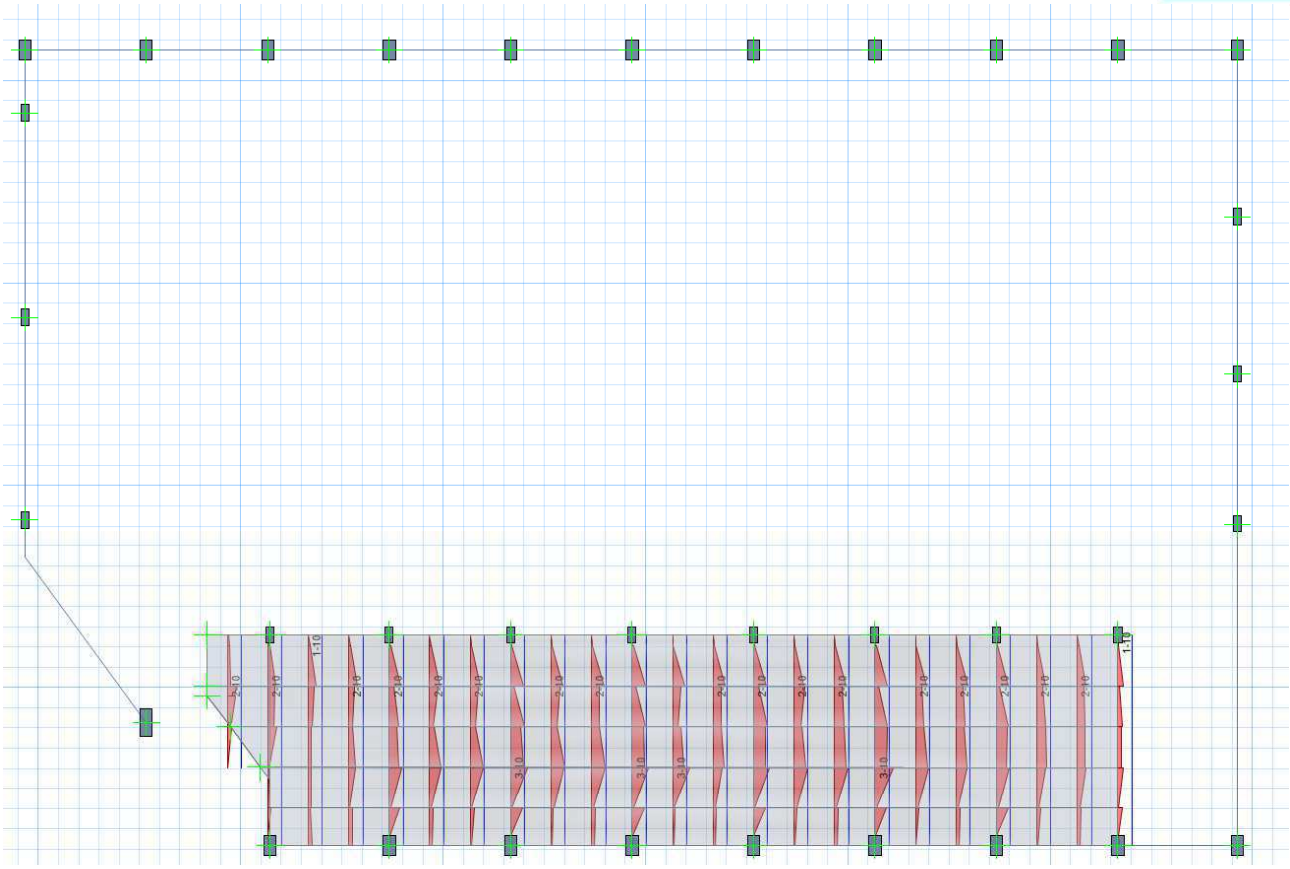


Figure 6-42 Slab Strip Design – Layer B –5T10 mesh –Bottom Reinforcing at Ground Floor Level as per as-built Drawings refer to **Appendix B** at Ground Floor Level

A. Roof Floor

The computed maximum deflection at Roof Floor is summarized below.

Label	Length, m	Allowable deflection, mm	Computed deflection, mm	Remarks
1	19.2	80	31	Computed Deflection is within the allowable deflection

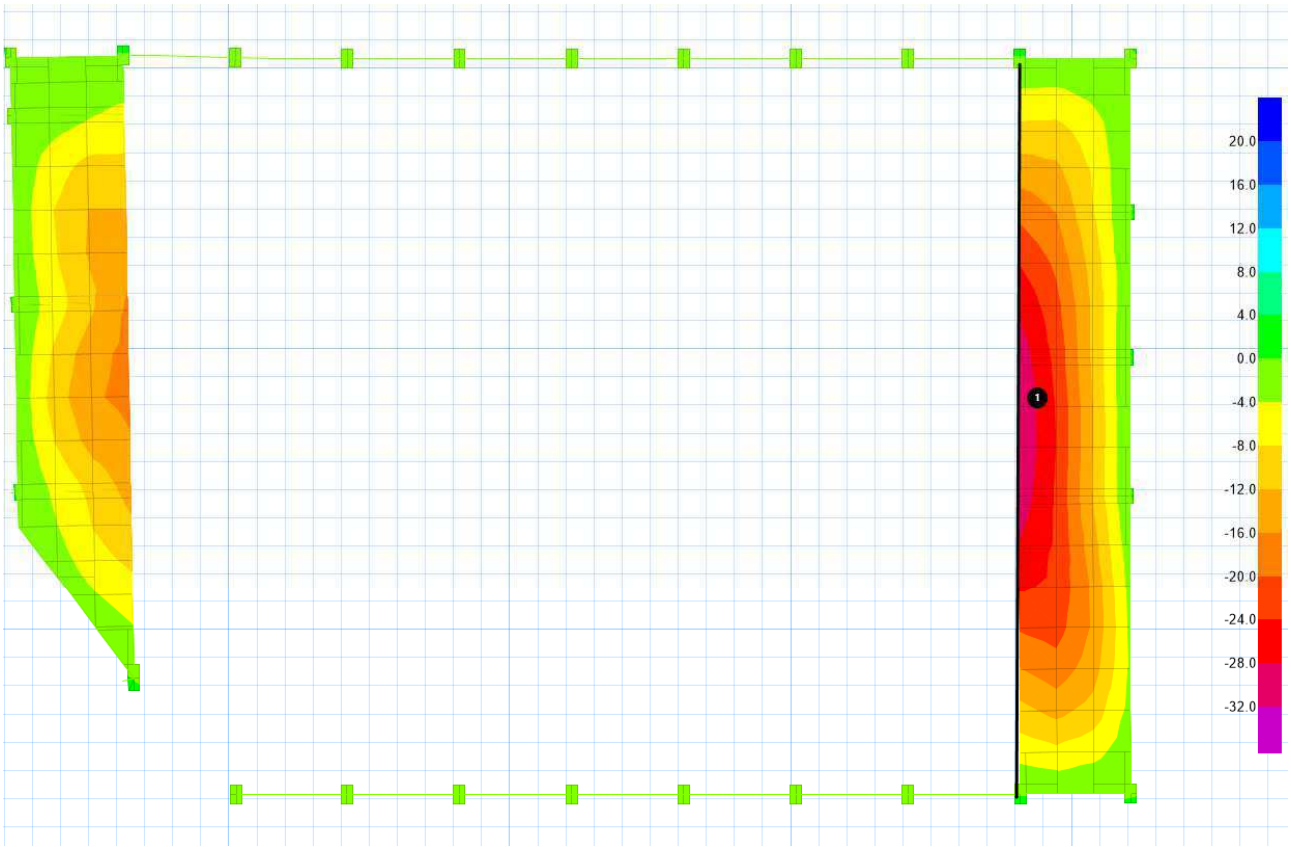


Figure 6-43 Long-Term Deflection at Roof Floor Level

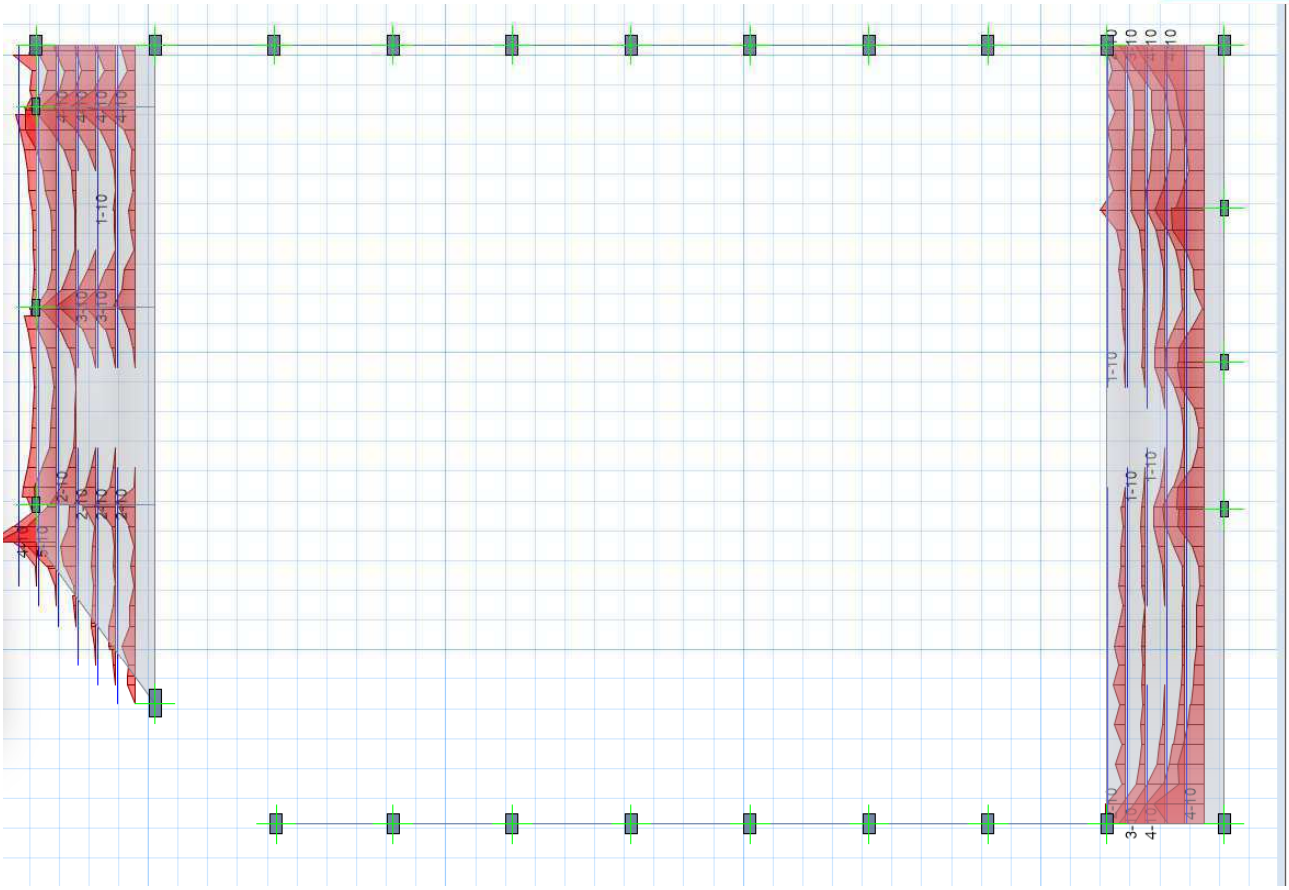


Figure 6-44 Slab Strip Design – Layer A – Top Reinforcing – 5T10 for Top Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

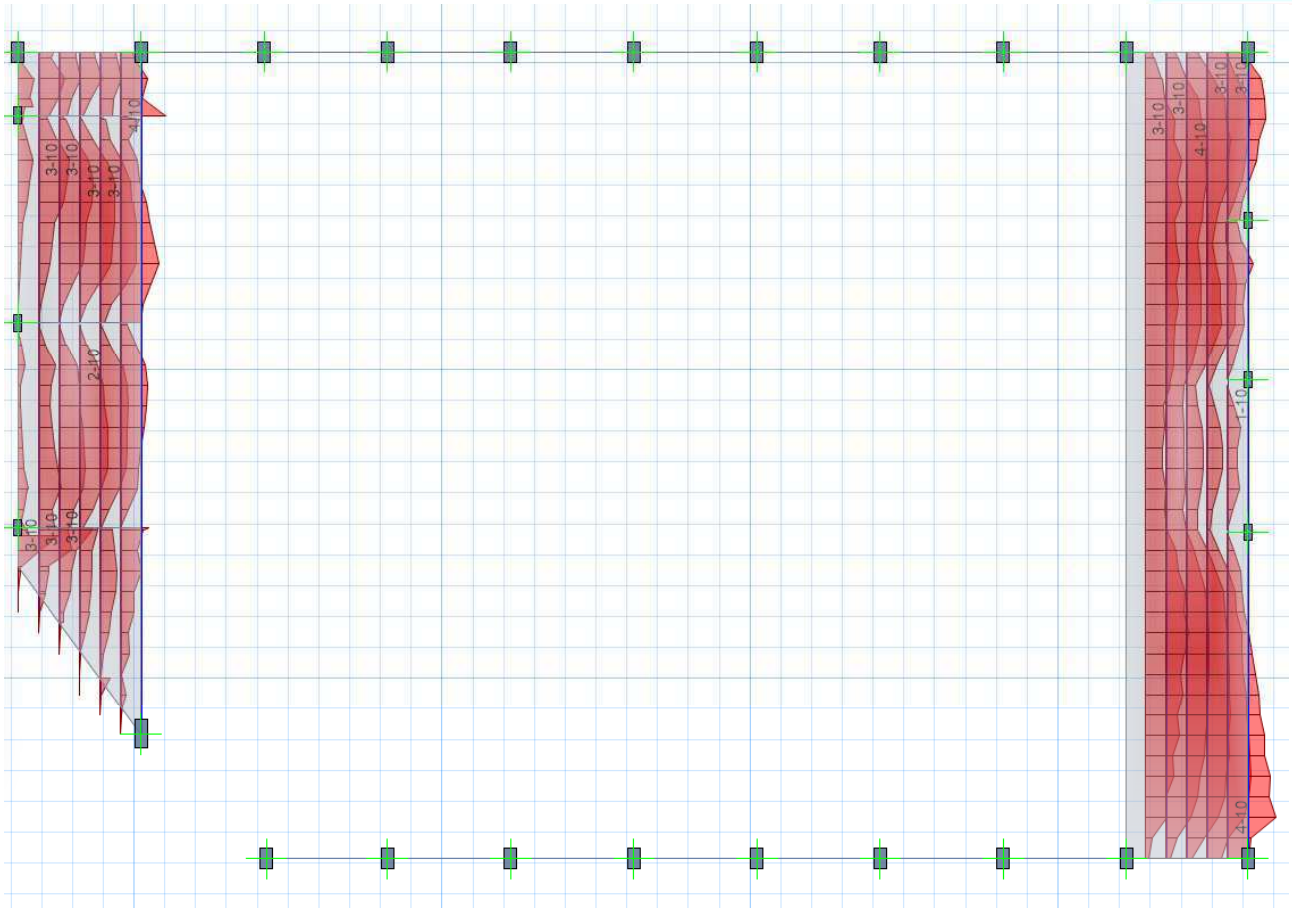


Figure 6-45 Slab Strip Design – Layer A –5T10 for at Bottom Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

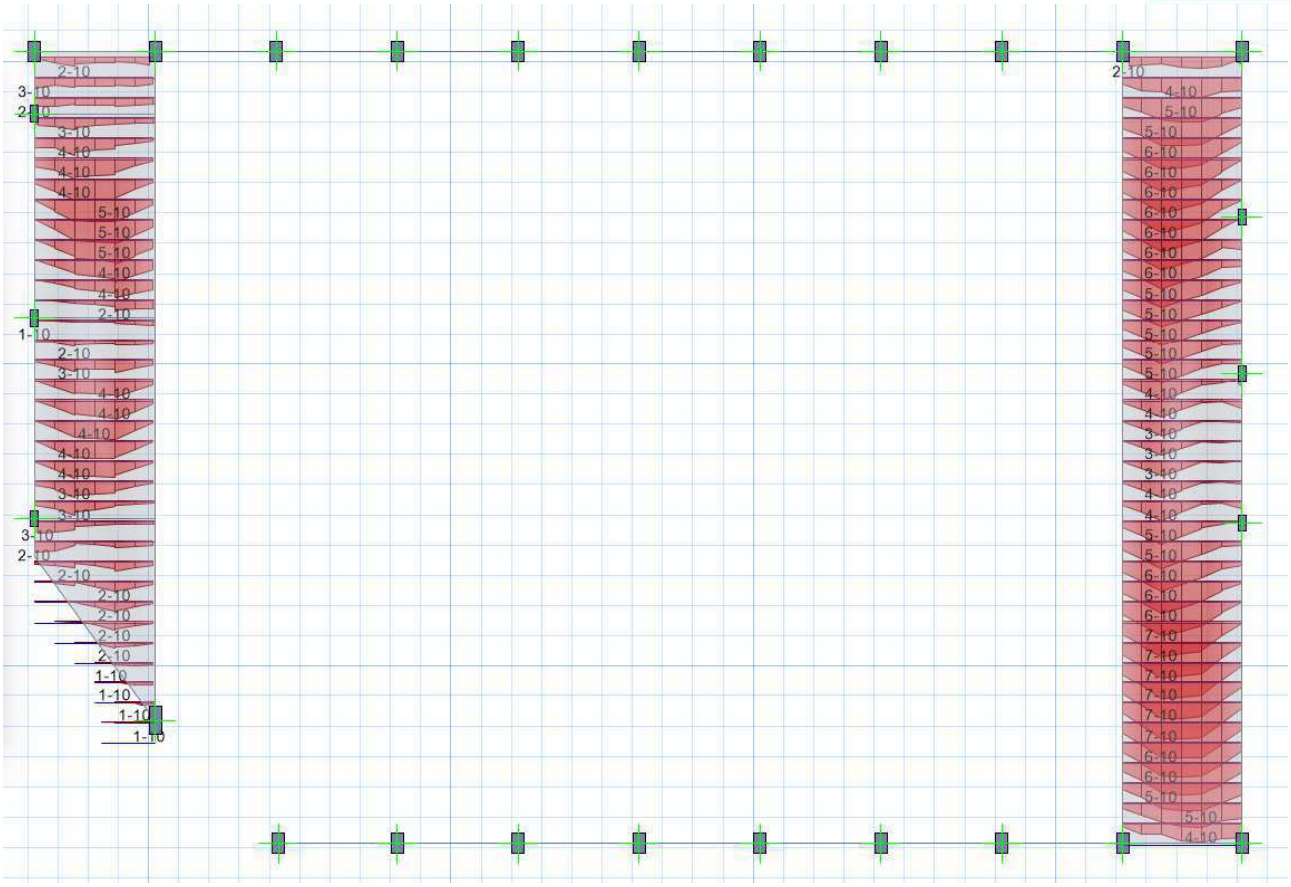


Figure 6-46 Slab Strip Design – Layer B –5T10 for Bottom Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

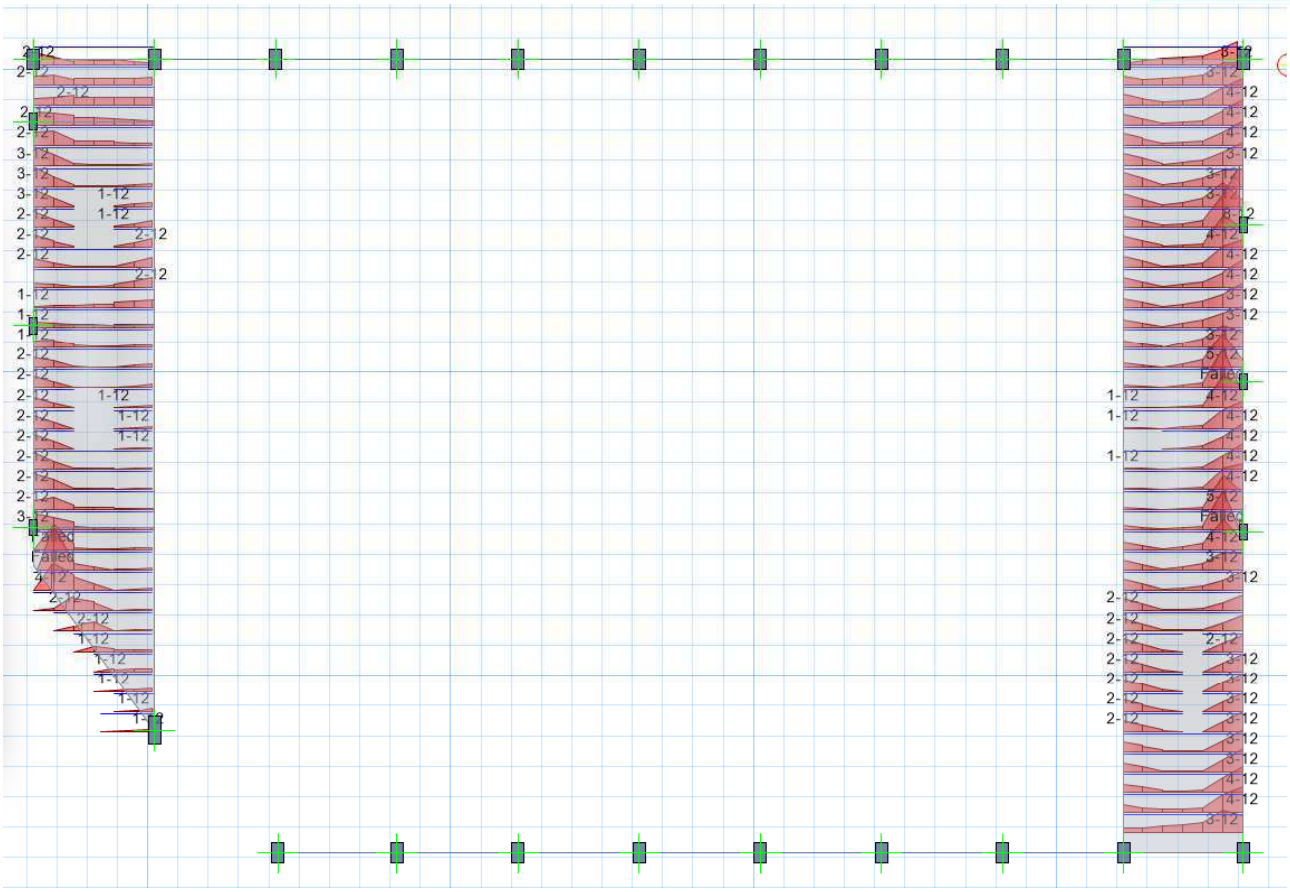


Figure 6-47 Slab Strip Design – Layer A –5T12 for Top Reinforcing at Roof Floor Level as per as-built Drawings refer to **Appendix B**

6.2.2 Beam Design

SAFE calculates and reports the required areas of reinforcement for flexure, shear, and torsion based on the moments, shear forces, torsion, load combination factors, and other criteria described in this section. The reinforcement requirements are calculated at each station along the length of the beam.

The beam top and bottom flexural reinforcement is designed at each station along the beam.

The shear reinforcement is designed for each load combination at each station along the length of the beam.

These reinforcements are checked with the provided shear reinforcement and found to be sufficient. Therefore, design of beams is adequate.

6.2.2.1 Gymnasium part

A. GROUND Floor

- **Longitudinal Bar**

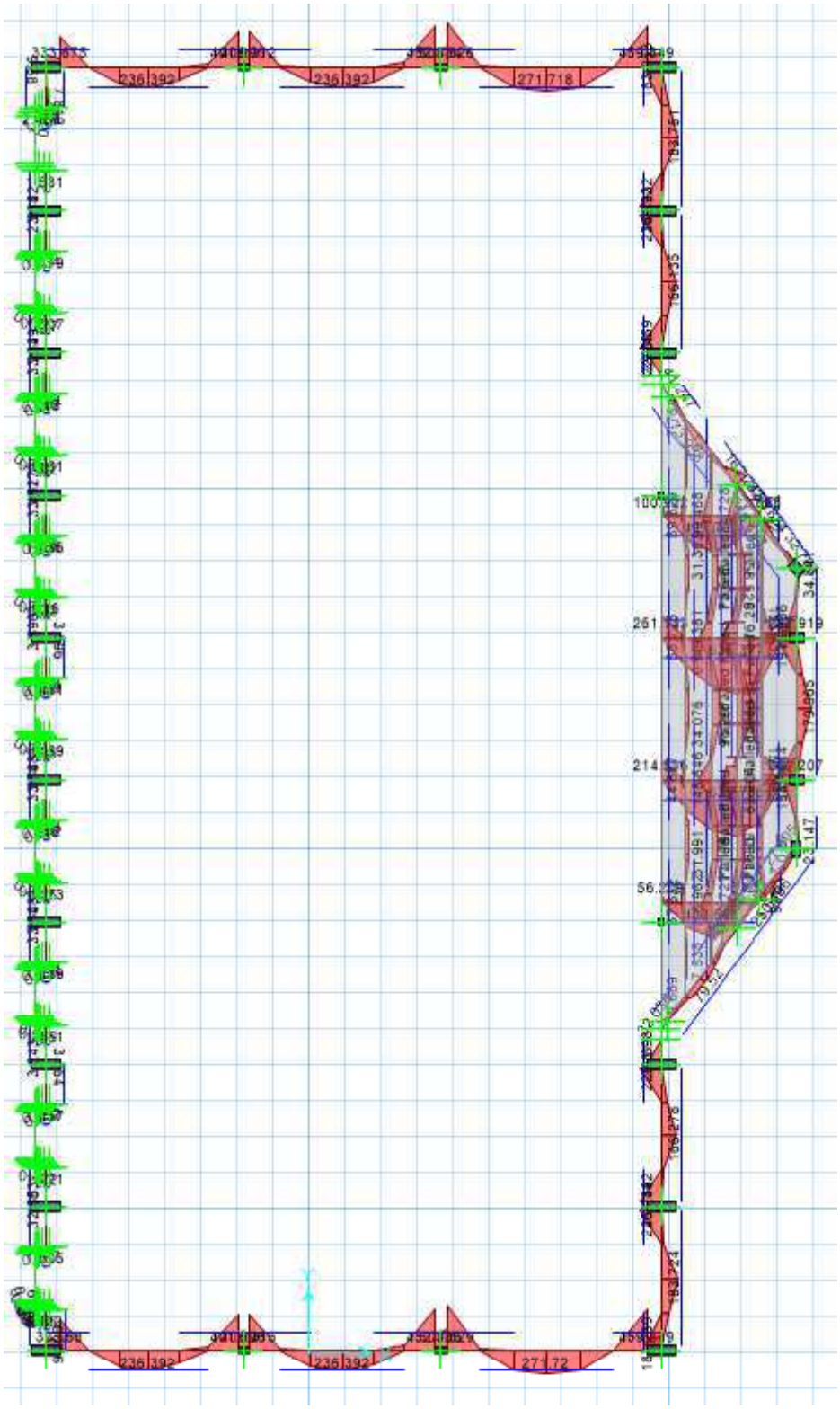


Figure 6-48 Required Longitudinal Reinforcement at GROUND Floor Level

- **Transverse Reinforcement**

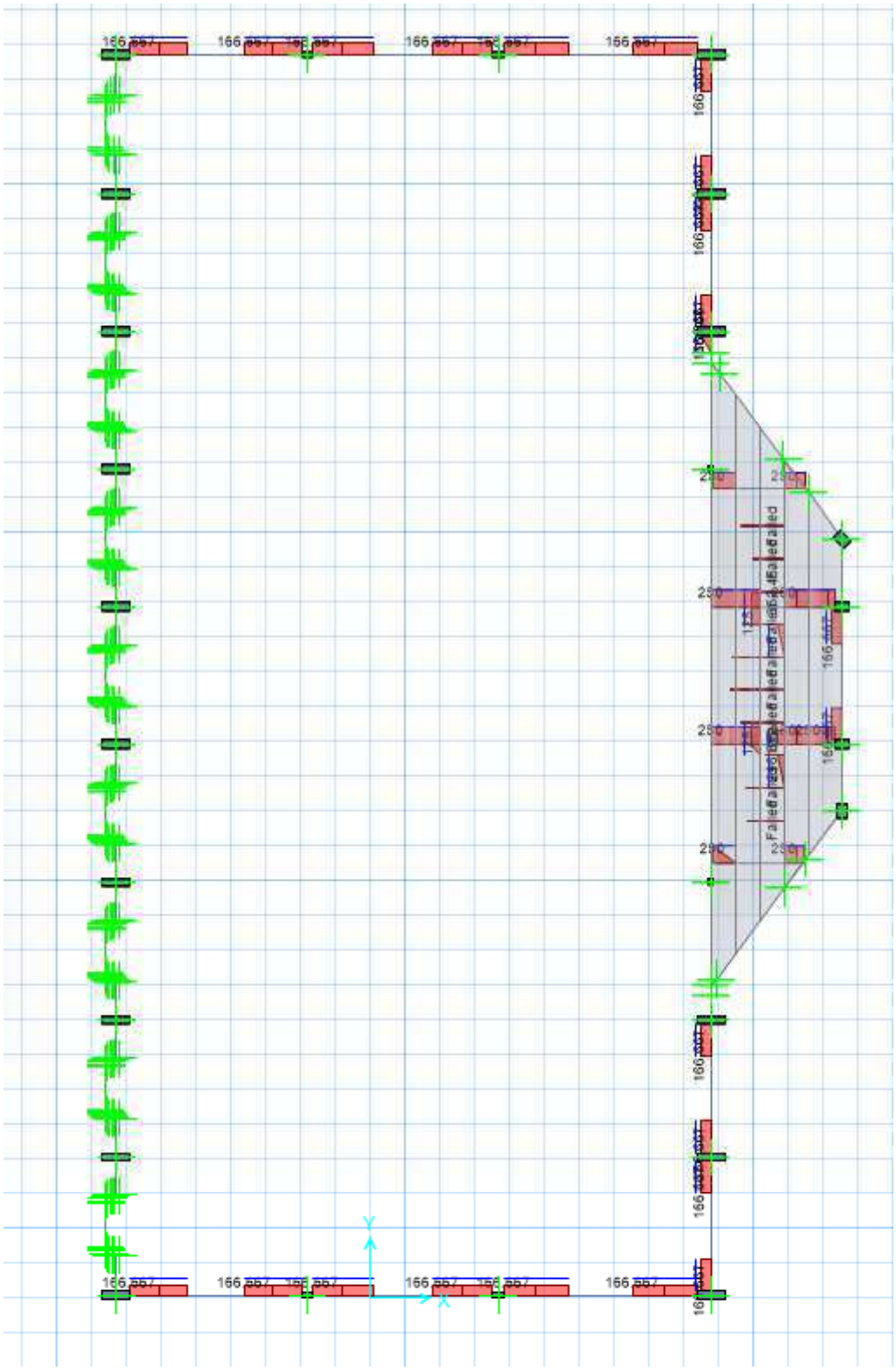


Figure 6-49 Required Transverse Reinforcement at GROUND Floor Level

B. Roof Floor

- **Longitudinal Bar**

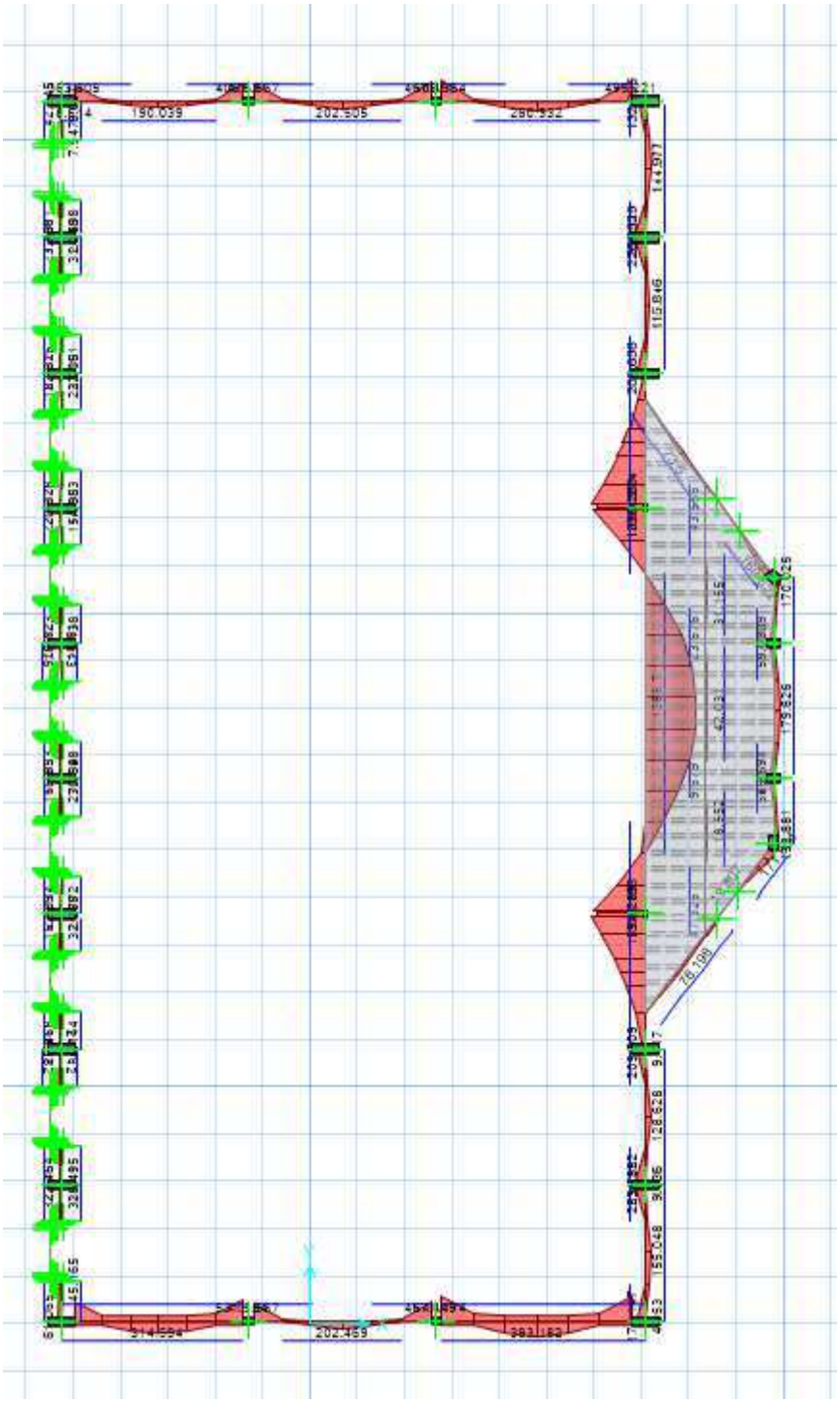


Figure 6-50 Required Longitudinal Reinforcement at Roof Floor Level

- **Transverse Reinforcement**

Figure 6-51 Required Transverse Reinforcement at Roof Floor Level

6.2.2.2 Auditorium Part

A. GROUND Floor

- **Longitudinal Bar**

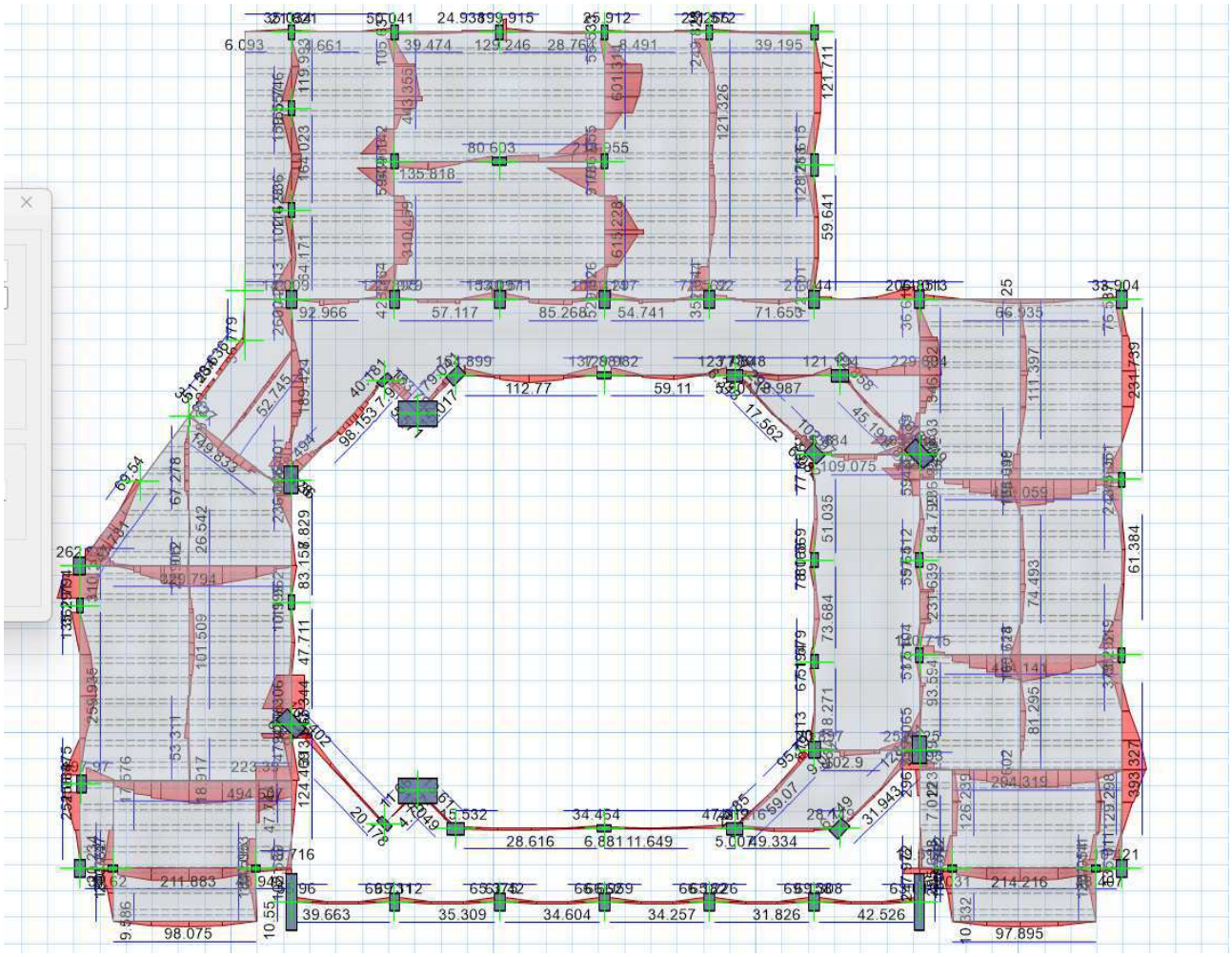


Figure 6-52 Required Longitudinal Reinforcement at GROUND Floor Level

- **Transverse Reinforcement**

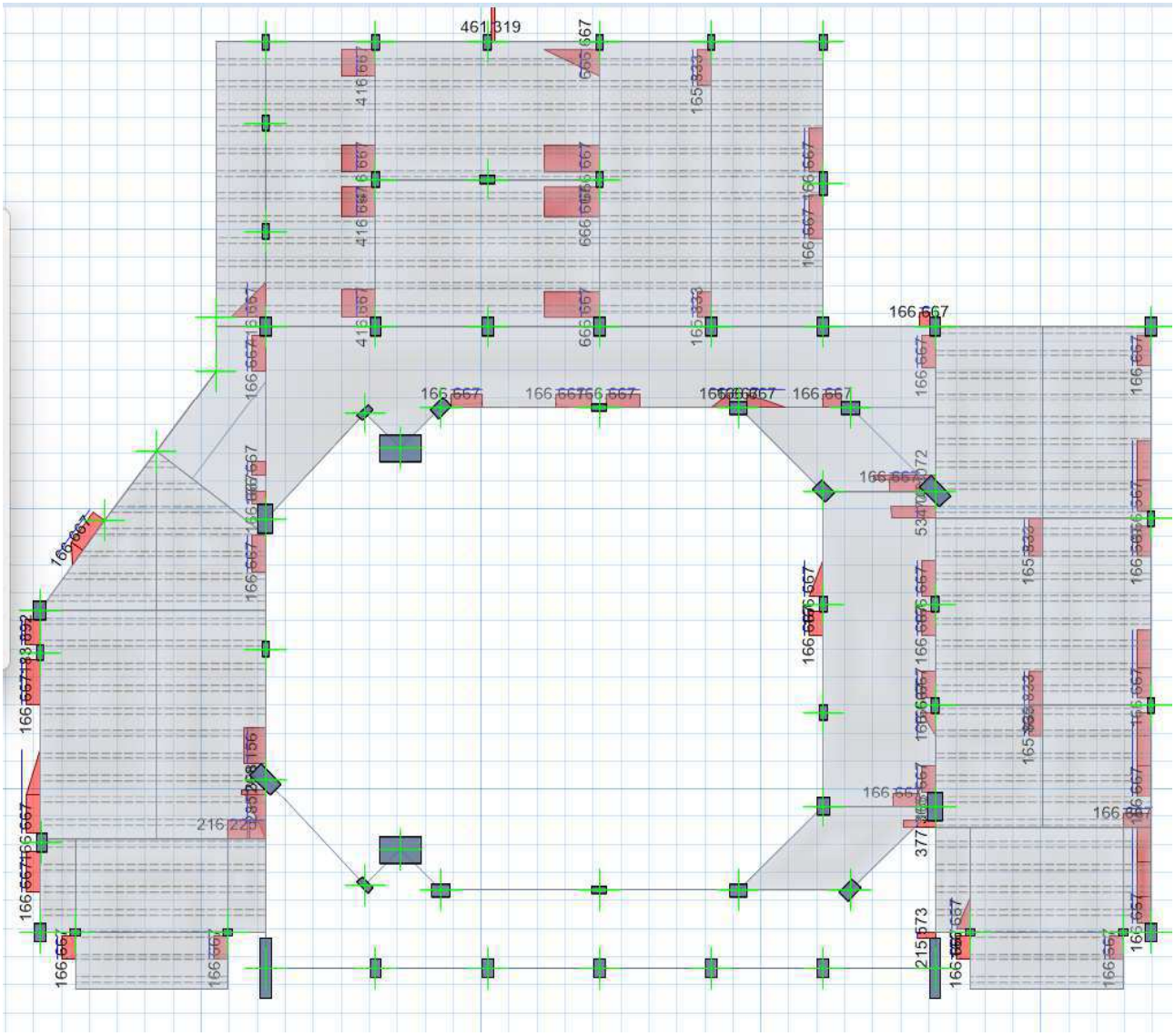


Figure 6-53 Required Transverse Reinforcement at GROUND Floor Level

B. Roof Floor

- **Longitudinal Bar**

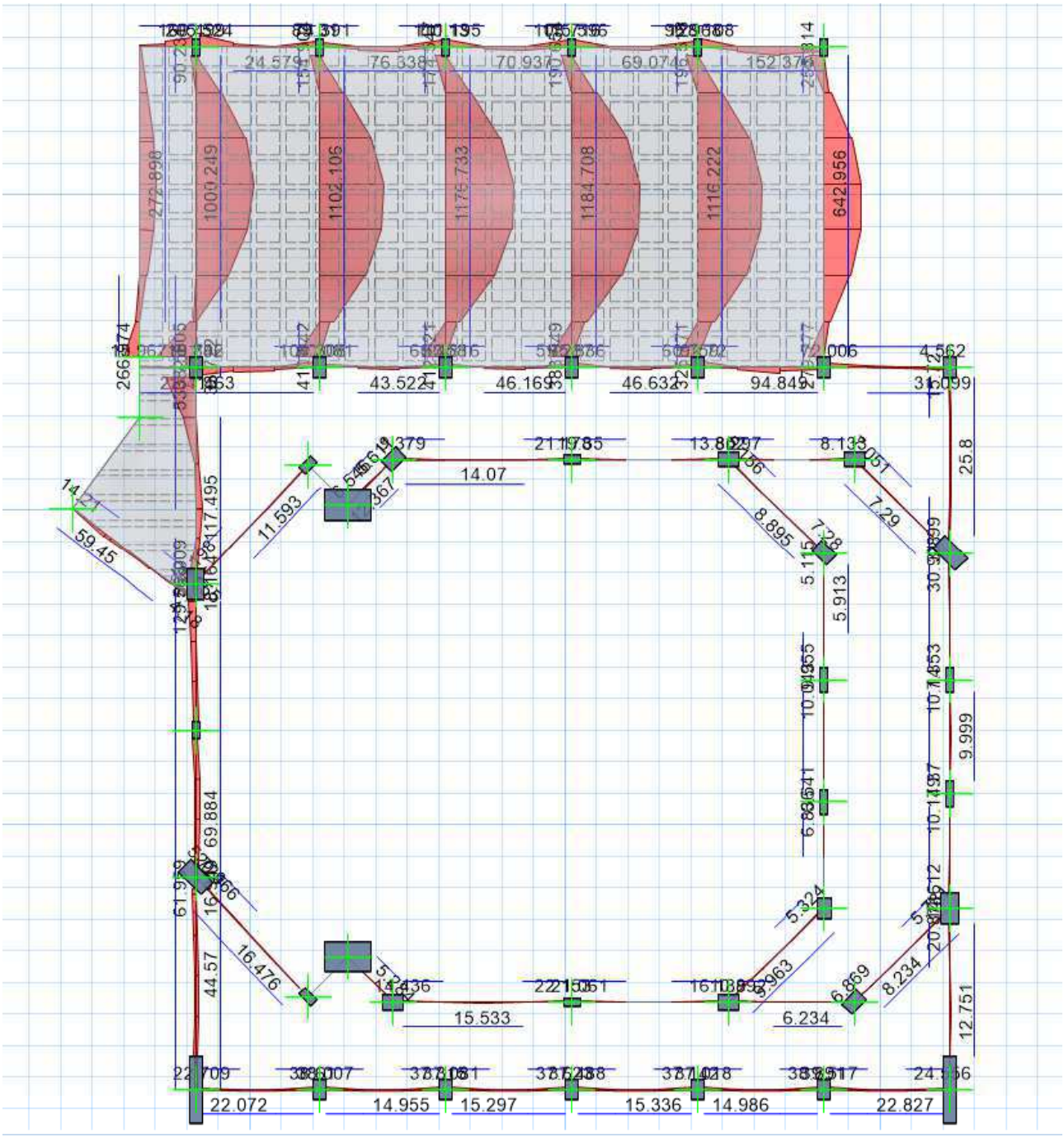


Figure 6-54 Required Longitudinal Reinforcement at Roof Floor Level

- **Transverse Reinforcement**

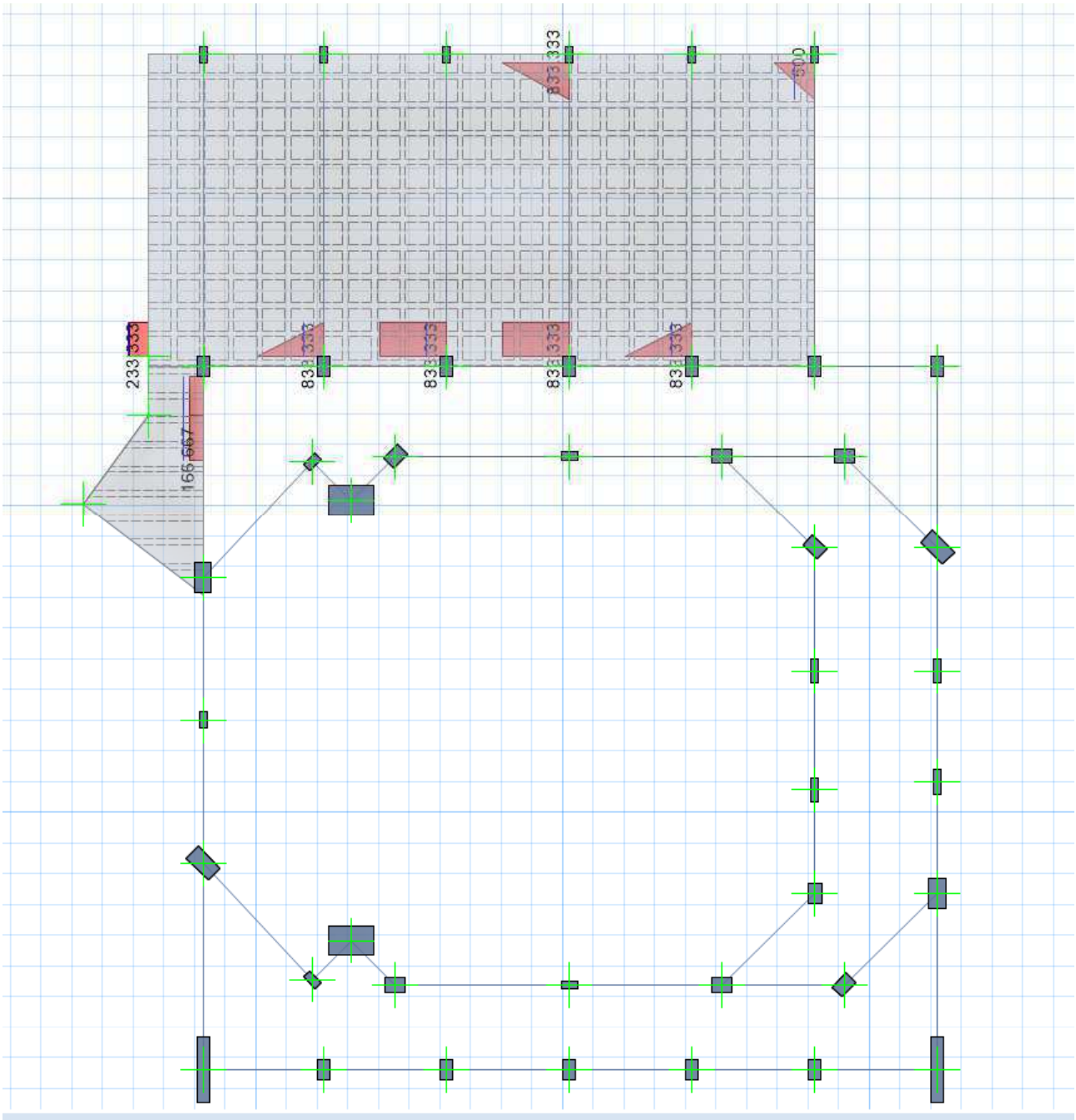


Figure 6-55 Required Transverse Reinforcement at Roof Floor Level

6.2.2.3 Swimming Part

A. GROUND Floor

- **Longitudinal Bar**

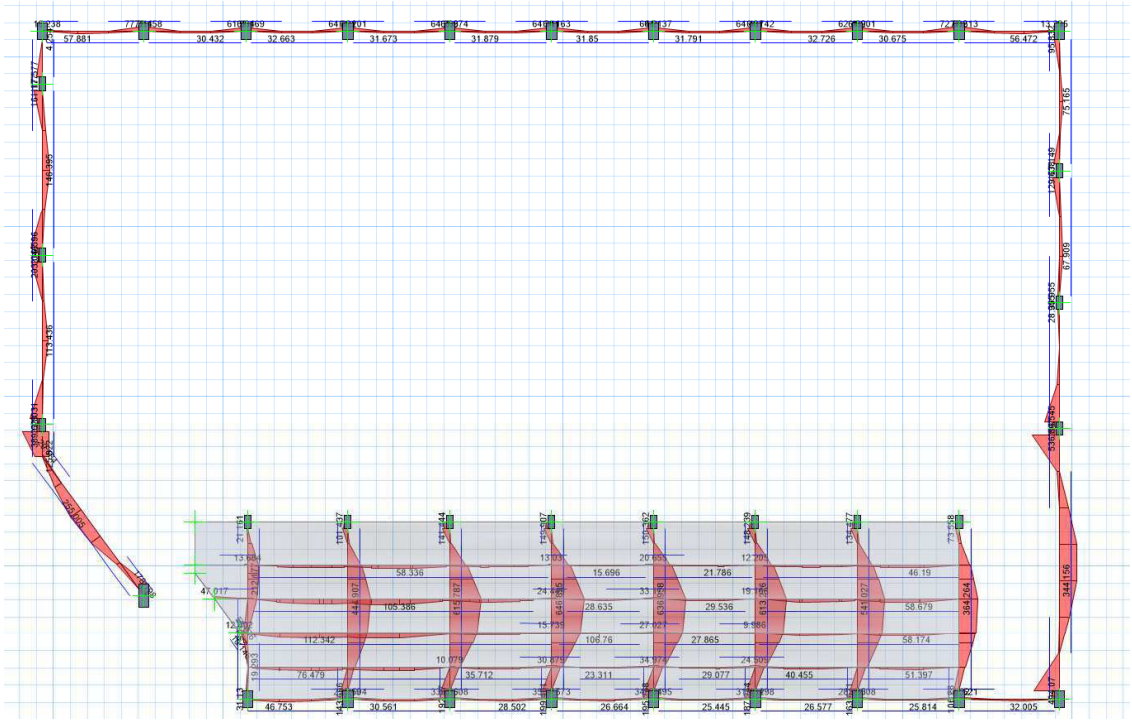


Figure 6-56 Required Longitudinal Reinforcement at GROUND Floor Level

- **Transverse Reinforcement**

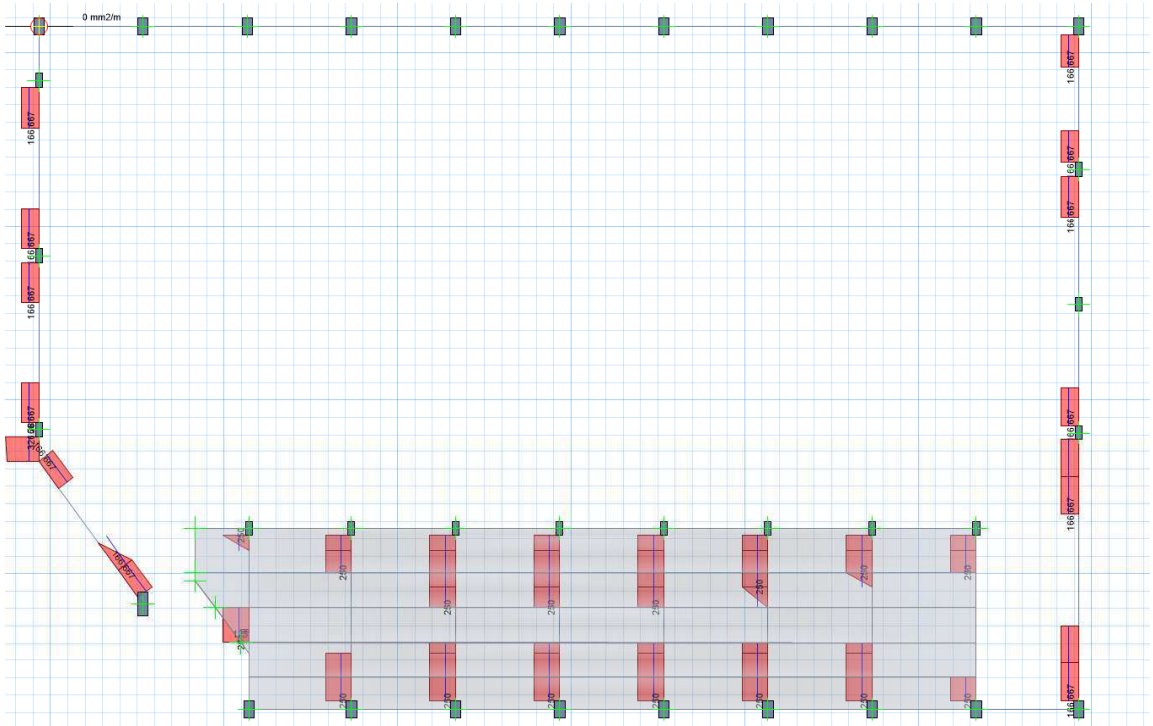


Figure 6-57 Required Transverse Reinforcement at GROUND Floor Level

B. Roof Floor

- **Longitudinal Bar**

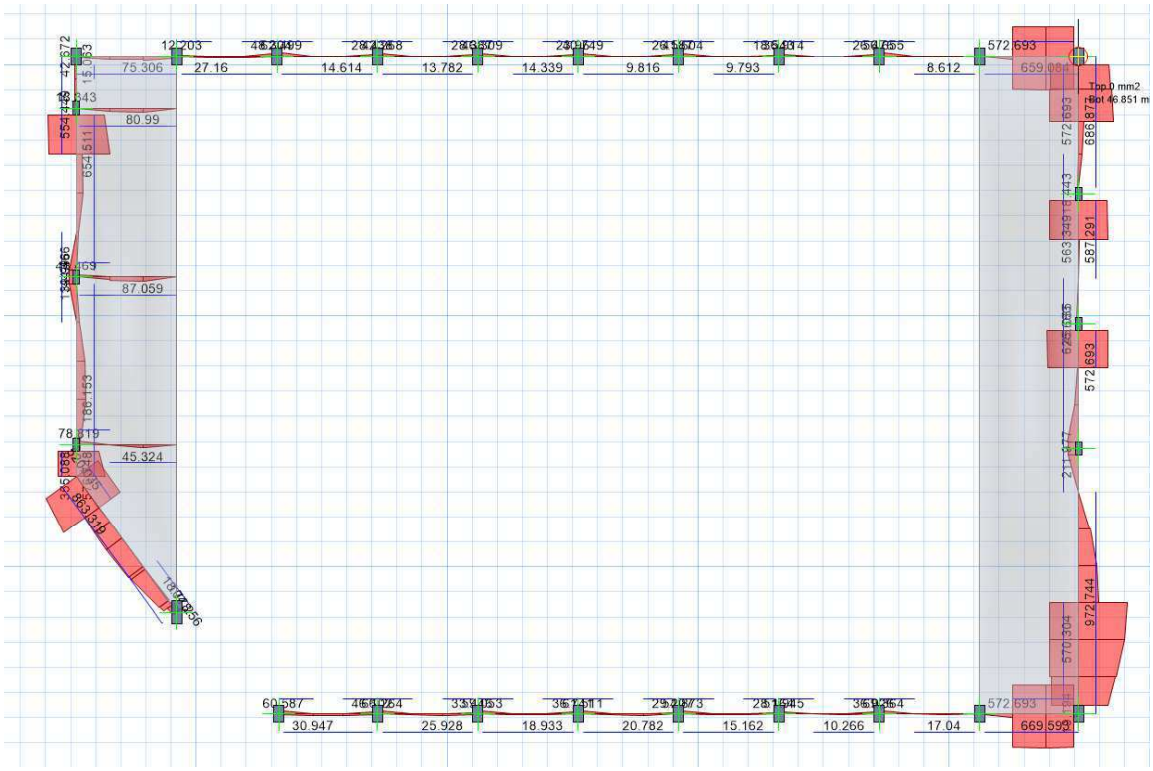


Figure 6-58 Required Longitudinal Reinforcement at Roof Floor Level

- **Transverse Reinforcement**

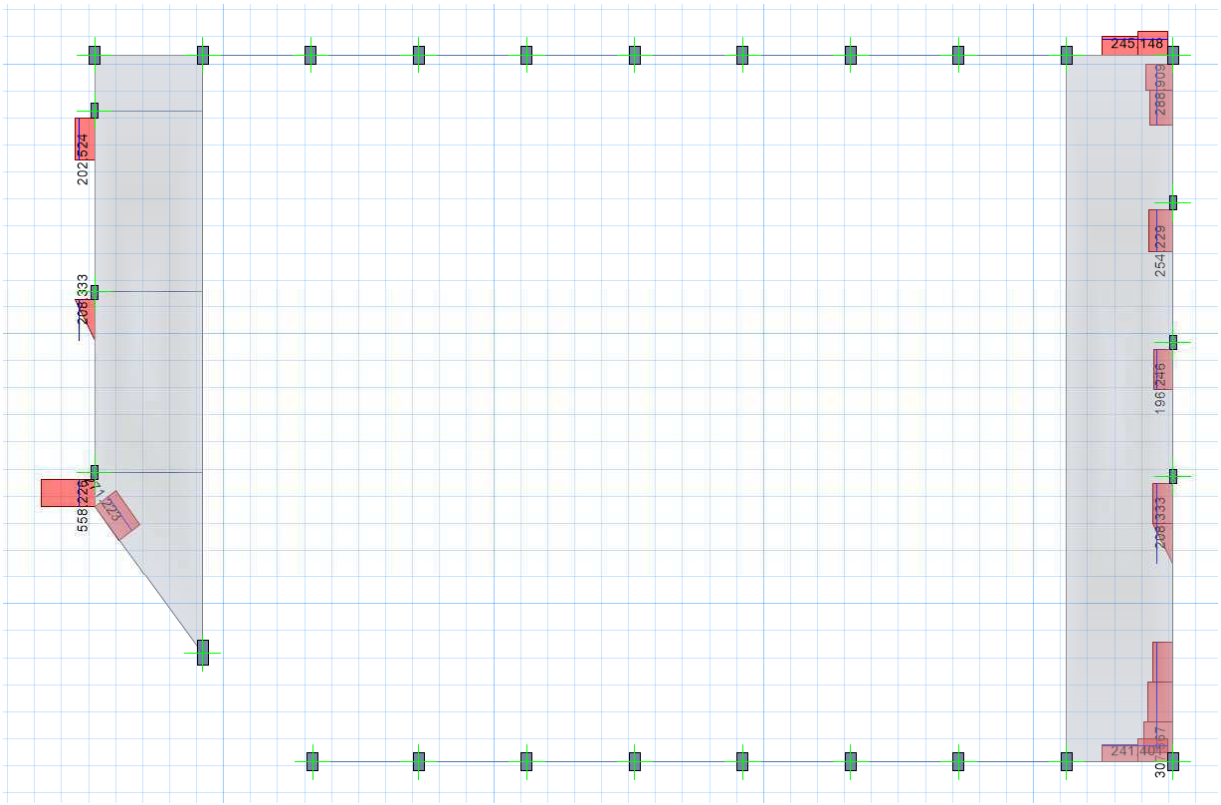


Figure 6-59 Required Transverse Reinforcement at Roof Floor Level

Figure 6-60 P-M RATIO STEEL BEAM at Roof Floor Level

7 DESIGN RESULT SUMMARY

7.1 Columns

The existing columns at ground floor and Roof floor are overstressed due to low concrete compressive strength. In addition, some of the columns at upper level are under design, these columns take greater lateral forces that causes larger column and beam bending moments.

Therefore, column strengthening is required by section enlargement technique to reach safe and sound structural elements.

7.2 Shear Walls

The existing shear wall is structurally adequate in flexural and shear design due to gravity and lateral loads.

7.3 Beam

The existing beam is structurally adequate in flexural and shear design due to gravity loads.

7.4 Slabs

The existing slab is structurally adequate in flexural and shear design due to gravity loads.

8 STRENGTHENING DESIGN

A second ETABS Model was created for purposed of strengthening design. In that model, the proposed strengthening is applied in the models to check the adequacy of the design, in addition to design requirements.

8.1 Column Strengthening Design

The under-design columns are strengthened by section enlargement to resist the under designed flexural strength; and CFRP wrap for confinement of partial column enlargement.

The proposed enlargement of the columns needs to be strengthened are created in section designer by providing the section that represents the proposed concrete enlargement. The new sections are provided with T16-150 Vertical reinforcement with 100mm/150mm thick C50 new micro-concrete as shown below.

Refer to **Appendix C** for strengthening drawings and related details.

8.1.1 GYMNASIUM COLUMNS

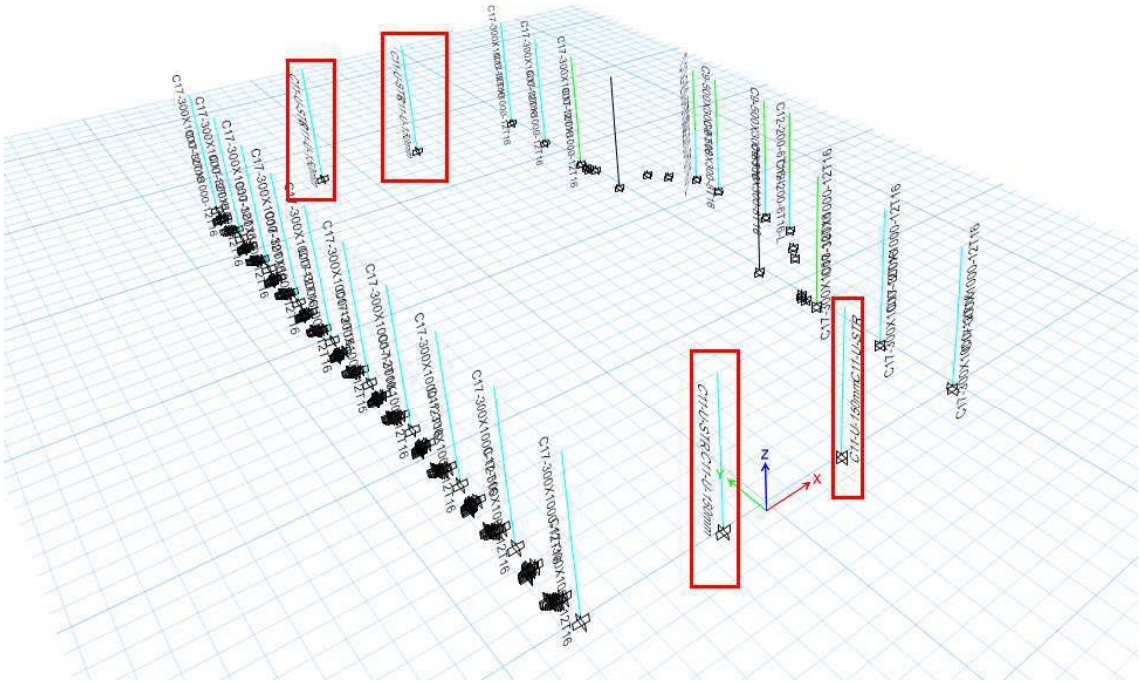


Figure 8-1 Column Strengthening Assignment at Ground to Roof Floor Level

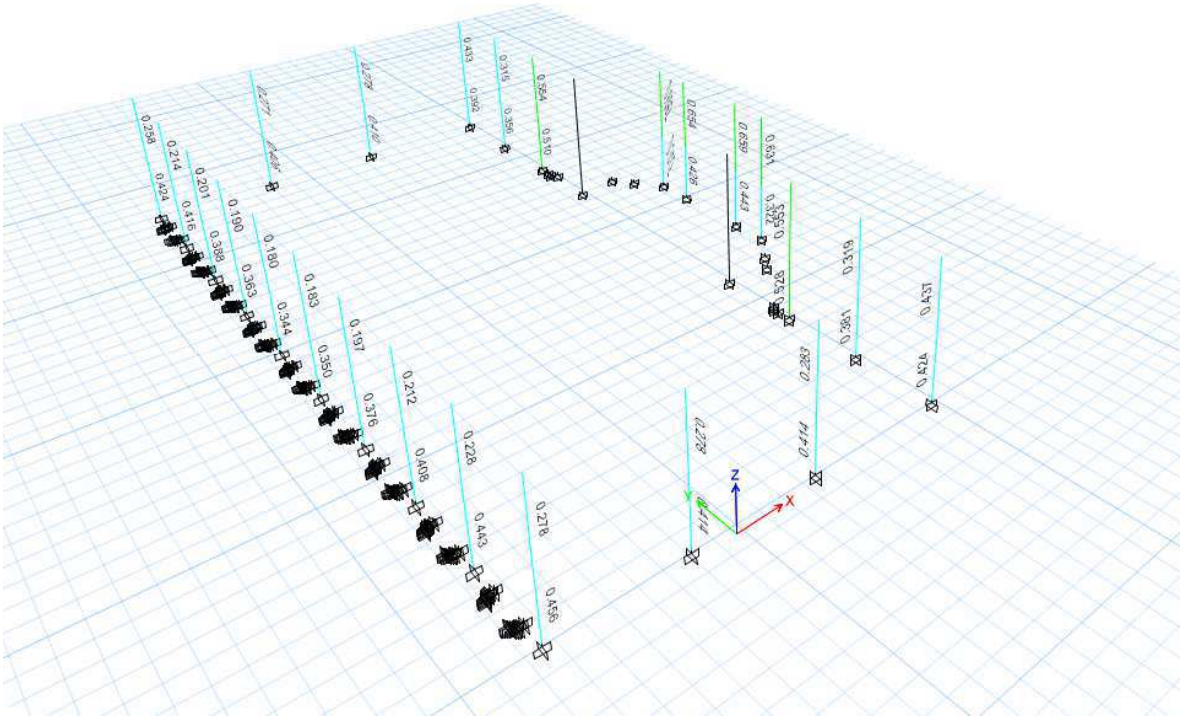


Figure 8-2 Column PMM Ratio after strengthening at Ground to Roof Floor Level

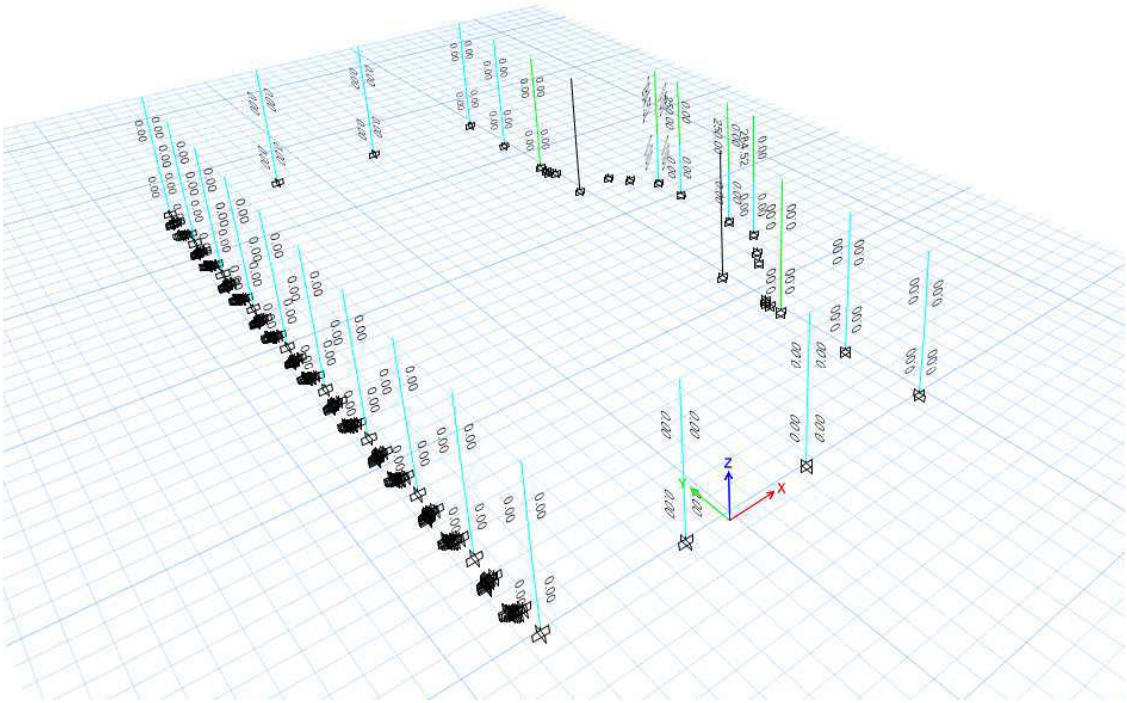


Figure 8-3 Column Shear Reinforcing after strengthening at Ground to Roof Floor Level

8.1.2 AUDITORIUM COLUMNS

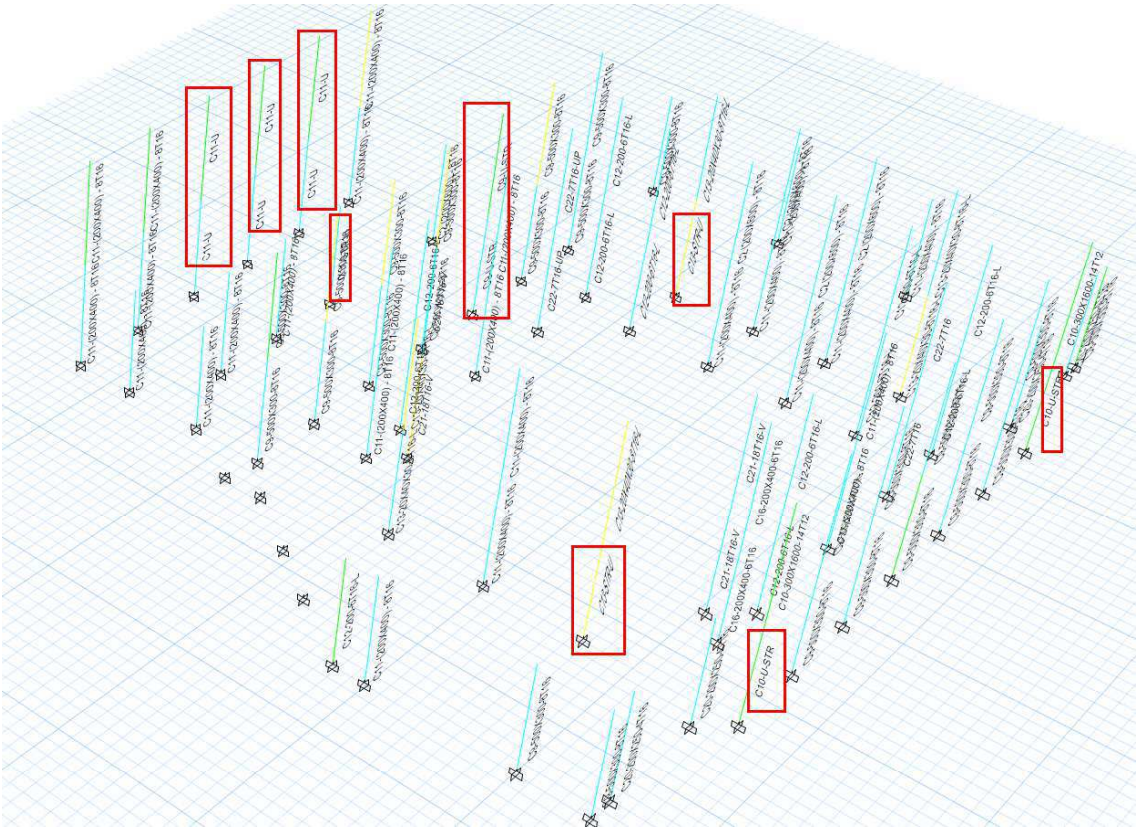


Figure 8-4 Column Strengthening Assignment at Ground to Roof Floor Level

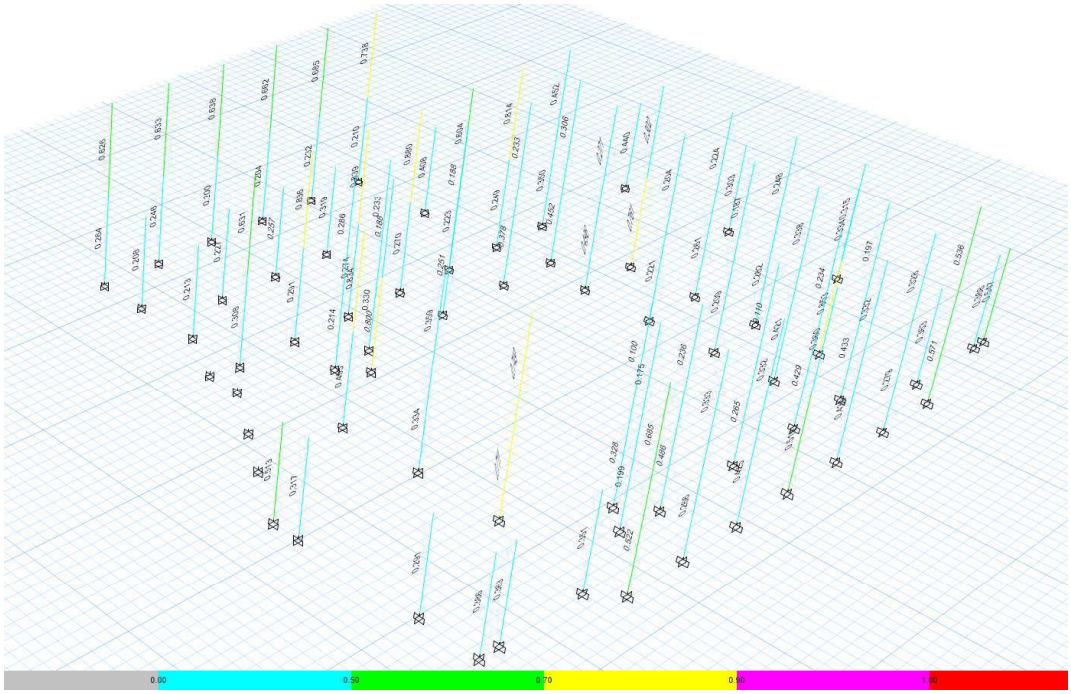


Figure 8-5 Column PMM Ratio after strengthening at Ground to Roof Floor Level

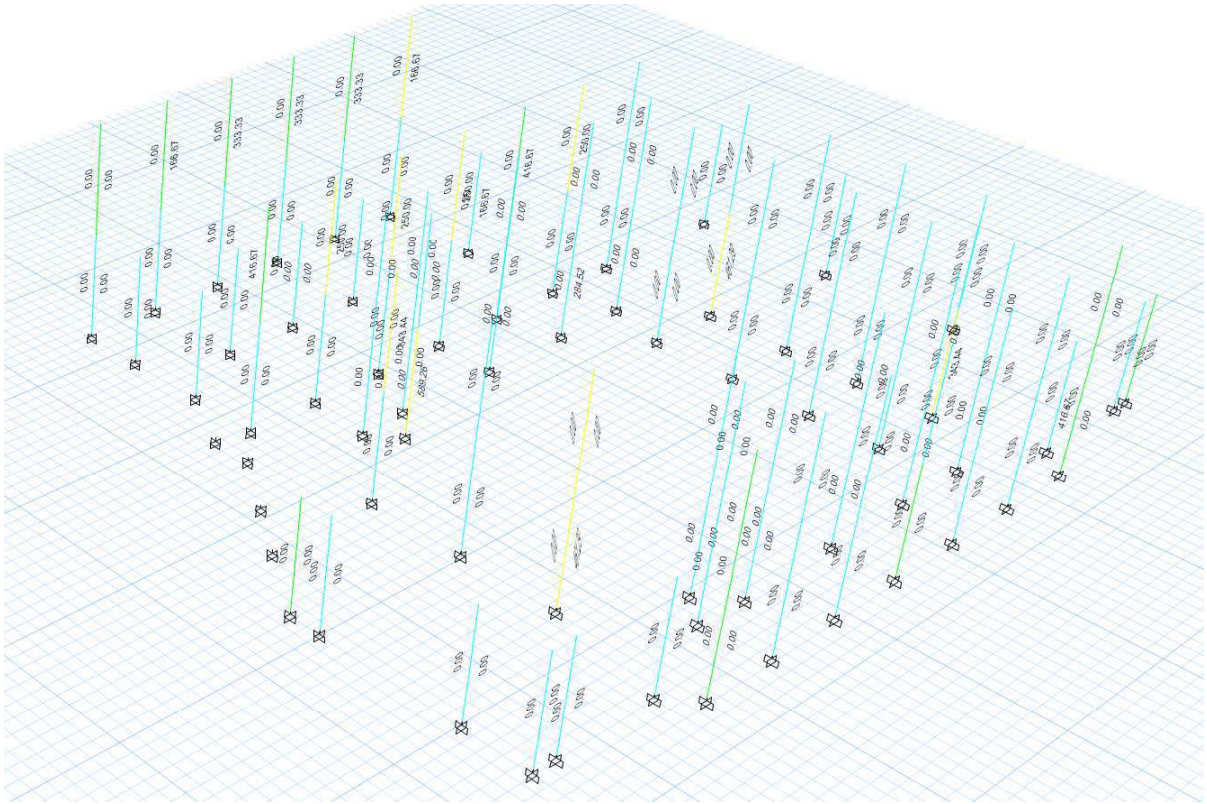


Figure 8-6 Column Shear Reinforcing after strengthening at Ground to Roof Floor Level

8.1.3 SWIMMING COLUMNS

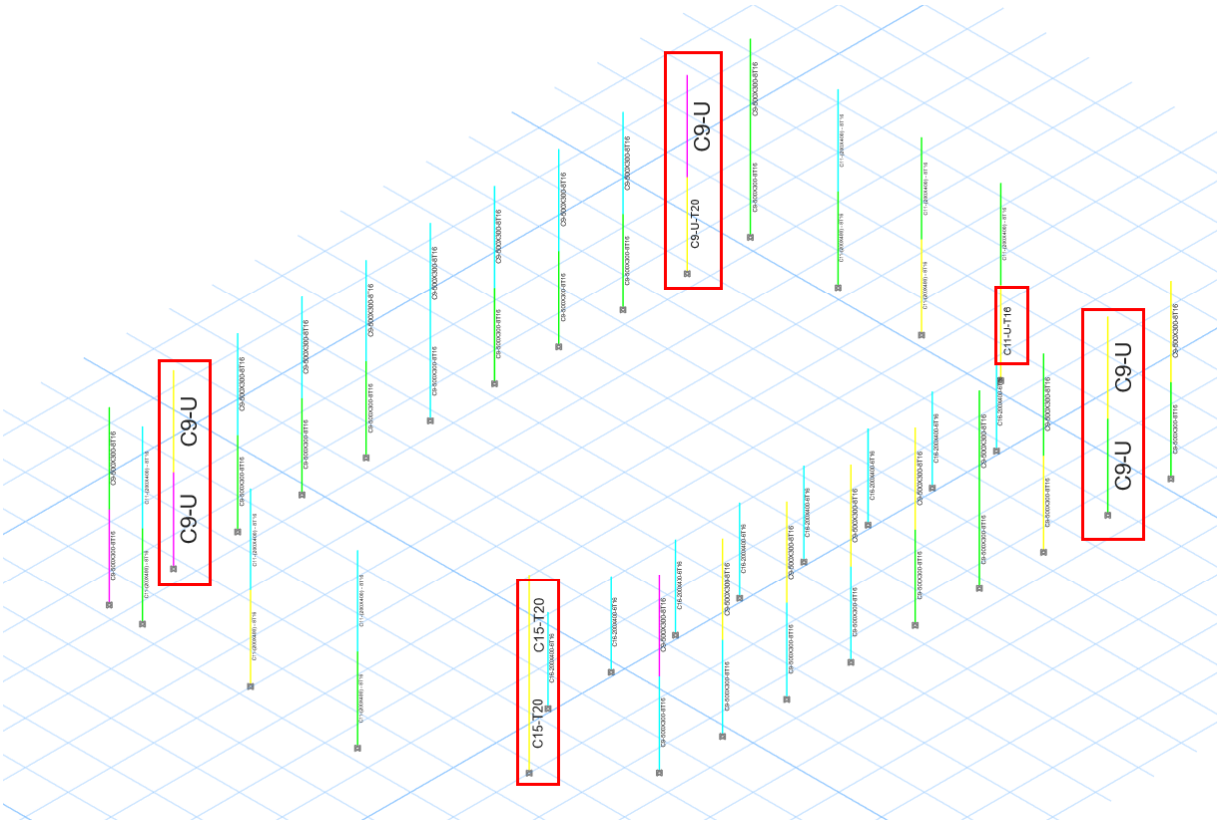


Figure 8-7 Column Strengthening Assignment at Ground to Roof Floor Level

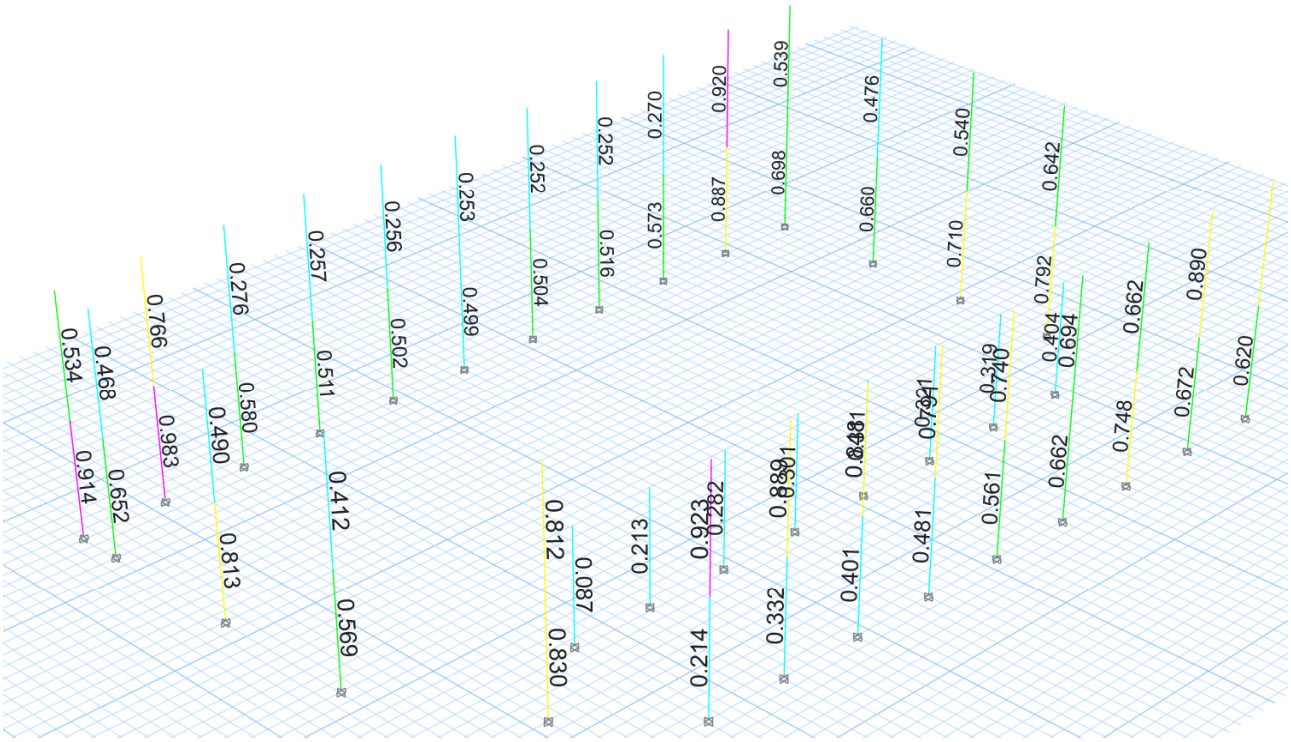


Figure 8-8 Column PMM Ratio after strengthening at Ground to Roof Floor Level

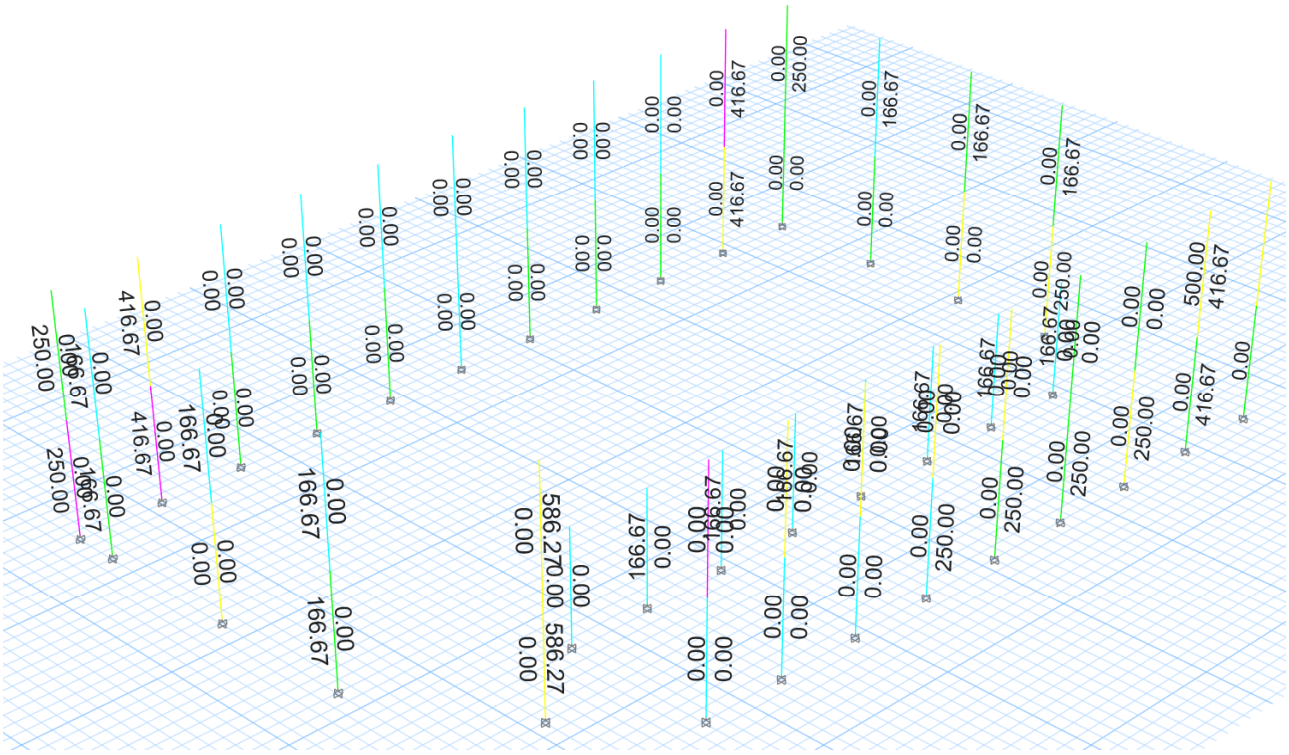


Figure 8-9 Column Shear Reinforcing after strengthening at Ground to Roof Floor Level

REFERENCES

American Concrete Institute, ACI 318M, 2011, Building Code and Commentary.

American Concrete Institute, ACI 437R, 1991, Strength evaluation of existing concrete buildings.

American Society for testing and materials, ASTM D 512-89, 1999, Standard test method for chloride ion in water.

British Standard Institute, BS 6089, 1981, Guide to assessment of concrete strength in existing structures, BSI, London.

CIRIA Report, 2002, Guide to the Construction of Reinforced Concrete in the Arabian Peninsula.

Frank Rendell, Raoul Jauberthie and Mike Grantham, 2002, Deteriorated Concrete, Inspection and Physicochemical Analysis, Thomas Trlford, 194 p

Dr. Ashraf Biddah
Reinforced concrete Professor
Repair and Strengthening Expert

Appendix A

STRENGTHENING DRAWINGS

GENERAL NOTES

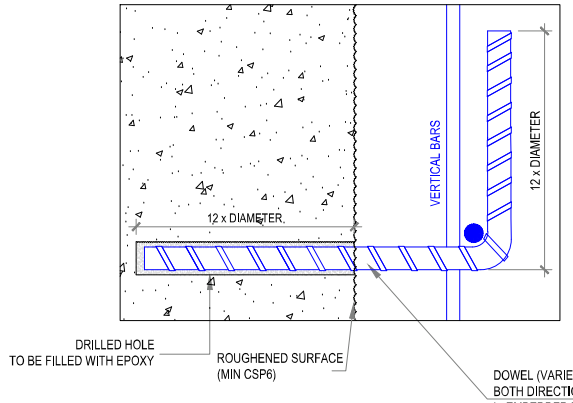
1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE PRIOR TO BEGINNING WORK.
2. CONTRACTOR SHALL REPORT ANY DISCREPANCIES IN THE DRAWINGS TO THE DESIGN ENGINEER.
3. NOTES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND RESOLVED BEFORE PROCEEDING TO WORK WHEN THERE IS AN OMISSIONS OR CONFLICT BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS,
4. DRAWINGS MUST NOT BE SCALE. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS INDICATED OTHERWISE.
5. THE REPAIR & STRENGTHENING WORK SHOULD BE EXECUTED ON SITE THROUGH APPROVED REPAIR AND STRENGTHENING SUB CONTRACTOR AND SUPERVISED BY SPECIALIZED REPAIR AND STRENGTHENING CONSULTANT.
6. THE CONTRACTOR IS REQUIRED TO PROVIDE A GENERAL METHOD STATEMENT DETAILING PHASING OF THE WORKS, PROGRAMMING, MATERIALS TO BE USED ETC.
7. THE CONTRACTOR SHOULD PAY ATTENTION TO THE SPECIFICATION REQUIREMENTS FOR APPROPRIATE SHORING, REPAIR PREPARATION, MATERIAL INSTALLATION AND SUBSEQUENT CURING.
8. DURING REPAIR WORKS, NEW LOADS SHALL BE AVOIDED ON THE AREAS WHERE STRENGTHENING WILL BE DONE. CONTRACTOR SHALL PROCEED WITH LIGHT FINISHING WORKS.
9. TEMPORARY WORKS SUCH AS PROPPING AND BRACING OF THE STRUCTURE SHALL BE INSTALLED AS PER THE RECOMMENDED PROCEDURE AND SPECIFICATION OF THE DESIGNER.
10. ALL REQUIRED TASKS,INCLUDING CONCRETE REMOVAL AND SURFACE PREPARATION, NEED TO BE DONE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS AND TO GOOD INDUSTRY PRACTICE.
11. CONTRACTOR SHALL HAVE DAILY MONITORING OF TEMPERATURE, HUMIDITY, AND WEATHER CONDITIONS THAT MAY AFFECT THE REPAIR PROCEDURE.
12. SAFETY MEASURE SHALL BE IMPLEMENTED TO ENSURE THE SAFETY OF ALL PERSONNEL AND THE STRUCTURE BEING REPAIRED OR STRENGTHENED THROUGHOUT THE COURSE OF THE WORK.

NOTES FOR CONCRETE ENLARGEMENT

1. EXISTING CONCRETE SURFACE SHOULD BE ROUGHEN TO 6MM AMPLITUDE INCLUDING SLAB SOFIT, BEAM SIDES, WALLS AND COLUMN SIDES.
2. REINFORCEMENT STEEL SHALL BE GRADE 460MPA.
3. THE STARTER BARS SHOULD BE INSTALLED BY DRILLING HOLES IN THE SLAB TO PATH THROUGH THE BARS
4. STEEL DOWELS SHOULD BE ANCHORED THROUGH THE EXISTING COLUMNS OR WALLS USING HILTI RE 500 OR EQUIVALENT.
5. A MINIMUM CLEARANCE OF 25MM SHALL BE ALLOWED BETWEEN PROPOSED LONGITUDINAL BARS AND ROUGHENED SURFACE OF THE CONCRETE.
6. PROPOSED NORMAL CONCRETE C50 SHOULD BE USED WITH MINIMUM CUBE COMPRESSIVE STRENGTH 50N/MM^2 .
7. CONCRETE POURING SHOULD BE FROM LETTERHEAD DOORS FROM THE SHUTTER AT MAXIMUM HEIGHT 2M.
8. THE LAST 300MM BELOW THE SLAB SHOULD BE CLOSED AND FILLED BY PUMPING CONCRETE GROUT SUCH AS MASTEREMACO S466 OR EQUIVALENT.
9. FULL PUMPING TECHNIQUE IS ALSO ACCEPTED.
10. PROPER CURING IS REQUIRED FOR MIN 15 .DAYS
11. ALL PROPOSED STEEL BARS SHOULD ACHIEVE ITS DEVELOPED LENGTH WITH THE EXISTING STARTER BARS, IF NOT, SHOULD BE ANCHORED TO THE EXISTING WALL BASED ON THE TABLE AT GENERAL NOTES.
12. ALL EXPOSED STEEL BARS SHALL BE COATED WITH ZINC-RICH PAINT
13. MINIMUM CONCRETE CLEAR COVER TO BE AS FOLLOWS:
    - COLUMNS 40MM
    - WALLS 25MM
    - SLABS 25MM
    - BEAMS 40MM

MINIMUM EMBEDMENT LENGTHS		
BAR DIAMETER (MM)	DRILLED HOLE DIAMETER (MM)	MINIMUM EMBEDMENT (MM)
10	14	120
12	16	150
16	20	200
20	25	250
25	32	300
32	40	350

USE PURE EPOXY BONDED ANCHORING SYSTEM SUCH AS;
1 - HILTI RE500
2 - MASTER FLOW 932 AN
3 - SIKA ANCHOR FIX 3
OR APPROVED EQUIVALENT



DOWEL DETAIL
N.T.S

GENERAL NOTES
1. THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF eFORCE INSPECTION CONSULTANCIES. IT IS CONFIDENTIAL AND CAN NOT BE USED, REPRODUCED OR COMMUNICATED TO THIRD PARTIES IN PART OR IN WHOLE IN ANY FORM OR MANNER WITHOUT THE EXPRESS, PRIOR WRITTEN AGREEMENT OF eFORCE INSPECTION CONSULTANCIES.
2. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHER WISE NOTED.
3. THIS DRAWING NOT TO BE SCALED. THE STATED DIMENSIONS ONLY ARE TO BE CONSIDERED.
4. 5. THIS DRAWING TO BE READ WITH CONJUNCTION OF ARCH AND MEP DRAWINGS AS WELL AS AS-BUILT CONDITION.
5. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF eFORCE INSPECTION CONSULTANCIES BEFORE COMMENCEMENT OF WORK.

REV	DESCRIPTION	DATE	DRAWN	CHECK
00	FOR SUBMISSION	20-12-2024	A.S	A.I

CLIENT
M/S AL HILAL ENGINEERING CONSULTANTS

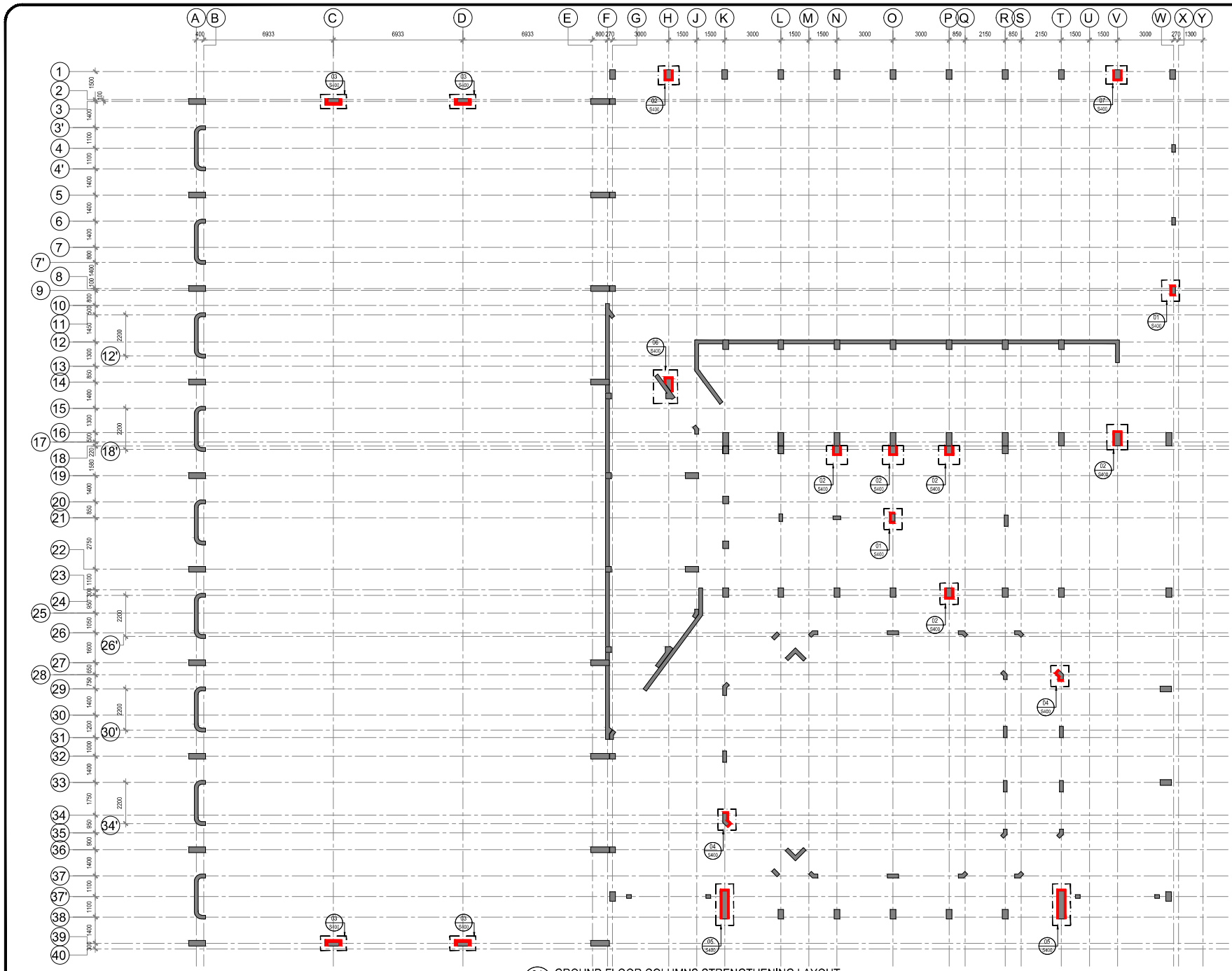
REPAIR AND STRENGTHENING CONSULTANT
eFORCE Inspection Consultancies
Dr. Ashraf Biddah
Abu Dhabi: P.O.Box 93898
Dubai: P.O.Box 118148
Tel. 02-6777993 Fax 02-6777998
Tel. 04-5519910 Fax 04-5519920 Mobile: 050-7636202

PROJECT:
LYCEE LOUIS MASSIGNON SCHOOL, AL SA'ADA STREET, ABU DHABI, UAE

DRAWING TITLE:
GENERAL NOTES AND DETAILS

SHEET SIZE	SCALE	PROJECT NO.
A1	N.T.S	PI204-24
DRAWN BY	CHECKED BY	APPROVED BY
A.S	K.M	A.B
DRAWING NO.		REVISION NO.
eFORCE-PI204-24-S000		00

AUTHORITIES APPROVAL



01 GROUND FLOOR COLUMNS STRENGTHENING LAYOUT
1/100

GENERAL NOTES

1. THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF eFORCE INSPECTION CONSULTANCIES. IT IS CONFIDENTIAL AND CAN NOT BE USED, REPRODUCED OR COMMUNICATED TO THIRD PARTIES IN PART OR IN WHOLE IN ANY FORM OR MANNER WITHOUT THE EXPRESS, PRIOR WRITTEN AGREEMENT OF eFORCE INSPECTION CONSULTANCIES.
2. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHER WISE NOTED.
3. THIS DRAWING NOT TO BE SCALED. THE STATED DIMENSIONS ONLY ARE TO BE CONSIDERED.
4. 5. THIS DRAWING TO BE READ WITH CONJUNCTION OF ARCH AND MEP DRAWINGS AS WELL AS AS-BUILT CONDITION.
5. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF eFORCE INSPECTION CONSULTANCIES BEFORE COMMENCEMENT OF WORK.

NOTE:

1. REFER TO DWG S000 FOR GENERAL NOTES AND GENERAL DETAILS.
2. REFER TO DWG S400 FOR COLUMNS STRENGTHENING DETAILS.
3. CONTRACTOR IS RESPONSIBLE TO CONFIRM EXISTING COLUMN DIMENSION IN ACCORDANCE WITH APPROVED DRAWING, ANY DISCREPANCY TO BE BROUGHT TO eFORCE ATTENTION FOR VERIFICATION.

LEGEND:

EXISTING COLUMN OR WALL BELOW	EXISTING COLUMN OR WALL ABOVE
COLUMN OR WALL STRENGTHENING BELOW	COLUMN OR WALL STRENGTHENING ABOVE

REV	DESCRIPTION	DATE	DRAWN	CHECK
01	FOR SUBMISSION	07-01-2025	A.S	A.I
00	FOR SUBMISSION	20-12-2024	A.S	A.I

CLIENT

M/S AL HILAL ENGINEERING CONSULTANTS

REPAIR AND STRENGTHENING CONSULTANT

eFORCE Inspection Consultancies
Dr. Ashraf Biddah
Abu Dhabi: P.O.Box 93898
Dubai: P.O.Box 118148
Tel. 02-6777993 Fax 02-6777998
Tel. 04-5519910 Fax 04-5519920 Mobile: 050-7636202

PROJECT:

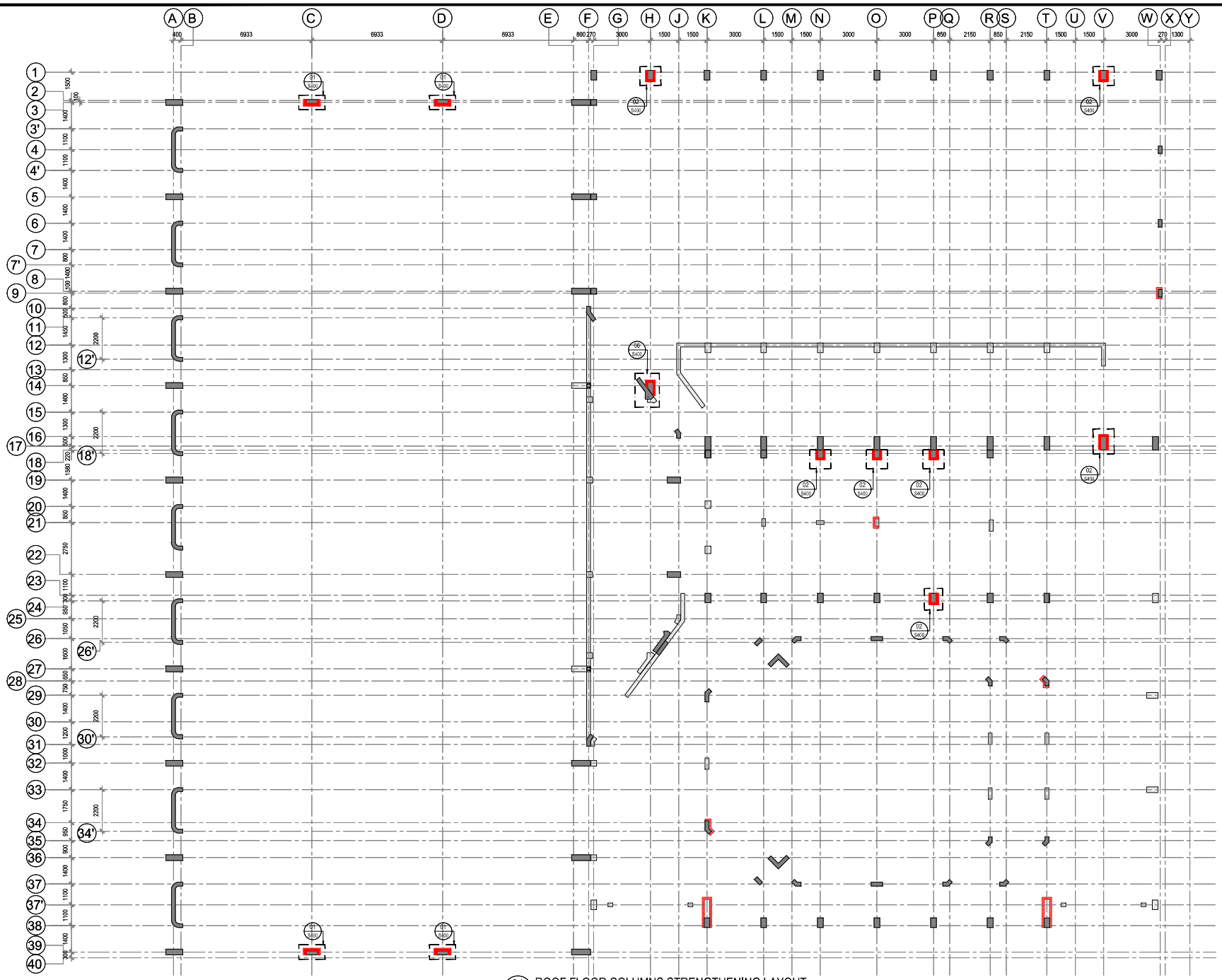
LYCEE LOUIS MASSIGNON
SCHOOL, AL SA'ADA STREET,
ABU DHABI, UAE

DRAWING TITLE:

GROUND FLOOR
COLUMNS STRENGTHENING LAYOUT

SHEET SIZE	SCALE	PROJECT NO.
A1	AS SHOWN	PI204-24
DRAWN BY	CHECKED BY	APPROVED BY
A.S	A.I	A.B
DRAWING NO.		REVISION NO.
eFORCE-PI204-24-S100		01

AUTHORITIES APPROVAL



01 ROOF FLOOR COLUMNS STRENGTHENING LAYOUT
1/100

GENERAL NOTES

1. THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF eFORCE INSPECTION CONSULTANCIES. IT IS CONFIDENTIAL AND CAN NOT BE USED, REPRODUCED OR COMMUNICATED TO THIRD PARTIES IN PART OR IN WHOLE IN ANY FORM OR MANNER WITHOUT THE EXPRESS, PRIOR WRITTEN AGREEMENT OF eFORCE INSPECTION CONSULTANCIES.
2. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHER WISE NOTED.
3. THIS DRAWING NOT TO BE SCALED. THE STATED DIMENSIONS ONLY ARE TO BE CONSIDERED.
4. 5. THIS DRAWING TO BE READ WITH CONJUNCTION OF ARCH AND MEP DRAWINGS AS WELL AS AS-BUILT CONDITION.
5. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF eFORCE INSPECTION CONSULTANCIES BEFORE COMMENCEMENT OF WORK.

NOTE:

1. REFER TO DWG S000 FOR GENERAL NOTES AND GENERAL DETAILS.
2. REFER TO DWG S400 FOR COLUMNS STRENGTHENING DETAILS.
3. CONTRACTOR IS RESPONSIBLE TO CONFIRM EXISTING COLUMN DIMENSION IN ACCORDANCE WITH APPROVED DRAWING, ANY DISCREPANCY TO BE BROUGHT TO eFORCE ATTENTION FOR VERIFICATION.

LEGEND:

EXISTING COLUMN OR WALL BELOW	EXISTING COLUMN OR WALL ABOVE
COLUMN OR WALL STRENGTHENING BELOW	COLUMN OR WALL STRENGTHENING ABOVE

REV	DESCRIPTION	DATE	DRAWN	CHECK
01	FOR SUBMISSION	07-01-2025	A.S	A.I
00	FOR SUBMISSION	20-12-2024	A.S	A.I

CLIENT

M/S AL HILAL ENGINEERING CONSULTANTS

REPAIR AND STRENGTHENING CONSULTANT

eFORCE Inspection Consultancies
Dr. Ashraf Biddah
Abu Dhabi: P.O.Box 93898
Dubai: P.O.Box 118148
Tel. 02-6777993 Fax 02-6777998
Tel. 04-5519910 Fax 04-5519920 Mobile: 050-7636202

PROJECT:

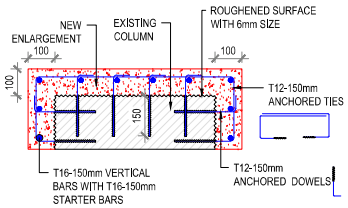
LYCEE LOUIS MASSIGNON
SCHOOL, AL SA'ADA STREET,
ABU DHABI, UAE

DRAWING TITLE:

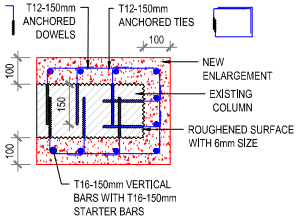
ROOF FLOOR
COLUMNS STRENGTHENING LAYOUT

SHEET SIZE	SCALE	PROJECT NO.
A1	AS SHOWN	PI204-24
DRAWN BY	CHECKED BY	APPROVED BY
A.S	A.I	A.B
DRAWING NO.		REVISION NO.
eFORCE-PI204-24-S101		01

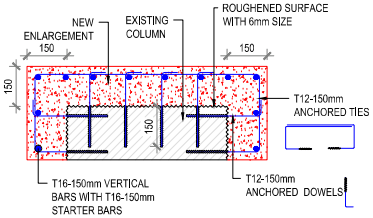
AUTHORITIES APPROVAL



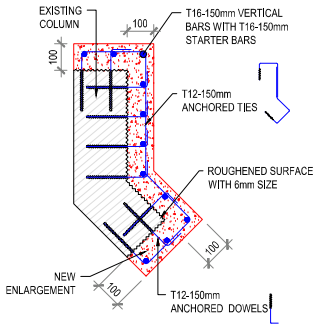
01 SECTION DETAIL
- 1:10



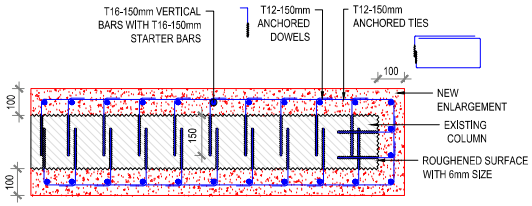
02 SECTION DETAIL
- 1:10



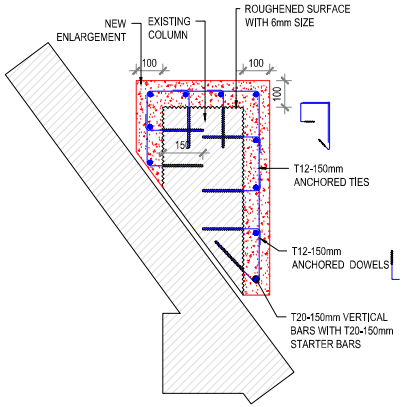
03 SECTION DETAIL
- 1:10



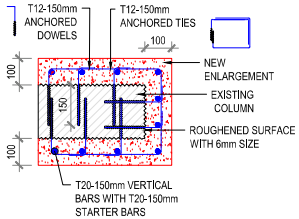
04 SECTION DETAIL
- 1:10



05 SECTION DETAIL
- 1:10



06 SECTION DETAIL
- 1:10



07 SECTION DETAIL
-- 1:10

GENERAL NOTES

1. THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF eFORCE INSPECTION CONSULTANCIES. IT IS CONFIDENTIAL AND CAN NOT BE USED, REPRODUCED OR COMMUNICATED TO THIRD PARTIES IN PART OR IN WHOLE IN ANY FORM OR MANNER WITHOUT THE EXPRESS, PRIOR WRITTEN AGREEMENT OF eFORCE INSPECTION CONSULTANCIES.
2. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHER WISE NOTED.
3. THIS DRAWING NOT TO BE SCALED. THE STATED DIMENSIONS ONLY ARE TO BE CONSIDERED.
4. 5. THIS DRAWING TO BE READ WITH CONJUNCTION OF ARCH AND MEP DRAWINGS AS WELL AS AS-BUILT CONDITION.
5. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF eFORCE INSPECTION CONSULTANCIES BEFORE COMMENCEMENT OF WORK.

NOTE:

1. REFER TO DWG S000 FOR GENERAL NOTES AND DETAILS.
2. REFER TO DWG S100 FOR COLUMNS STRENGTHENING LAYOUT.
3. CONTRACTOR IS RESPONSIBLE TO CONFIRM EXISTING COLUMN DIMENSION IN ACCORDANCE WITH APPROVED DRAWING. ANY DISCREPANCY TO BE BROUGHT TO eFORCE ATTENTION FOR VERIFICATION.

REV	DESCRIPTION	DATE	DRAWN	CHECK
01	FOR SUBMISSION	07-01-2025	A.S	A.I
00	FOR SUBMISSION	30-12-2024	A.S	A.I

CLIENT

M/S AL HILAL ENGINEERING CONSULTANTS

REPAIR AND STRENGTHENING CONSULTANT

eFORCE Inspection Consultancies
Dr. Ashraf Biddah
Abu Dhabi: P.O.Box 93898
Dubai: P.O.Box 118148
Tel. 04-4777993 Fax 04-4777998
Tel. 04-5519910 Fax 04-5519920 Mobile: 050-7636202

PROJECT:

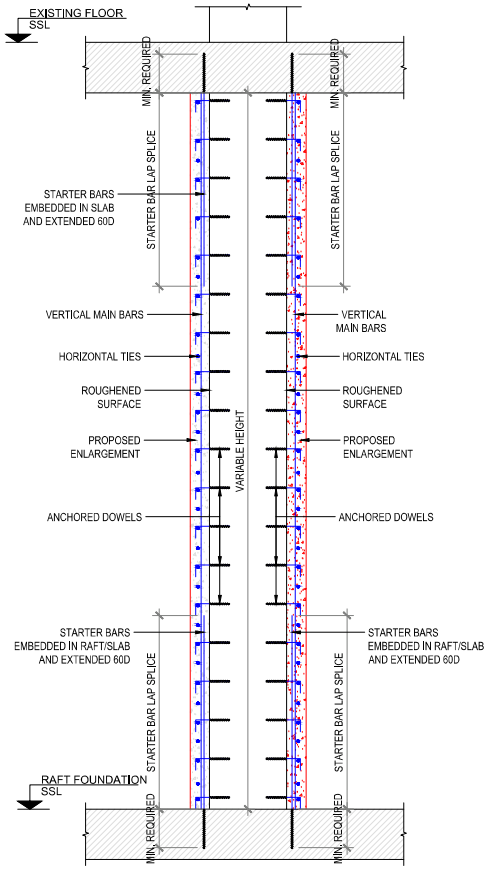
LYCEE LOUIS MASSIGNON SCHOOL, AL SA'ADA STREET, ABU DHABI, UAE

DRAWING TITLE:

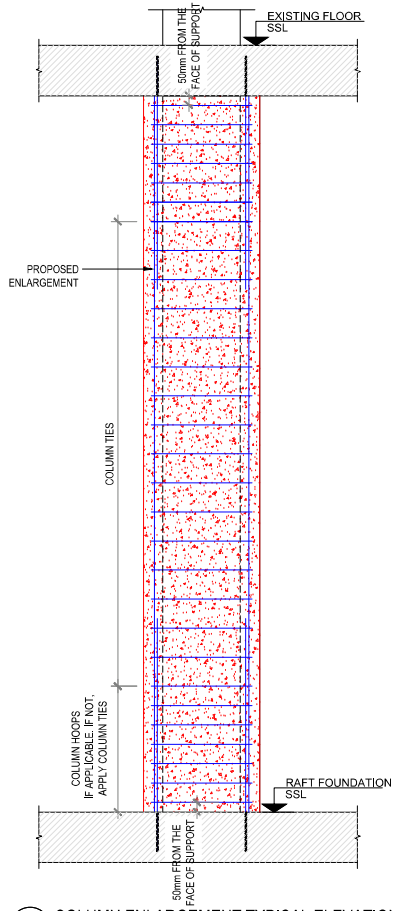
COLUMNS STRENGTHENING DETAILS

SHEET SIZE	SCALE	PROJECT NO.
A1	AS SHOWN	PI204-24
DRAWN BY	CHECKED BY	APPROVED BY
A.S	A.I	A.B
DRAWING NO.		REVISION NO.
eFORCE-PI204-24-S400		01

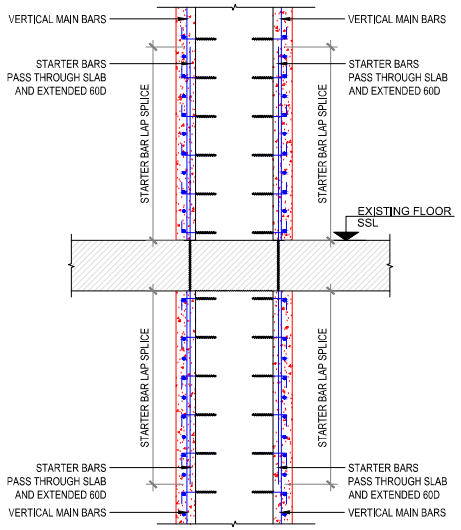
AUTHORITIES APPROVAL



1 COLUMN ENLARGEMENT TYPICAL ELEVATION
N.T.S



2 COLUMN ENLARGEMENT TYPICAL ELEVATION
SHOWING TIES AND HOOPS SPACING DETAIL
N.T.S



3 STARTER BAR PASS THROUGH
SLAB OR BEAM TYPICAL DETAIL
N.T.S

GENERAL NOTES

1. THIS DOCUMENT IS THE EXCLUSIVE PROPERTY OF eFORCE INSPECTION CONSULTANCIES. IT IS CONFIDENTIAL AND CAN NOT BE USED, REPRODUCED OR COMMUNICATED TO THIRD PARTIES IN PART OR IN WHOLE IN ANY FORM OR MANNER WITHOUT THE EXPRESS, PRIOR WRITTEN AGREEMENT OF eFORCE INSPECTION CONSULTANCIES.
2. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHER WISE NOTED.
3. THIS DRAWING NOT TO BE SCALED. THE STATED DIMENSIONS ONLY ARE TO BE CONSIDERED.
4. 5. THIS DRAWING TO BE READ WITH CONJUNCTION OF ARCH AND MEP DRAWINGS AS WELL AS AS-BUILT CONDITION.
5. ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF eFORCE INSPECTION CONSULTANCIES BEFORE COMMENCEMENT OF WORK.

NOTE:

1. REFER TO DWG S000 FOR GENERAL NOTES AND DETAILS.
2. REFER TO DWG S100 FOR COLUMNS STRENGTHENING LAYOUT.
3. CONTRACTOR IS RESPONSIBLE TO CONFIRM EXISTING COLUMN DIMENSION IN ACCORDANCE WITH APPROVED DRAWING, ANY DISCREPANCY TO BE BROUGHT TO eFORCE ATTENTION FOR VERIFICATION.

REV	DESCRIPTION	DATE	DRAWN	CHECK
00	FOR SUBMISSION	20-12-2024	A.S	A.I

CLIENT

M/S AL HILAL ENGINEERING CONSULTANTS

REPAIR AND STRENGTHENING CONSULTANT

eFORCE Inspection Consultancies
Dr. Ashraf Biddah
Abu Dhabi: P.O.Box 93898
Dubai: P.O.Box 118148
Tel. 02-6777993 Fax 02-6777998
Tel. 04-5519910 Fax 04-5519920 Mobile: 050-7636202

PROJECT:

LYCEE LOUIS MASSIGNON
SCHOOL, AL SA'ADA STREET,
ABU DHABI, UAE

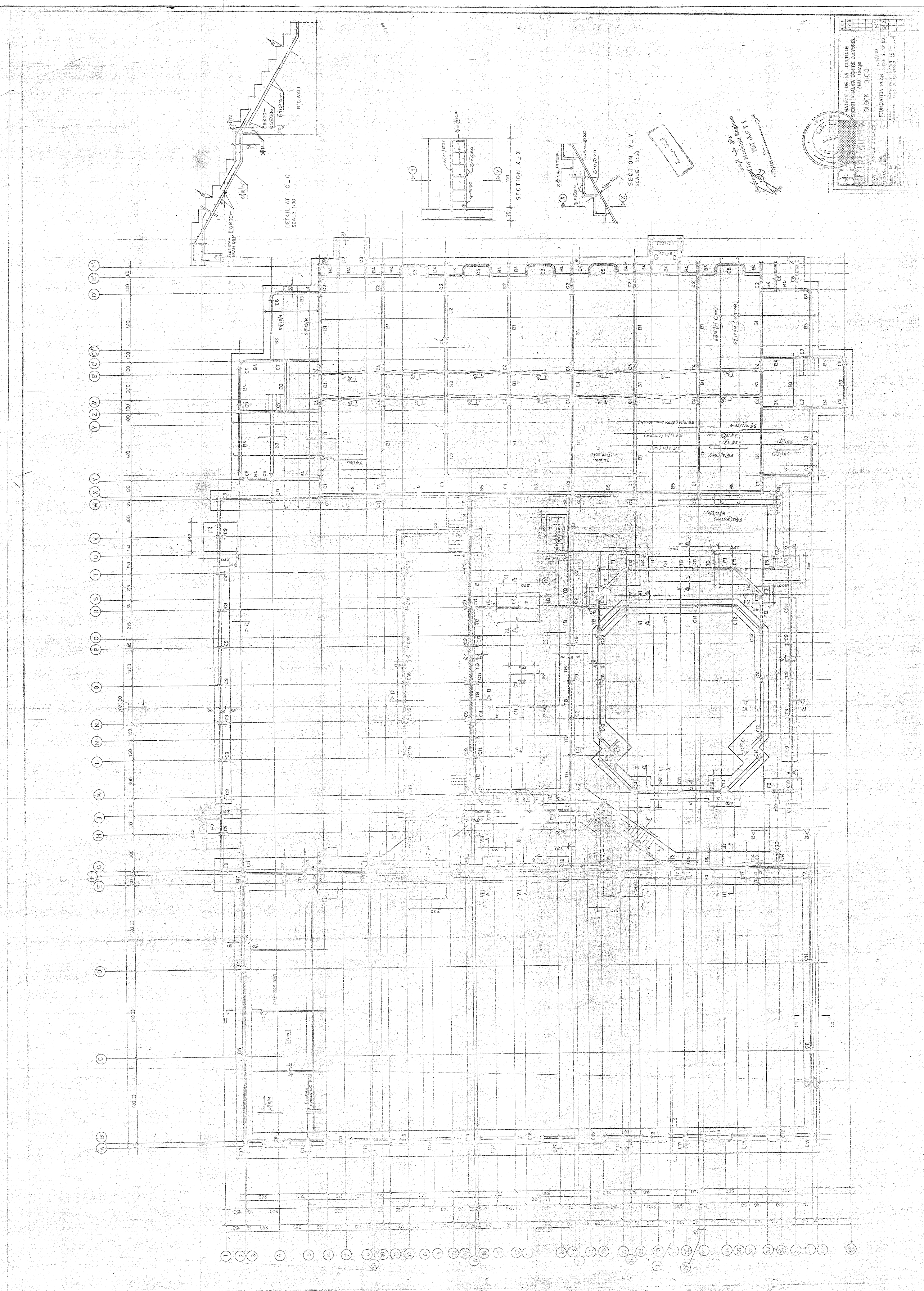
DRAWING TITLE:

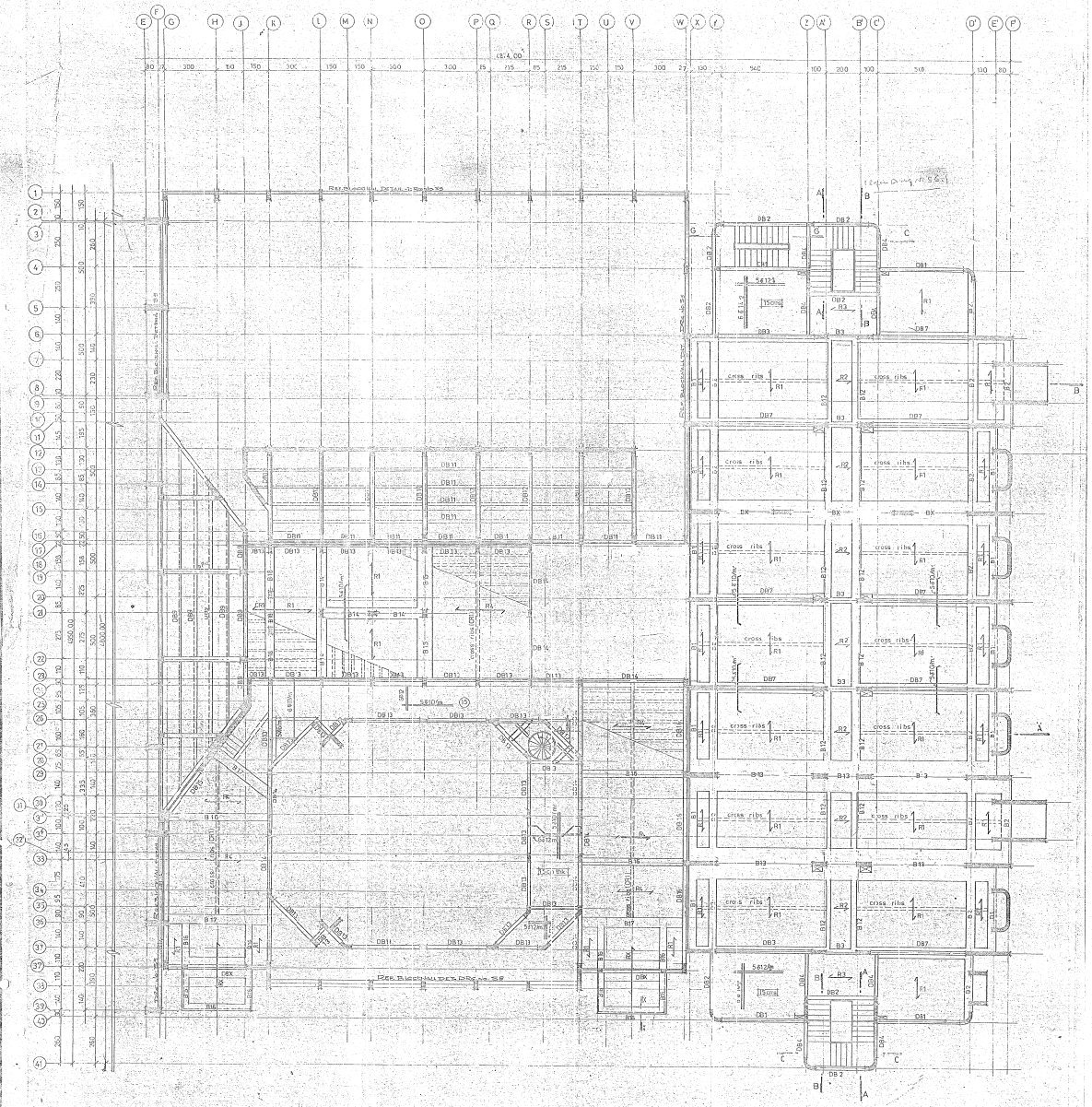
TYPICAL COLUMNS
STRENGTHENING DETAILS

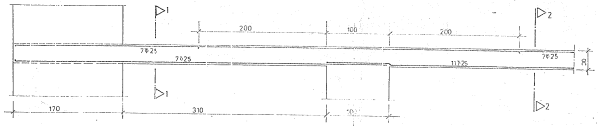
SHEET SIZE	SCALE	PROJECT NO.
A1	N.T.S	PI204-24
DRAWN BY	CHECKED BY	APPROVED BY
A.S	A.I	A.B
DRAWING NO.		REVISION NO.
eFORCE-PI204-24-S401		00

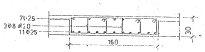
AUTHORITIES APPROVAL

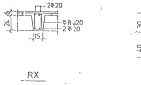
Appendix B
AS-BUILT DRAWINGS

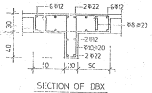

MAISON DE LA CULTURE
SHEIKH KHALIFA CENTRE CULTUREL
ABU DHABI
BLOCK B-C-D
FOUNDATION PLAN
5.12.82
S 2
DETAIL AT C_C
SCALE 1:20
R.C.WALL
SECTION X_X
SECTION Y_Y
SCALE 1:20

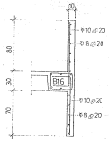










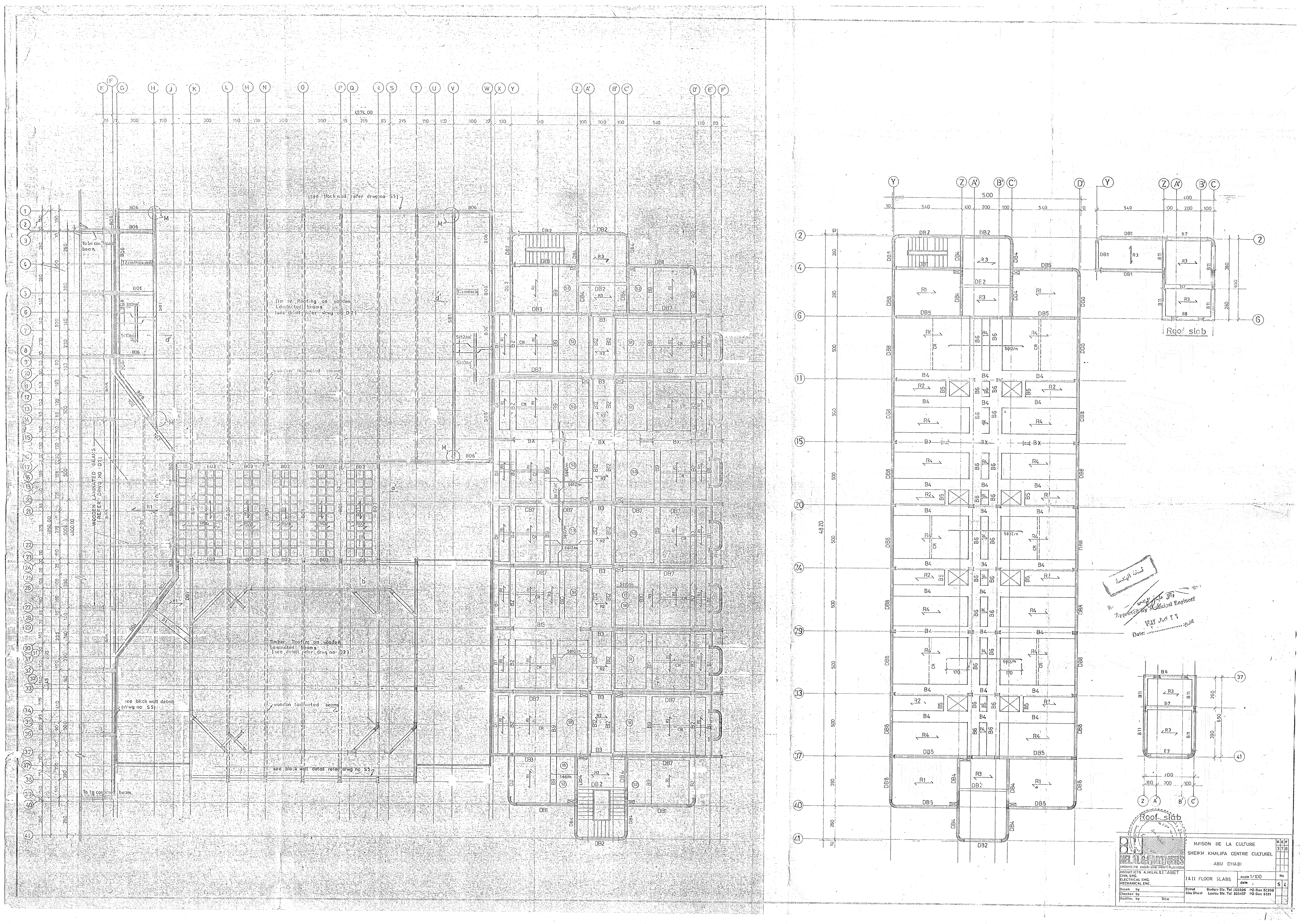


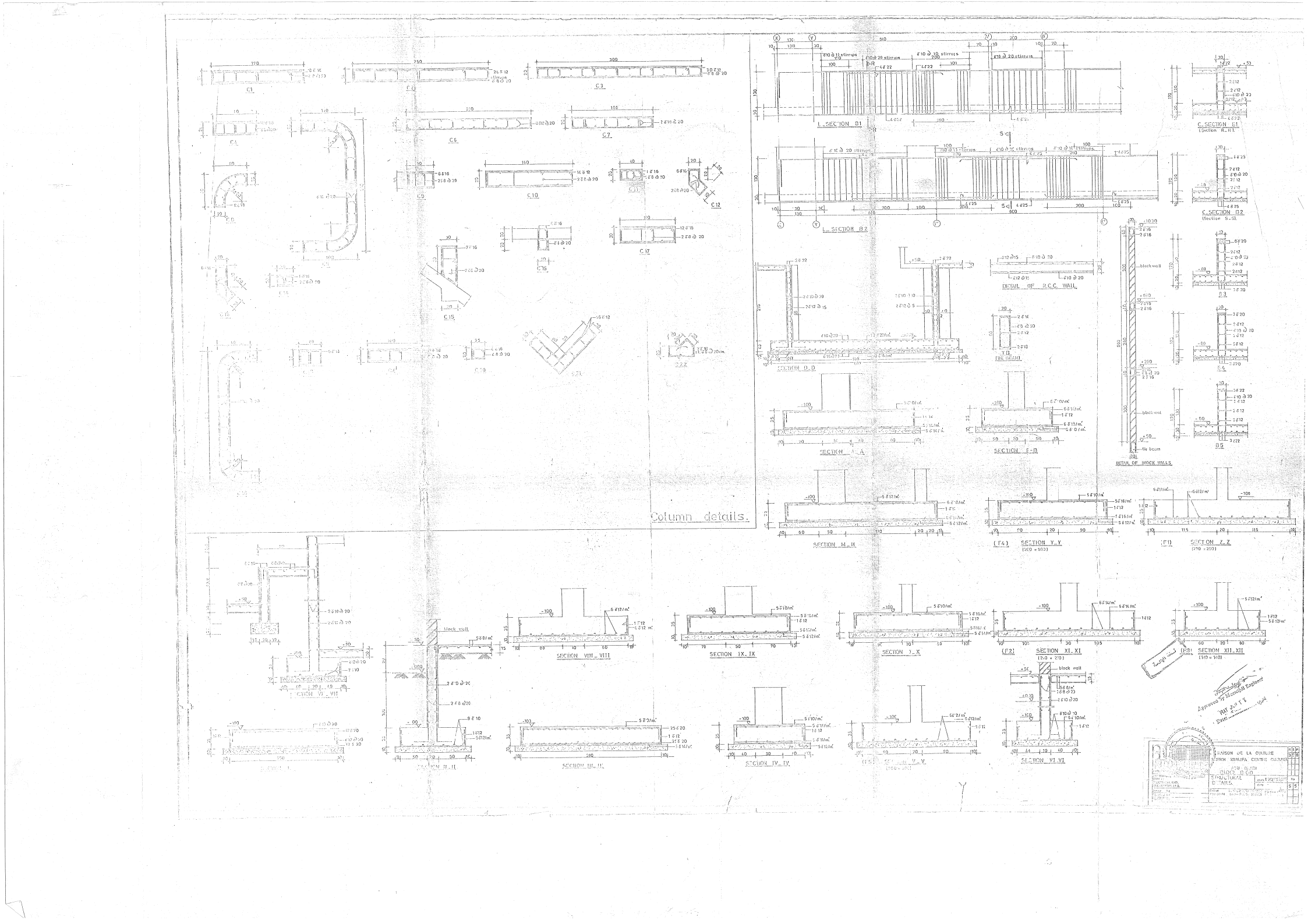
MAISON DE LA CULTURE
SHEIKH KHALIFA CENTRE CULTUREL
ABU DHABI

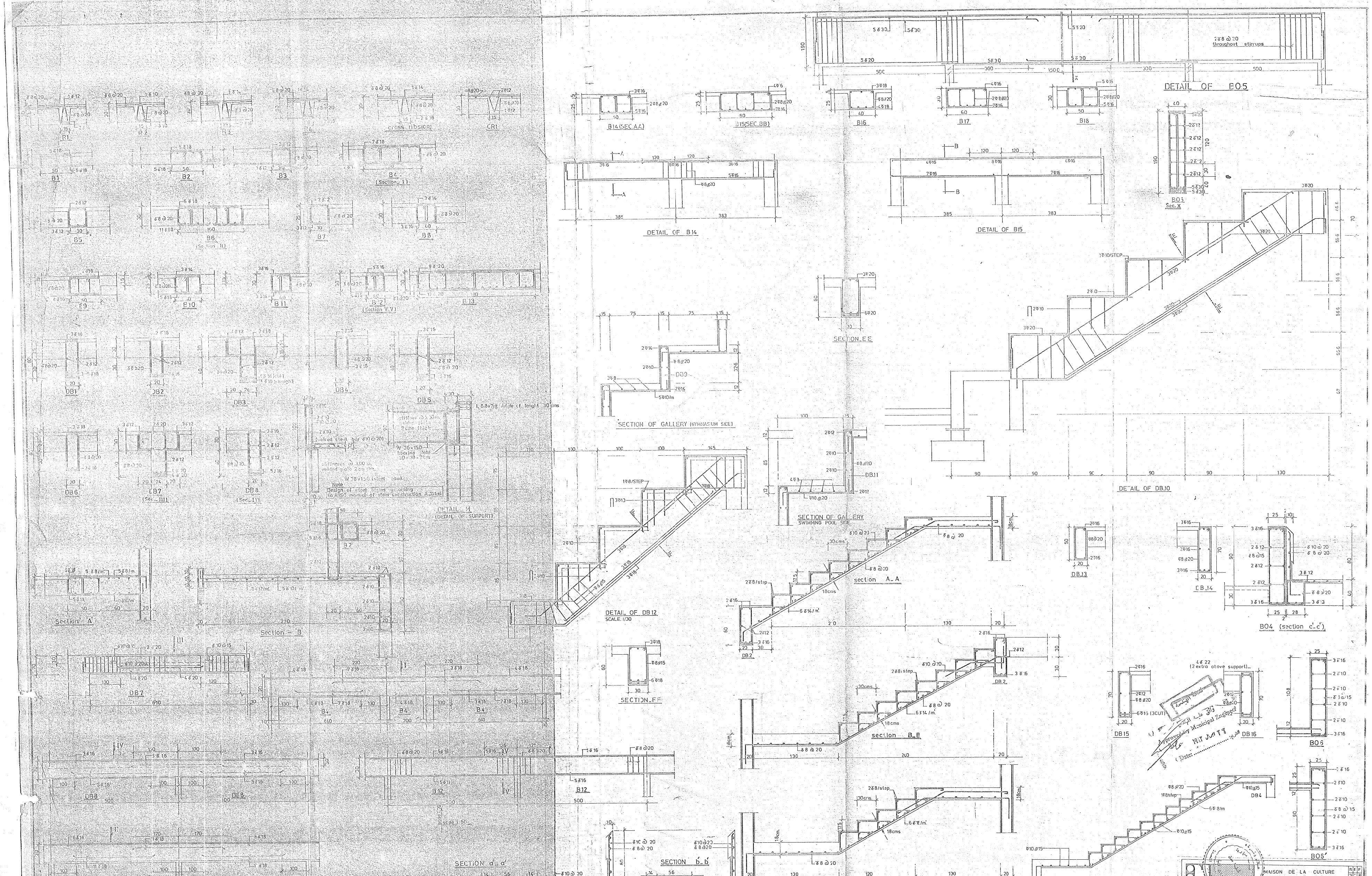
GROUND FLOOR SLAB

scale 1:100

Dubai Br. Tel 383785 PO Box 50158
Abu Dhabi Liwalou Br. Tel 339487 PO Box 3321


Roof slab
Roof slab
MAISON DE LA CULTURE
SHEIKH KHALIFA CENTRE CULTUREL
ABU DHABI
I&II FLOOR SLABS
scale 1/100
date
REF 378
No S 4
Beirut Badaro Str. Tel 362395 PO Box 50298
Abu Dhabi Loulou Str. Tel 335467 PO Box 3321


Column details.
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
L SECTION B1
L SECTION B2
C SECTION B1
C SECTION B2
DETAIL OF R.C.C. WALL
DETAIL OF BLOCK WALLS
B3
B4
B5
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
SECTION I-I
SECTION II-II
SECTION III-III
SECTION IV-IV
SECTION V-V
SECTION VI-VI
SECTION VII-VII
SECTION VIII-VIII
SECTION IX-IX
SECTION X-X
SECTION XI-XI
SECTION XII-XII
Approved by Municipal Engineer
Date
MAISON DE LA CULTURE
SIRCH MUNICIPAL CENTRE CULTURAL
BLOCK 'B' (G+0)
STRUCTURAL DETAILS.



MAISON DE LA CULTURE
SHEIKH KHALIFA CENTRE CULTUREL
ABU DHABI

HELAL & PARTNERS
ARCHITECTS . ENGINEERS . TOWN PLANNERS

ARCHITECTS A.HELAL & I.TABET
CIVIL ENG.
ELECTRICAL ENG.
MECHANICAL ENG.

STRUCTURAL DETAILS — scale 1:20, 1:50, 1:30 — date

R	E	F
3	7	8

No S 6

Drawn by
Checked by
Modified by Date

Beirut Badaro Str. Tel 382395 PO Box 50298
Abu Dhabi Loulou Str. Tel 335467 PO Box 3321

Appendix C
SHEAR WALL ANALYSIS FOR GYMNASIUM

TABLE: Shear Wall Pier Design Summary - ACI 318-14

Story	Pier Label	Station	Design Type	Edge Rebar	End Rebar	Rebar Spacing	D/C Ratio	Pier Leg	Leg X1	Leg Y1	Leg X2	Leg Y2	Length	Thickness	Shear Rebar	Compressive Stress Left	Compressive Stress Right	Compressive Stress Limit Left	Compressive Stress Limit Right	C Depth Left	C Limit Left	C Depth Right	C Limit Right	Boundary Zone Left	Boundary Zone Right	Warnings	Errors
						mm			mm	mm	mm	mm	mm	mm	mm^2/m	MPa	MPa	MPa	MPa	mm	mm	mm	mm	mm	mm		
MID	P4	Top	Uniform	12	12	150	0.434	Top Leg 1	12399.9	11050	12399.9	34350	23300	200	500	0.21	0.27	3.88	3.88							No Message	No Message
MID	P4	Top	Uniform	12	12	150	0.434	Top Leg 2	12399.9	34016.8	12699.6	33614.7	501.5	200	500	1.83	2.85	3.88	3.88							No Message	No Message
MID	P4	Top	Uniform	12	12	150	0.434	Top Leg 3	12399.9	11383.2	12580.4	11624.6	301.4	200	500	3.25	4.71	3.88	3.88	19.9	67	27.8	67	10	13.9	No Message	No Message
MID	P4	Bottom	Uniform	12	12	150	0.455	Bottom Leg 1	12399.9	11050	12399.9	34350	23300	200	500	0.41	0.6	3.88	3.88							No Message	No Message
MID	P4	Bottom	Uniform	12	12	150	0.455	Bottom Leg 2	12399.9	34016.8	12699.6	33614.7	501.5	200	500	4.75	4.4	3.88	3.88	55.7	111.4	52.9	111.4	27.9	26.5	No Message	No Message
MID	P4	Bottom	Uniform	12	12	150	0.455	Bottom Leg 3	12399.9	11383.2	12580.4	11624.6	301.4	200	500	3.56	3.04	3.88	3.88	24.8	67	22.3	67	12.4	11.2	No Message	No Message
ROOF	P6	Top	Uniform	12	12	150	0.536	Top Leg 1	15050.8	14941.7	15819.1	15969.1	1282.9	200	500	4.07	5.09	3.88	3.88	249.6	206.1	249.6	206.1	124.8	124.8	No Message	No Message
ROOF	P6	Bottom	Uniform	12	12	150	0.587	Bottom Leg 1	15050.8	14941.7	15818.8	15969.3	1282.9	200	500	6.35	4.06	3.88	3.88	258.6	206.1	258.6	206.1	130.3	130.3	No Message	No Message
MID	P6	Top	Uniform	12	12	150	0.46	Top Leg 1	15050.8	14941.7	15818.8	15969.3	1282.9	200	500	4.38	3.02	3.88	3.88	283.8	285.1	283.4	285.1	155.5	155.1	No Message	No Message
MID	P6	Bottom	Uniform	12	12	150	0.571	Bottom Leg 1	15050.8	14941.7	15819.1	15969.1	1282.9	200	500	5.23	7.21	3.88	3.88	290.6	285.1	290.6	285.1	162.3	162.3	No Message	No Message
ROOF	P7	Top	Uniform	12	12	150	0.559	Top Leg 1	15010.1	30514.7	15930	29280.5	1539.3	200	500	3.5	4.18	3.88	3.88	283.3	342.1	283.3	342.1	141.7	141.7	No Message	No Message
ROOF	P7	Bottom	Uniform	12	12	150	0.636	Bottom Leg 1	15011.2	30515.6	15929.3	29280	1539.3	200	500	6.21	4.38	3.88	3.88	294.1	342.1	294.1	342.1	147.1	147.1	No Message	No Message
MID	P7	Top	Uniform	12	12	150	0.507	Top Leg 1	15011.2	30515.6	15929.3	29280	1539.3	200	500	4.96	3.57	3.88	3.88	319.7	342.1	319.7	342.1	165.7	165.7	No Message	No Message
MID	P7	Bottom	Uniform	12	12	150	0.689	Bottom Leg 1	15010.1	30514.7	15930	29280.5	1539.3	200	500	6.27	7.73	3.88	3.88	327.9	342.1	327.9	342.1	174	174	No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 1	-9307.4	43749.3	-9100	43750	207.4	200	500	3.04	3.84	3.88	3.88	14.4	38.2	14.4	38.2		7.2	No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 2	-9441.9	43715.5	-9307.4	43749.3	138.7	200	500	0.63	0.74	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 3	-9558.3	43604.2	-9441.9	43715.5	161.1	200	500	0.92	1.1	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 4	-9599.1	43463.3	-9558.3	43604.2	146.7	200	500	0.15	0.2	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 5	-9600	41850	-9599.1	43463.3	1613.3	200	500	0.02	0.03	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 6	-9600	41850	-9567.8	41712.6	141.1	200	500	0.84	0.86	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 7	-9567.8	41712.6	-9456	41592.7	163.9	200	500	0.55	0.65	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 8	-9456	41592.7	-9300	41550	161.8	200	500	2.13	2.26	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 9	-9300	41550	-9100	41550	200	200	500	1.18	2.3	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 10	-9377.1	36559.1	-9100	36550	277.1	200.3	500.77	0.82	1.37	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 11	-9456	36592.7	-9377.1	36559.1	85.7	200	500	1.59	1.69	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 12	-9514.3	36638.7	-9456	36592.7	74.2	200	500	0.74	0.82	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 13	-9567.8	36712.6	-9514.3	36638.7	91.2	200	500	0.49	0.54	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 14	-9592.5	36780.4	-9567.8	36712.6	72.2	200	500	1.41	1.43	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 15	-9599.1	38463.3	-9592.5	36780.4	1674	201.1	502.76	0.004096	0.01	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 16	-9599.1	38463.3	-9589	38532.3	69.7	200	500	1.35	1.35	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 17	-9589	38532.3	-9558.3	38604.2	78.2	200	500	1.15	1.16	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 18	-9558.3	38604.2	-9511.9	38663.7	75.5	200	500	1.24	1.28	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 19	-9511.9	38663.7	-9441.9	38715.5	87.1	200	500	1.08	1.14	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 20	-9441.9	38715.5	-9369.5	38741.8	77	200	500	0.91	1.02	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 21	-9369.5	38741.8	-9100	38750	268.6	201	502.56	1.29	1.91	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 22	-9377.1	31559.1	-9100	31550	277.1	200.4	500.97	0.78	1.32	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 23	-9456	31592.7	-9377.1	31559.1	85.7	200	500	1.62	1.7	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 24	-9511.7	31636.6	-9456	31592.7	70.9	200	500	0.78	0.87	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 25	-9567.8	31712.6	-9511.7	31636.6	94.5	200	500	0.51	0.57	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 26	-9592.5	31780.4	-9567.8	31712.6	72.2	200	500	0.54	0.56	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 27	-9599.1	33463.3	-9592.5	31780.4	1674	201.1	502.76	0.004157	0.01	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 28	-9599.1	33463.3	-9590.3	33529.3	66.6	200	500	0.67	0.68	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 29	-9590.3	33529.3	-9558.3	33604.2	81.4	200	500	0.49	0.51	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 30	-9558.3	33604.2	-9511.2	33665.4	77.3	200	500	0.67	0.73	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 31	-9511.2	33665.4	-9441.9	33715.5	85.5	200	500	0.69	0.78	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 32	-9441.9	33715.5	-9363.7	33743.9	83.2	200	500	1.75	1.86	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 33	-9363.7	33743.9	-9100	33750	263.1	200.7	501.72	1.04	1.6	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 34	-9363.7	28743.9	-9100	28750	263.7	200.2	500.55	0.83	1.4	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 35	-9441.9	28715.5	-9363.7	28743.9	83.2	200	500	1.66	1.75	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 36	-9511.9	28663.7	-9441.9	28715.5	87.1	200	500	0.62	0.7	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 37	-9558.3	28604.2	-9511.9	28663.7	75.5	200	500	0.66	0.71	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 38	-9590.3	28529.3	-9558.3	28604.2	81.4	200	500	0.51	0.52	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 39	-9600	26850	-9590.3	28529.3	1665.7	201.7	504.24	0.004834	0.01	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 40	-9600	26850	-9592.5	26780.4	70	200	500	0.21	0.22	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 41	-9592.5	26780.4	-9569	26716.1	68.5	200	500	0.22	0.23	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 42	-9569	26716.1	-9514.3	26638.7	94.8	200	500	0.48	0.53	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 43	-9514.3	26638.7	-9456	26592.7	74.2	200	500	0.69	0.77	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 44	-9456	26592.7	-9377.1	26559.1	85.7	200	500	1.53	1.6	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 45	-9377.1	26559.1	-9100	26550	276.3	201	502.49	1.09	1.63	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 46	-9377.1	21559.1	-9100	21550	277.1	200.4	500.97	0.77	1.31	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 47	-9456	21592.7	-9377.1	21559.1	85.7	200	500	1.52	1.6	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 48	-9514.3	21638.7	-9456	21592.7	74.2	200	500	0.72	0.8	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 49	-9567.8	21712.6	-9514.3	21638.7	91.2	200	500	0.53	0.58	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 50	-9592.8	21781.3	-9567.8	21712.6	73.1	200	500	0.24	0.26	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 51	-9599.1	23463.3	-9592.8	21781.3	1673.6	201	502.59	0.003107	0.01	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 52	-9599.1	23463.3	-9590.3	23529.3	66.6	200	500	0.23	0.24	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 53	-9590.3	23529.3	-9558.3	23604.2	81.4	200	500	0.45	0.47	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 54	-9558.3	23604.2	-9511.9	23663.7	75.5	200	500	0.64	0.7	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 55	-9511.9	23663.7	-9441.9	23715.5	87.1	200	500	0.63	0.71	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 56	-9441.9	23715.5	-9363.7	23743.9	83.2	200	500	1.22	1.29	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 57	-9363.7	23743.9	-9100	23750	262.9	200.8	502.04	1.07	1.63	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 58	-9379.8	1560.2	-9100	1550	279.8	200.5	501.17	2.57	3.83	3.88	3.88			20.7	40.1		10.3	No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 59	-9456	1592.7	-9379.8	1560.2	82.9	200	500	4.26	0.64	3.88	3.88	5.3	16.8			2.6		No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 60	-9514.3	1638.7	-9456	1592.7	74.2	200	500	4.23	0.65	3.88	3.88	4.8	16.5			2.4		No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 61	-9567.8	1712.6	-9514.3	1638.7	91.2	200	500	0.3	0.34	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 62	-9592.5	1780.4	-9567.8	1712.6	72.2	200	500	0.42	0.46	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 63	-9599.1	3463.3	-9592.5	1780.4	1674	201.1	502.76	0.01	0.01	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 64	-9599.1	3463.3	-9590.3	3529.3	66.6	200	500	1.52	1.53	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 65	-9590.3	3529.3	-9558.3	3604.2	81.4	200	500	1.2	1.22	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 66	-9558.3	3604.2	-9511.9	3663.7	75.5	200	500	1.39	1.42	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 67	-9511.9	3663.7	-9441.9	3715.5	87.1	200	500	1.21	1.24	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 68	-9441.9	3715.5	-9363.7	3743.9	83.2	200	500	0.18	0.27	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 69	-9363.7	3743.9	-9100	3750	262.9	200.8	502.04	1.82	2.64	3.88	3.88							No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019	Top Leg 70	-9377.1	6559.1	-9100	6550	277.1	200.4	500.97	0.92	1.52	3.88	3.88							No Message	No Message

ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 71	-9456	6592.7	-9377.1	6559.1	85.7	200	500	0.73	0.84	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 72	-9514.3	6638.7	-9456	6592.7	74.2	200	500	0.53	0.6	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 73	-9567.8	6712.6	-9514.3	6638.7	91.2	200	500	1.05	1.09	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 74	-9592.5	6780.4	-9567.8	6712.6	72.2	200	500	1.27	1.29	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 75	-9599.1	8463.3	-9592.5	6780.4	1674	201.1	502.76	0.004272	0.01	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 76	-9599.1	8463.3	-9590.3	8529.3	66.6	200	500	0.61	0.63	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 77	-9590.3	8529.3	-9558.3	8604.2	81.4	200	500	1.17	1.19	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 78	-9558.3	8604.2	-9511.9	8663.7	75.5	200	500	0.66	0.73	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 79	-9511.9	8663.7	-9441.9	8715.5	87.1	200	500	0.65	0.73	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 80	-9441.9	8715.5	-9363.7	8743.9	83.2	200	500	1.94	2.03	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 81	-9363.7	8743.9	-9100	8750	262.9	200.8	502.04	1.23	1.81	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 82	-9377.1	11559.1	-9100	11550	277.1	200.4	500.97	0.77	1.33	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 83	-9456	11592.7	-9377.1	11559.1	85.7	200	500	1.54	1.64	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 84	-9514.3	11638.7	-9456	11592.7	74.2	200	500	0.7	0.79	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 85	-9567.8	11712.6	-9514.3	11638.7	91.2	200	500	0.51	0.56	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 86	-9592.5	11780.4	-9567.8	11712.6	72.2	200	500	1.26	1.27	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 87	-9599.1	13463.3	-9592.5	11780.4	1674	201.1	502.76	0.004846	0.01	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 88	-9599.1	13463.3	-9590.3	13529.3	66.6	200	500	0.71	0.72	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 89	-9590.3	13529.3	-9558.3	13604.2	81.4	200	500	0.51	0.53	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 90	-9558.3	13604.2	-9511.9	13663.7	75.5	200	500	0.73	0.8	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 91	-9511.9	13663.7	-9441.9	13715.5	87.1	200	500	0.69	0.78	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 92	-9441.9	13715.5	-9363.7	13743.9	83.2	200	500	1.89	1.98	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 93	-9363.7	13743.9	-9100	13750	262.9	200.8	502.04	1.17	1.74	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 94	-9363.7	18743.9	-9100	18750	263.7	200.2	500.55	0.86	1.42	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 95	-9441.9	18715.5	-9363.7	18743.9	83.2	200	500	1.19	1.27	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 96	-9511.9	18663.7	-9441.9	18715.5	87.1	200	500	0.68	0.77	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 97	-9558.3	18604.2	-9511.9	18663.7	75.5	200	500	0.71	0.77	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 98	-9590.3	18529.3	-9558.3	18604.2	81.4	200	500	0.55	0.57	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 99	-9600	16850	-9590.3	18529.3	1665.7	201.7	504.24	0.004756	0.01	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 100	-9600	16850	-9589.9	16785.2	65.6	200	500	0.2	0.21	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 101	-9589.9	16785.2	-9567.8	16712.6	75.8	200	500	0.49	0.51	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 102	-9567.8	16712.6	-9514.3	16638.7	91.2	200	500	0.49	0.54	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 103	-9514.3	16638.7	-9456	16592.7	74.2	200	500	0.69	0.77	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 104	-9456	16592.7	-9377.1	16559.1	85.7	200	500	1.53	1.6	3.88	3.88						No Message	No Message
ROOF	P8	Top	Uniform	16	16	150	0.019 Top Leg 105	-9377.1	16559.1	-9102.2	16550.7	274.1	201	502.49	1.01	1.55	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 1	-9307.4	43749.3	-9100	43750	207.4	200	500	0.73	2.33	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 2	-9441.9	43715.5	-9307.4	43749.3	138.7	200	500	2.99	2.56	3.88	3.88	9.6	26.4			4.8	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 3	-9558.3	43604.2	-9441.9	43715.5	161.1	200	500	0.35	1.77	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 4	-9599.1	43463.3	-9558.3	43604.2	146.7	200	500	0.31	1.86	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 5	-9600	41850	-9599.1	43463.3	1613.3	200	500	0.4	0.79	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 6	-9600	41850	-9567.8	41712.6	141.1	200	500	0.39	1.81	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 7	-9567.8	41712.6	-9456	41592.7	163.9	200	500	0.32	1.67	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 8	-9456	41592.7	-9300	41550	161.8	200	500	0.42	2.36	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 9	-9300	41550	-9100	41550	200	200	500	0.8	2.15	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 10	-9377.1	36559.1	-9100	36550	277.1	200.3	500.77	0.5	2.03	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 11	-9456	36592.7	-9377.1	36559.1	85.7	200	500	2.91	2.56	3.88	3.88	5.6	19.1			2.8	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 12	-9514.3	36638.7	-9456	36592.7	74.2	200	500	3.04	2.69	3.88	3.88	4.7	13.8			2.4	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 13	-9567.8	36712.6	-9514.3	36638.7	91.2	200	500	0.85	2.28	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 14	-9592.5	36780.4	-9567.8	36712.6	72.2	200	500	1.24	2.7	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 15	-9599.1	38463.3	-9592.5	36780.4	1674	201.1	502.76	0.39	0.76	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 16	-9599.1	38463.3	-9589	38532.3	69.7	200	500	3.2	3.07	3.88	3.88	4.7	15.5	4.6	15.5	2.3	2.3 No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 17	-9589	38532.3	-9558.3	38604.2	78.2	200	500	1.27	2.78	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 18	-9558.3	38604.2	-9511.9	38663.7	75.5	200	500	3	2.82	3.88	3.88	4.8	16.8			2.4	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 19	-9511.9	38663.7	-9441.9	38715.5	87.1	200	500	1.12	2.64	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 20	-9441.9	38715.5	-9369.5	38741.8	77	200	500	3.47	3.08	3.88	3.88	5.8	17.1	5.3	17.1	2.9	2.6 No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 21	-9369.5	38741.8	-9100	38750	268.6	201	502.56	0.33	2.33	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 22	-9377.1	31559.1	-9100	31550	277.1	200.4	500.97	0.42	2	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 23	-9456	31592.7	-9377.1	31559.1	85.7	200	500	0.78	2.48	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 24	-9511.7	31636.6	-9456	31592.7	70.9	200	500	3	2.62	3.88	3.88	4.5	14.1			2.2	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 25	-9567.8	31712.6	-9511.7	31636.6	94.5	200	500	0.72	2.16	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 26	-9592.5	31780.4	-9567.8	31712.6	72.2	200	500	1.16	2.6	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 27	-9599.1	33463.3	-9592.5	31780.4	1674	201.1	502.76	0.37	0.74	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 28	-9599.1	33463.3	-9590.3	33529.3	66.6	200	500	3.16	3.03	3.88	3.88	4.4	14.8	4.3	14.8	2.2	2.1 No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 29	-9590.3	33529.3	-9558.3	33604.2	81.4	200	500	1.08	2.55	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 30	-9558.3	33604.2	-9511.2	33665.4	77.3	200	500	1.17	2.62	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 31	-9511.2	33665.4	-9441.9	33715.5	85.5	200	500	0.97	2.5	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 32	-9441.9	33715.5	-9363.7	33743.9	83.2	200	500	3.11	2.73	3.88	3.88	5.7	18.5			2.9	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 33	-9363.7	33743.9	-9100	33750	263.1	200.7	501.72	0.37	2.22	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 34	-9363.7	28743.9	-9100	28750	263.7	200.2	500.55	0.48	2.07	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 35	-9441.9	28715.5	-9363.7	28743.9	83.2	200	500	2.99	2.6	3.88	3.88	5.5	18.5			2.8	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 36	-9511.9	28663.7	-9441.9	28715.5	87.1	200	500	0.82	2.34	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 37	-9558.3	28604.2	-9511.9	28663.7	75.5	200	500	1.09	2.53	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 38	-9590.3	28529.3	-9558.3	28604.2	81.4	200	500	0.99	2.44	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 39	-9600	26850	-9590.3	28529.3	1665.7	201.7	504.24	0.35	0.73	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 40	-9600	26850	-9592.5	26780.4	70	200	500	1.33	2.73	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 41	-9592.5	26780.4	-9569	26716.1	68.5	200	500	1.23	2.67	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 42	-9569	26716.1	-9514.3	26638.7	94.8	200	500	0.68	2.12	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 43	-9514.3	26638.7	-9456	26592.7	74.2	200	500	1.01	2.49	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 44	-9456	26592.7	-9377.1	26559.1	85.7	200	500	0.73	2.42	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 45	-9377.1	26559.1	-9100	26550	276.3	201	502.49	0.33	2.12	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 46	-9377.1	21559.1	-9100	21550	277.1	200.4	500.97	0.44	2.02	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 47	-9456	21592.7	-9377.1	21559.1	85.7	200	500	0.72	2.41	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 48	-9514.3	21638.7	-9456	21592.7	74.2	200	500	1	2.48	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 49	-9567.8	21712.6	-9514.3	21638.7	91.2	200	500	0.73	2.17	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 50	-9592.8	21781.3	-9567.8	21712.6	73.1	200	500	1.12	2.56	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 51	-9599.1	23463.3	-9592.8	21781.3	1673.6	201	502.59	0.34	0.71	3.88	3.88						No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073 Bottom Leg 52	-9599.1	23463.3	-9590.3	23529.3	66.6	200	500	2.99	2.82	3.88	3.88	4.2	14.8			2.1	No Message	No Message

ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 53	-9590.3	23529.3	-9558.3	23604.2	81.4	200	500	0.92	2.35	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 54	-9558.3	23604.2	-9511.9	23663.7	75.5	200	500	1.01	2.44	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 55	-9511.9	23663.7	-9441.9	23715.5	87.1	200	500	0.73	2.24	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 56	-9441.9	23715.5	-9363.7	23743.9	83.2	200	500	2.93	2.52	3.88	3.88	5.4	18.5			2.7		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 57	-9363.7	23743.9	-9100	23750	262.9	200.8	502.04	0.37	2.16	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 58	-9379.8	1560.2	-9100	1550	279.8	200.5	501.17	0.47	2.44	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 59	-9456	1592.7	-9379.8	1560.2	82.9	200	500	3.66	2.92	3.88	3.88	6.4	16.8	5.5	16.8	3.2	2.7	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 60	-9514.3	1638.7	-9456	1592.7	74.2	200	500	3.54	2.92	3.88	3.88	5.4	16.5	4.5	16.5	2.7	2.3	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 61	-9567.8	1712.6	-9514.3	1638.7	91.2	200	500	0.94	2.42	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 62	-9592.5	1780.4	-9567.8	1712.6	72.2	200	500	3.34	2.88	3.88	3.88	5.1	16			2.5		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 63	-9599.1	3463.3	-9592.5	1780.4	1674	201.1	502.76	0.41	0.83	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 64	-9599.1	3463.3	-9590.3	3529.3	66.6	200	500	3.43	2.95	3.88	3.88	4.7	14.8	4.2	14.8	2.3	2.1	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 65	-9590.3	3529.3	-9558.3	3604.2	81.4	200	500	2.92	2.51	3.88	3.88	5	18.1			2.5		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 66	-9558.3	3604.2	-9511.9	3663.7	75.5	200	500	3.23	2.66	3.88	3.88	4.9	15.5			2.5		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 67	-9511.9	3663.7	-9441.9	3715.5	87.1	200	500	3.08	2.52	3.88	3.88	5.6	13.9			2.8		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 68	-9441.9	3715.5	-9363.7	3743.9	83.2	200	500	3.59	2.97	3.88	3.88	6.4	11.4	5.5	11.4	3.2	2.8	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 69	-9363.7	3743.9	-9100	3750	262.9	200.8	502.04	0.44	2.44	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 70	-9377.1	6559.1	-9100	6550	277.1	200.4	500.97	0.42	2.3	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 71	-9456	6592.7	-9377.1	6559.1	85.7	200	500	3.16	2.84	3.88	3.88	5.9	19.1			3		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 72	-9514.3	6638.7	-9456	6592.7	74.2	200	500	3.17	2.92	3.88	3.88	4.9	16.5	4.6	16.5	2.5	2.3	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 73	-9567.8	6712.6	-9514.3	6638.7	91.2	200	500	1.04	2.49	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 74	-9592.5	6780.4	-9567.8	6712.6	72.2	200	500	3.09	2.94	3.88	3.88	4.7	16	4.6	16	2.4	2.3	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 75	-9599.1	8463.3	-9592.5	6780.4	1674	201.1	502.76	0.41	0.78	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 76	-9599.1	8463.3	-9590.3	8529.3	66.6	200	500	3.11	2.93	3.88	3.88	4.3	14.8	4.2	14.8	2.2	2.1	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 77	-9590.3	8529.3	-9558.3	8604.2	81.4	200	500	1.03	2.47	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 78	-9558.3	8604.2	-9511.9	8663.7	75.5	200	500	1.19	2.6	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 79	-9511.9	8663.7	-9441.9	8715.5	87.1	200	500	0.92	2.42	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 80	-9441.9	8715.5	-9363.7	8743.9	83.2	200	500	3.23	2.75	3.88	3.88	5.8	12.5			2.9		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 81	-9363.7	8743.9	-9100	8750	262.9	200.8	502.04	0.41	2.25	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 82	-9377.1	11559.1	-9100	11550	277.1	200.4	500.97	0.43	2.19	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 83	-9456	11592.7	-9377.1	11559.1	85.7	200	500	2.98	2.66	3.88	3.88	5.7	19.1			2.8		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 84	-9514.3	11638.7	-9456	11592.7	74.2	200	500	2.99	2.75	3.88	3.88	4.7	16.5			2.4		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 85	-9567.8	11712.6	-9514.3	11638.7	91.2	200	500	0.91	2.37	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 86	-9592.5	11780.4	-9567.8	11712.6	72.2	200	500	2.93	2.81	3.88	3.88	4.5	16			2.3		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 87	-9599.1	13463.3	-9592.5	11780.4	1674	201.1	502.76	0.39	0.76	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 88	-9599.1	13463.3	-9590.3	13529.3	66.6	200	500	3.02	2.86	3.88	3.88	4.2	14.8			2.1		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 89	-9590.3	13529.3	-9558.3	13604.2	81.4	200	500	0.95	2.39	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 90	-9558.3	13604.2	-9511.9	13663.7	75.5	200	500	1.07	2.5	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 91	-9511.9	13663.7	-9441.9	13715.5	87.1	200	500	0.8	2.31	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 92	-9441.9	13715.5	-9363.7	13743.9	83.2	200	500	3.11	2.61	3.88	3.88	5.6	13.5			2.8		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 93	-9363.7	13743.9	-9100	13750	262.9	200.8	502.04	0.36	2.18	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 94	-9363.7	18743.9	-9100	18750	263.7	200.2	500.55	0.48	2.05	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 95	-9441.9	18715.5	-9363.7	18743.9	83.2	200	500	3.01	2.52	3.88	3.88	5.5	14.2			2.7		No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 96	-9511.9	18663.7	-9441.9	18715.5	87.1	200	500	0.74	2.25	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 97	-9558.3	18604.2	-9511.9	18663.7	75.5	200	500	1	2.43	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 98	-9590.3	18529.3	-9558.3	18604.2	81.4	200	500	0.92	2.35	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 99	-9600	16850	-9590.3	18529.3	1665.7	201.7	504.24	0.35	0.74	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 100	-9600	16850	-9589.9	16785.2	65.6	200	500	3.08	2.95	3.88	3.88	4.2	14.6	4.1	14.6	2.1	2	No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 101	-9589.9	16785.2	-9567.8	16712.6	75.8	200	500	1.11	2.56	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 102	-9567.8	16712.6	-9514.3	16638.7	91.2	200	500	0.79	2.24	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 103	-9514.3	16638.7	-9456	16592.7	74.2	200	500	1.08	2.57	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 104	-9456	16592.7	-9377.1	16559.1	85.7	200	500	0.78	2.49	3.88	3.88							No Message	No Message
ROOF	P8	Bottom	Uniform	16	16	150	0.073	Bottom Leg 105	-9377.1	16559.1	-9102.2	16550.7	274.1	201	502.49	0.33	2.19	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 1	-9307.4	43749.3	-9100	43750	207.4	200	500	1.26	2.05	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 2	-9441.9	43715.5	-9307.4	43749.3	138.7	200	500	0.7	2.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 3	-9558.3	43604.2	-9441.9	43715.5	161.1	200	500	0.35	1.86	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 4	-9599.1	43463.3	-9558.3	43604.2	146.7	200	500	0.53	2.21	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 5	-9600	41850	-9599.1	43463.3	1613.3	200	500	0.51	0.78	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 6	-9600	41850	-9567.8	41712.6	141.1	200	500	0.43	1.99	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 7	-9567.8	41712.6	-9456	41592.7	163.9	200	500	0.13	1.59	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 8	-9456	41592.7	-9300	41550	161.8	200	500	0.41	2.29	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 9	-9300	41550	-9100	41550	200	200	500	1.32	1.76	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 10	-9377.1	36559.1	-9100	36550	277.1	200.3	500.77	1	1.62	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 11	-9456	36592.7	-9377.1	36559.1	85.7	200	500	1.09	2.82	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 12	-9514.3	36638.7	-9456	36592.7	74.2	200	500	1.45	2.96	3.88	3.88			4.7	16.5		2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 13	-9567.8	36712.6	-9514.3	36638.7	91.2	200	500	0.92	2.46	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 14	-9592.5	36780.4	-9567.8	36712.6	72.2	200	500	1.43	3.03	3.88	3.88			4.7	16		2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 15	-9599.1	38463.3	-9592.5	36780.4	1674	201.1	502.76	0.49	0.75	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 16	-9599.1	38463.3	-9589	38532.3	69.7	200	500	3.34	3.43	3.88	3.88	5	15.5	5.1	15.5	2.5	2.5	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 17	-9589	38532.3	-9558.3	38604.2	78.2	200	500	2.95	3.04	3.88	3.88	5.1	17.4	5.2	17.4	2.5	2.6	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 18	-9558.3	38604.2	-9511.9	38663.7	75.5	200	500	1.47	3.02	3.88	3.88			4.9	16.8		2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 19	-9511.9	38663.7	-9441.9	38715.5	87.1	200	500	1.19	2.74	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 20	-9441.9	38715.5	-9369.5	38741.8	77	200	500	2.96	3.29	3.88	3.88	5.1	17.1	5.5	17.1	2.6	2.8	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 21	-9369.5	38741.8	-9100	38750	268.6	201	502.56	1.02	1.78	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 22	-9377.1	31559.1	-9100	31550	277.1	200.4	500.97	0.91	1.62	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 23	-9456	31592.7	-9377.1	31559.1	85.7	200	500	1.03	2.75	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 24	-9511.7	31636.6	-9456	31592.7	70.9	200	500	1.42	2.94	3.88	3.88			4.5	15.7		2.2	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 25	-9567.8	31712.6	-9511.7	31636.6	94.5	200	500	0.81	2.35	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 26	-9592.5	31780.4	-9567.8	31712.6	72.2	200	500	1.36	2.94	3.88	3.88			4.6	16		2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 27	-9599.1	33463.3	-9592.5	31780.4	1674	201.1	502.76	0.46	0.73	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 28	-9599.1	33463.3	-9590.3	33529.3	66.6	200	500	3.29	3.4	3.88	3.88	4.6	14.8	4.8	14.8	2.3	2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 29	-9590.3	33529.3	-9558.3	33604.2	81.4	200	500	1.2	2.79	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 30	-9558.3	33604.2	-9511.2	33665.4	77.3	200	500	1.27	2.81	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 31	-9511.2	33665.4	-9441.9	33715.5	85.5	200	500	1.07	2.63	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 32	-9441.9	33715.5	-9363.7	33743.9	83.2	200	500	1.15	2.94	3.88	3.88			5.5	18.5		2.7	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 33	-9363.7	33743.9	-9100	33750	263.1	200.7	501.72	1.01	1.72	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069	Top Leg 34	-9363.7	28743.9	-9100	28750	263.7	200.2	500.55	0.99	1.69	3.88	3.88							No Message	No Message

MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 35	-9441.9	28715.5	-9363.7	28743.9	83.2	200	500	1.09	2.86	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 36	-9511.9	28663.7	-9441.9	28715.5	87.1	200	500	0.97	2.52	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 37	-9558.3	28604.2	-9511.9	28663.7	75.5	200	500	1.23	2.77	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 38	-9590.3	28529.3	-9558.3	28604.2	81.4	200	500	1.13	2.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 39	-9600	26850	-9590.3	28529.3	1665.7	201.7	504.24	0.44	0.71	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 40	-9600	26850	-9592.5	26780.4	70	200	500	2.96	3.1	3.88	3.88	4.5	15.5	4.6	15.5	2.2	2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 41	-9592.5	26780.4	-9569	26716.1	68.5	200	500	1.46	3.03	3.88	3.88			4.5	15.2		2.2	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 42	-9569	26716.1	-9514.3	26638.7	94.8	200	500	0.78	2.32	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 43	-9514.3	26638.7	-9456	26592.7	74.2	200	500	1.27	2.79	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 44	-9456	26592.7	-9377.1	26559.1	85.7	200	500	0.98	2.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 45	-9377.1	26559.1	-9100	26550	276.3	201	502.49	0.91	1.65	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 46	-9377.1	21559.1	-9100	21550	277.1	200.4	500.97	0.92	1.66	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 47	-9456	21592.7	-9377.1	21559.1	85.7	200	500	0.96	2.67	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 48	-9514.3	21638.7	-9456	21592.7	74.2	200	500	1.25	2.77	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 49	-9567.8	21712.6	-9514.3	21638.7	91.2	200	500	0.83	2.37	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 50	-9592.8	21781.3	-9567.8	21712.6	73.1	200	500	1.32	2.89	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 51	-9599.1	23463.3	-9592.8	21781.3	1673.6	201	502.59	0.43	0.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 52	-9599.1	23463.3	-9590.3	23529.3	66.6	200	500	3.08	3.22	3.88	3.88	4.4	14.8	4.5	14.8	2.2	2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 53	-9590.3	23529.3	-9558.3	23604.2	81.4	200	500	1.09	2.64	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 54	-9558.3	23604.2	-9511.9	23663.7	75.5	200	500	1.22	2.74	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 55	-9511.9	23663.7	-9441.9	23715.5	87.1	200	500	0.93	2.48	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 56	-9441.9	23715.5	-9363.7	23743.9	83.2	200	500	1.08	2.83	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 57	-9363.7	23743.9	-9100	23750	262.9	200.8	502.04	0.96	1.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 58	-9379.8	1560.2	-9100	1550	279.8	200.5	501.17	1.02	2.08	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 59	-9456	1592.7	-9379.8	1560.2	82.9	200	500	2.97	3.56	3.88	3.88	5.5	18.4	6.3	18.4	2.8	3.2	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 60	-9514.3	1638.7	-9456	1592.7	74.2	200	500	3.23	3.74	3.88	3.88	5	16.5	5.6	16.5	2.5	2.8	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 61	-9567.8	1712.6	-9514.3	1638.7	91.2	200	500	1.58	3.18	3.88	3.88			6.2	20.3		3.1	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 62	-9592.5	1780.4	-9567.8	1712.6	72.2	200	500	3.57	3.99	3.88	3.88	5.5	16	5.9	16	2.7	3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 63	-9599.1	3463.3	-9592.5	1780.4	1674	201.1	502.76	0.51	0.83	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 64	-9599.1	3463.3	-9590.3	3529.3	66.6	200	500	3.22	3.54	3.88	3.88	4.6	14.8	4.9	14.8	2.3	2.5	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 65	-9590.3	3529.3	-9558.3	3604.2	81.4	200	500	1.36	2.94	3.88	3.88			5.2	18.1		2.6	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 66	-9558.3	3604.2	-9511.9	3663.7	75.5	200	500	1.59	3.08	3.88	3.88			4.9	16.8		2.5	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 67	-9511.9	3663.7	-9441.9	3715.5	87.1	200	500	1.3	2.84	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 68	-9441.9	3715.5	-9363.7	3743.9	83.2	200	500	1.5	3.34	3.88	3.88			6.1	18.5		3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 69	-9363.7	3743.9	-9100	3750	262.9	200.8	502.04	1.09	1.88	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 70	-9377.1	6559.1	-9100	6550	277.1	200.4	500.97	1.03	1.83	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 71	-9456	6592.7	-9377.1	6559.1	85.7	200	500	1.22	2.98	3.88	3.88			5.7	19.1		2.8	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 72	-9514.3	6638.7	-9456	6592.7	74.2	200	500	2.96	3.1	3.88	3.88	4.7	16.5	4.9	16.5	2.4	2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 73	-9567.8	6712.6	-9514.3	6638.7	91.2	200	500	1.07	2.63	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 74	-9592.5	6780.4	-9567.8	6712.6	72.2	200	500	3.23	3.27	3.88	3.88	5	16	5	16	2.5	2.5	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 75	-9599.1	8463.3	-9592.5	6780.4	1674	201.1	502.76	0.51	0.78	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 76	-9599.1	8463.3	-9590.3	8529.3	66.6	200	500	3.18	3.34	3.88	3.88	4.5	14.8	4.7	14.8	2.3	2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 77	-9590.3	8529.3	-9558.3	8604.2	81.4	200	500	1.18	2.76	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 78	-9558.3	8604.2	-9511.9	8663.7	75.5	200	500	1.36	2.88	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 79	-9511.9	8663.7	-9441.9	8715.5	87.1	200	500	1.08	2.62	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 80	-9441.9	8715.5	-9363.7	8743.9	83.2	200	500	1.27	3.05	3.88	3.88			5.6	18.5		2.8	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 81	-9363.7	8743.9	-9100	8750	262.9	200.8	502.04	0.99	1.77	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 82	-9377.1	11559.1	-9100	11550	277.1	200.4	500.97	0.98	1.78	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 83	-9456	11592.7	-9377.1	11559.1	85.7	200	500	1.07	2.82	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 84	-9514.3	11638.7	-9456	11592.7	74.2	200	500	1.38	2.96	3.88	3.88			4.7	16.5		2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 85	-9567.8	11712.6	-9514.3	11638.7	91.2	200	500	0.93	2.49	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 86	-9592.5	11780.4	-9567.8	11712.6	72.2	200	500	2.99	3.08	3.88	3.88	4.7	16	4.8	16	2.3	2.4	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 87	-9599.1	13463.3	-9592.5	11780.4	1674	201.1	502.76	0.48	0.75	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 88	-9599.1	13463.3	-9590.3	13529.3	66.6	200	500	3.1	3.24	3.88	3.88	4.4	14.8	4.6	14.8	2.2	2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 89	-9590.3	13529.3	-9558.3	13604.2	81.4	200	500	1.1	2.68	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 90	-9558.3	13604.2	-9511.9	13663.7	75.5	200	500	1.25	2.78	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 91	-9511.9	13663.7	-9441.9	13715.5	87.1	200	500	0.97	2.52	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 92	-9441.9	13715.5	-9363.7	13743.9	83.2	200	500	1.14	2.97	3.88	3.88			5.4	18.5		2.7	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 93	-9363.7	13743.9	-9100	13750	262.9	200.8	502.04	1	1.67	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 94	-9363.7	18743.9	-9100	18750	263.7	200.2	500.55	0.99	1.66	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 95	-9441.9	18715.5	-9363.7	18743.9	83.2	200	500	1.07	2.82	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 96	-9511.9	18663.7	-9441.9	18715.5	87.1	200	500	0.94	2.49	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 97	-9558.3	18604.2	-9511.9	18663.7	75.5	200	500	1.2	2.73	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 98	-9590.3	18529.3	-9558.3	18604.2	81.4	200	500	1.08	2.65	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 99	-9600	16850	-9590.3	18529.3	1665.7	201.7	504.24	0.45	0.72	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 100	-9600	16850	-9589.9	16785.2	65.6	200	500	3.22	3.34	3.88	3.88	4.5	14.6	4.6	14.6	2.2	2.3	No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 101	-9589.9	16785.2	-9567.8	16712.6	75.8	200	500	1.29	2.87	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 102	-9567.8	16712.6	-9514.3	16638.7	91.2	200	500	0.85	2.41	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 103	-9514.3	16638.7	-9456	16592.7	74.2	200	500	1.26	2.79	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 104	-9456	16592.7	-9377.1	16559.1	85.7	200	500	0.97	2.7	3.88	3.88							No Message	No Message
MID	P8	Top	Uniform	16	16	150	0.069 Top Leg 105	-9377.1	16559.1	-9102.2	16550.7	274.1	201	502.49	0.95	1.7	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 1	-9307.4	43749.3	-9100	43750	207.4	200	500	4.49	4.32	3.88	3.88	27.9	46.1	27.4	46.1	14	13.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 2	-9441.9	43715.5	-9307.4	43749.3	138.7	200	500	3.45	3.28	3.88	3.88	13.5	30.8	13.1	30.8	6.7	6.5	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 3	-9558.3	43604.2	-9441.9	43715.5	161.1	200	500	2.92	2.91	3.88	3.88	12.9	35.8	12.8	35.8	6.4	6.4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 4	-9599.1	43463.3	-9558.3	43604.2	146.7	200	500	3.08	3.31	3.88	3.88	12.4	32.6	12.9	32.6	6.2	6.5	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 5	-9600	41850	-9599.1	43463.3	1613.3	200	500	0.66	1.55	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 6	-9600	41850	-9567.8	41712.6	141.1	200	500	3.05	3.33	3.88	3.88	12	31.4	12.6	31.4	6	6.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 7	-9567.8	41712.6	-9456	41592.7	163.9	200	500	0.32	2.75	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 8	-9456	41592.7	-9300	41550	161.8	200	500	3.02	2.88	3.88	3.88	13.9	35.9			7		No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 9	-9300	41550	-9100	41550	200	200	500	4.38	4.24	3.88	3.88	26	44.4	25.6	44.4	13	12.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 10	-9377.1	36559.1	-9100	36550	277.1	200.3	500.77	4.01	3.89	3.88	3.88	32	61.6	31.5	61.6	16	15.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 11	-9456	36592.7	-9377.1	36559.1	85.7	200	500	3.25	3.25	3.88	3.88	7.5	19.1	7.5	19.1	3.7	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 12	-9514.3	36638.7	-9456	36592.7	74.2	200	500	3.41	3.57	3.88	3.88	6.5	16.5	6.6	16.5	3.2	3.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 13	-9567.8	36712.6	-9514.3	36638.7	91.2	200	500	3.37	3.63	3.88	3.88	8	20.3	8.4	20.3	4	4.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 14	-9592.5	36780.4	-9567.8	36712.6	72.2	200	500	4.04	4.55	3.88	3.88	7.2	16	7.8	16	3.6	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 15	-9599.1	38463.3	-9592.5	36780.4	1674	201.1	502.76	0.63	1.47	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143 Bottom Leg 16	-9599.1	38463.3	-9589	38532.3	69.7	200	500	4.33	5.05	3.88	3.88	7.2	15.5	8	15.5	3.6	4	No Message	No Message

MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 17	-9589	38532.3	-9558.3	38604.2	78.2	200	500	3.94	4.45	3.88	3.88	7.6	17.4	8.2	17.4	3.8	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 18	-9558.3	38604.2	-9511.9	38663.7	75.5	200	500	3.87	4.24	3.88	3.88	7.2	16.8	7.6	16.8	3.6	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 19	-9511.9	38663.7	-9441.9	38715.5	87.1	200	500	3.38	3.53	3.88	3.88	7.6	19.3	7.8	19.3	3.8	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 20	-9441.9	38715.5	-9369.5	38741.8	77	200	500	3.78	3.8	3.88	3.88	7.6	17.1	7.6	17.1	3.8	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 21	-9369.5	38741.8	-9100	38750	268.6	201	502.56	4.09	3.98	3.88	3.88	32.3	59.7	31.9	59.7	16.2	15.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 22	-9377.1	31559.1	-9100	31550	277.1	200.4	500.97	3.86	3.74	3.88	3.88	30.9	61.6	30.4	61.6	15.5	15.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 23	-9456	31592.7	-9377.1	31559.1	85.7	200	500	3.22	3.23	3.88	3.88	7.4	19.1	7.5	19.1	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 24	-9511.7	31636.6	-9456	31592.7	70.9	200	500	3.5	3.68	3.88	3.88	6.3	15.7	6.5	15.7	3.1	3.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 25	-9567.8	31712.6	-9511.7	31636.6	94.5	200	500	3.3	3.57	3.88	3.88	8.2	21	8.6	21	4.1	4.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 26	-9592.5	31780.4	-9567.8	31712.6	72.2	200	500	4.01	4.53	3.88	3.88	7.1	16	7.7	16	3.6	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 27	-9599.1	33463.3	-9592.5	31780.4	1674	201.1	502.76	0.59	1.43	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 28	-9599.1	33463.3	-9590.3	33529.3	66.6	200	500	4.4	5.14	3.88	3.88	6.9	14.8	7.6	14.8	3.4	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 29	-9590.3	33529.3	-9558.3	33604.2	81.4	200	500	3.8	4.28	3.88	3.88	7.7	18.1	8.3	18.1	3.8	4.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 30	-9558.3	33604.2	-9511.2	33665.4	77.3	200	500	3.77	4.12	3.88	3.88	7.2	17.2	7.7	17.2	3.6	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 31	-9511.2	33665.4	-9441.9	33715.5	85.5	200	500	3.32	3.45	3.88	3.88	7.4	19	7.6	19	3.7	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 32	-9441.9	33715.5	-9363.7	33743.9	83.2	200	500	3.49	3.51	3.88	3.88	7.8	18.5	7.8	18.5	3.9	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 33	-9363.7	33743.9	-9100	33750	263.1	200.7	501.72	3.93	3.83	3.88	3.88	30.5	58.5	30.1	58.5	15.3	15	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 34	-9363.7	28743.9	-9100	28750	263.7	200.2	500.55	3.84	3.72	3.88	3.88	29.8	58.6	29.3	58.6	14.9	14.6	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 35	-9441.9	28715.5	-9363.7	28743.9	83.2	200	500	3.39	3.39	3.88	3.88	7.6	18.5	7.6	18.5	3.8	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 36	-9511.9	28663.7	-9441.9	28715.5	87.1	200	500	3.26	3.38	3.88	3.88	7.4	19.3	7.6	19.3	3.7	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 37	-9558.3	28604.2	-9511.9	28663.7	75.5	200	500	3.77	4.11	3.88	3.88	7.1	16.8	7.5	16.8	3.5	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 38	-9590.3	28529.3	-9558.3	28604.2	81.4	200	500	3.77	4.23	3.88	3.88	7.6	18.1	8.2	18.1	3.8	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 39	-9600	26850	-9590.3	28529.3	1665.7	201.7	504.24	0.53	1.4	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 40	-9600	26850	-9592.5	26780.4	70	200	500	4.23	4.91	3.88	3.88	7	15.5	7.8	15.5	3.5	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 41	-9592.5	26780.4	-9569	26716.1	68.5	200	500	4.13	4.69	3.88	3.88	6.8	15.2	7.4	15.2	3.4	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 42	-9569	26716.1	-9514.3	26638.7	94.8	200	500	3.32	3.59	3.88	3.88	8.2	21.1	8.6	21.1	4.1	4.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 43	-9514.3	26638.7	-9456	26592.7	74.2	200	500	3.46	3.62	3.88	3.88	6.5	16.5	6.7	16.5	3.3	3.4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 44	-9456	26592.7	-9377.1	26559.1	85.7	200	500	3.23	3.24	3.88	3.88	7.5	19.1	7.5	19.1	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 45	-9377.1	26559.1	-9100	26550	276.3	201	502.49	3.77	3.65	3.88	3.88	30.1	61.4	29.6	61.4	15	14.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 46	-9377.1	21559.1	-9100	21550	277.1	200.4	500.97	3.77	3.64	3.88	3.88	30.4	61.6	29.8	61.6	15.2	14.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 47	-9456	21592.7	-9377.1	21559.1	85.7	200	500	3.25	3.26	3.88	3.88	7.5	19.1	7.5	19.1	3.8	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 48	-9514.3	21638.7	-9456	21592.7	74.2	200	500	3.47	3.64	3.88	3.88	6.5	16.5	6.7	16.5	3.3	3.4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 49	-9567.8	21712.6	-9514.3	21638.7	91.2	200	500	3.4	3.69	3.88	3.88	8	20.3	8.4	20.3	4	4.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 50	-9592.8	21781.3	-9567.8	21712.6	73.1	200	500	3.98	4.52	3.88	3.88	7.1	16.3	7.7	16.3	3.6	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 51	-9599.1	23463.3	-9592.8	21781.3	1673.6	201	502.59	0.53	1.38	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 52	-9599.1	23463.3	-9590.3	23529.3	66.6	200	500	4.33	5.03	3.88	3.88	6.8	14.8	7.5	14.8	3.4	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 53	-9590.3	23529.3	-9558.3	23604.2	81.4	200	500	3.72	4.17	3.88	3.88	7.6	18.1	8.2	18.1	3.8	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 54	-9558.3	23604.2	-9511.9	23663.7	75.5	200	500	3.72	4.04	3.88	3.88	7	16.8	7.4	16.8	3.5	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 55	-9511.9	23663.7	-9441.9	23715.5	87.1	200	500	3.23	3.34	3.88	3.88	7.4	19.3	7.5	19.3	3.7	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 56	-9441.9	23715.5	-9363.7	23743.9	83.2	200	500	3.32	3.32	3.88	3.88	7.4	18.5	7.4	18.5	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 57	-9363.7	23743.9	-9100	23750	262.9	200.8	502.04	3.79	3.68	3.88	3.88	29.2	58.4	28.7	58.4	14.6	14.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 58	-9379.8	1560.2	-9100	1550	279.8	200.5	501.17	4.59	4.32	3.88	3.88	37	62.2	35.8	62.2	18.5	17.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 59	-9456	1592.7	-9379.8	1560.2	82.9	200	500	4.07	3.81	3.88	3.88	8.6	18.4	8.3	18.4	4.3	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 60	-9514.3	1638.7	-9456	1592.7	74.2	200	500	4.06	3.95	3.88	3.88	7.3	16.5	7.2	16.5	3.7	3.6	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 61	-9567.8	1712.6	-9514.3	1638.7	91.2	200	500	3.87	3.95	3.88	3.88	8.9	20.3	9	20.3	4.4	4.5	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 62	-9592.5	1780.4	-9567.8	1712.6	72.2	200	500	4.54	4.87	3.88	3.88	7.9	16	8.2	16	3.9	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 63	-9599.1	3463.3	-9592.5	1780.4	1674	201.1	502.76	0.69	1.63	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 64	-9599.1	3463.3	-9590.3	3529.3	66.6	200	500	4.62	5.32	3.88	3.88	7.4	14.8	8.2	14.8	3.7	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 65	-9590.3	3529.3	-9558.3	3604.2	81.4	200	500	3.92	4.33	3.88	3.88	8.2	18.1	8.7	18.1	4.1	4.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 66	-9558.3	3604.2	-9511.9	3663.7	75.5	200	500	3.79	4.05	3.88	3.88	7.3	16.8	7.6	16.8	3.6	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 67	-9511.9	3663.7	-9441.9	3715.5	87.1	200	500	3.28	3.31	3.88	3.88	7.5	19.3	7.6	19.3	3.8	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 68	-9441.9	3715.5	-9363.7	3743.9	83.2	200	500	3.53	3.41	3.88	3.88	7.8	18.5	7.6	18.5	3.9	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 69	-9363.7	3743.9	-9100	3750	262.9	200.8	502.04	4.53	4.35	3.88	3.88	34.3	58.4	33.5	58.4	17.1	16.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 70	-9377.1	6559.1	-9100	6550	277.1	200.4	500.97	4.26	4.14	3.88	3.88	34.5	61.6	33.9	61.6	17.2	17	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 71	-9456	6592.7	-9377.1	6559.1	85.7	200	500	3.56	3.61	3.88	3.88	8.1	19.1	8.2	19.1	4	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 72	-9514.3	6638.7	-9456	6592.7	74.2	200	500	3.65	3.87	3.88	3.88	6.8	16.5	7	16.5	3.4	3.5	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 73	-9567.8	6712.6	-9514.3	6638.7	91.2	200	500	3.54	3.88	3.88	3.88	8.3	20.3	8.7	20.3	4.1	4.4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 74	-9592.5	6780.4	-9567.8	6712.6	72.2	200	500	4.14	4.75	3.88	3.88	7.3	16	8	16	3.6	4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 75	-9599.1	8463.3	-9592.5	6780.4	1674	201.1	502.76	0.64	1.53	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 76	-9599.1	8463.3	-9590.3	8529.3	66.6	200	500	4.41	5.04	3.88	3.88	7	14.8	7.7	14.8	3.5	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 77	-9590.3	8529.3	-9558.3	8604.2	81.4	200	500	3.74	4.15	3.88	3.88	7.7	18.1	8.2	18.1	3.9	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 78	-9558.3	8604.2	-9511.9	8663.7	75.5	200	500	3.68	3.97	3.88	3.88	7	16.8	7.3	16.8	3.5	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 79	-9511.9	8663.7	-9441.9	8715.5	87.1	200	500	3.18	3.28	3.88	3.88	7.3	19.3	7.4	19.3	3.6	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 80	-9441.9	8715.5	-9363.7	8743.9	83.2	200	500	3.34	3.33	3.88	3.88	7.5	18.5	7.4	18.5	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 81	-9363.7	8743.9	-9100	8750	262.9	200.8	502.04	4.26	4.16	3.88	3.88	32.5	58.4	32.1	58.4	16.3	16.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 82	-9377.1	11559.1	-9100	11550	277.1	200.4	500.97	4.03	3.91	3.88	3.88	32.6	61.6	32.1	61.6	16.3	16.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 83	-9456	11592.7	-9377.1	11559.1	85.7	200	500	3.43	3.47	3.88	3.88	7.8	19.1	7.9	19.1	3.9	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 84	-9514.3	11638.7	-9456	11592.7	74.2	200	500	3.56	3.77	3.88	3.88	6.7	16.5	6.9	16.5	3.3	3.4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 85	-9567.8	11712.6	-9514.3	11638.7	91.2	200	500	3.47	3.79	3.88	3.88	8.1	20.3	8.6	20.3	4.1	4.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 86	-9592.5	11780.4	-9567.8	11712.6	72.2	200	500	4.07	4.65	3.88	3.88	7.1	16	7.8	16	3.6	3.9	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 87	-9599.1	13463.3	-9592.5	11780.4	1674	201.1	502.76	0.59	1.47	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 88	-9599.1	13463.3	-9590.3	13529.3	66.6	200	500	4.37	5.04	3.88	3.88	6.9	14.8	7.6	14.8	3.4	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 89	-9590.3	13529.3	-9558.3	13604.2	81.4	200	500	3.73	4.16	3.88	3.88	7.7	18.1	8.2	18.1	3.8	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 90	-9558.3	13604.2	-9511.9	13663.7	75.5	200	500	3.68	3.99	3.88	3.88	7	16.8	7.3	16.8	3.5	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 91	-9511.9	13663.7	-9441.9	13715.5	87.1	200	500	3.17	3.28	3.88	3.88	7.3	19.3	7.4	19.3	3.6	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 92	-9441.9	13715.5	-9363.7	13743.9	83.2	200	500	3.28	3.27	3.88	3.88	7.4	18.5	7.4	18.5	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 93	-9363.7	13743.9	-9100	13750	262.9	200.8	502.04	4.01	3.91	3.88	3.88	30.8	58.4	30.3	58.4	15.4	15.2	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 94	-9363.7	18743.9	-9100	18750	263.7	200.2	500.55	3.85	3.73	3.88	3.88	29.7	58.6	29.2	58.6	14.8	14.6	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 95	-9441.9	18715.5	-9363.7	18743.9	83.2	200	500	3.28	3.27	3.88	3.88	7.4	18.5	7.3	18.5	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 96	-9511.9	18663.7	-9441.9	18715.5	87.1	200	500	3.19	3.3	3.88	3.88	7.3	19.3	7.5	19.3	3.7	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 97	-9558.3	18604.2	-9511.9	18663.7	75.5	200	500	3.7	4.02	3.88	3.88	7	16.8	7.4	16.8	3.5	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 98	-9590.3	18529.3	-9558.3	18604.2	81.4	200	500	3.73	4.17	3.88	3.88	7.6	18.1	8.2	18.1	3.8	4.1	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 99	-9600	16850	-9590.3	18529.3	1665.7	201.7	504.24	0.56	1.42	3.88	3.88							No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 100	-9600	16850	-9589.9	16785.2	65.6	200	500	4.41	5.15	3.88	3.88	6.7	14.6	7.5	14.6	3.4	3.7	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 101	-9589.9	16785.2	-9567.8	16712.6	75.8	200	500	3.95	4.51	3.88	3.88	7.3	16.9	8	16.9	3.7	4	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 102	-9567.8	16712.6	-9514.3	16638.7	91.2	200	500	3.44	3.75	3.88	3.88	8.1	20.3	8.5	20.3	4	4.3	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 103	-9514.3	16638.7	-9456	16592.7	74.2	200	500	3.51	3.7	3.88	3.88	6.6	16.5	6.8	16.5	3.3	3.4	No Message	No Message

MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 104	-9456	16592.7	-9377.1	16559.1	85.7	200	500	3.31	3.34	3.88	3.88	7.6	19.1	7.7	19.1	3.8	3.8	No Message	No Message
MID	P8	Bottom	Uniform	16	16	150	0.143	Bottom Leg 105	-9377.1	16559.1	-9102.2	16550.7	274.1	201	502.49	3.86	3.75	3.88	3.88	30.9	60.9	30.4	60.9	15.5	15.2	No Message	No Message

Appendix D
SHEAR WALL ANALYSIS AUDITORIUM

TABLE: Shear Wall Pier Design Summary - ACI 318-14

Story	Pier Label	Station	Design Type	Edge Rebar	End Rebar	Rebar Spacing	D/C Ratio	Pier Leg	Leg X1	Leg Y1	Leg X2	Leg Y2	Length	Thickness	Shear Rebar	Compressive Stress Left	Compressive Stress Right	Compressive Stress Limit Left	Compressive Stress Limit Right	C Depth Left	C Limit Left	C Depth Right	C Limit Right	Boundary Zone Left	Boundary Zone Right	Warnings	Errors
						mm			mm	mm	mm	mm	mm	mm	mm^2/m	MPa	MPa	MPa	MPa	mm	mm	mm	mm	mm	mm		
ROOF	P1	Top	Uniform	12	12	150	0.229	Top Leg 1	27389.9	12710.2	27389.9	14150	1439.8	200	500	1.89	2.61	4	4							No Message	No Message
ROOF	P1	Top	Uniform	12	12	150	0.229	Top Leg 2	25779.9	10542.2	27389.9	12710.2	2700.4	200	500	0.01	0.28	4	4							No Message	No Message
ROOF	P1	Bottom	Uniform	12	12	150	0.759	Bottom Leg 1	27389.9	12710.2	27389.9	14150	1439.8	200	500	3.32	3.57	4	4	121.8	320	127.3	320	60.9	63.6	No Message	No Message
ROOF	P1	Bottom	Uniform	12	12	150	0.759	Bottom Leg 2	25779.9	10542.2	27389.9	12710.2	2700.4	200	500	3.16	3.49	4	4	177.4	600.1	191	600.1	88.7	95.5	No Message	No Message
MID	P1	Top	Uniform	12	12	150	0.447	Top Leg 1	27389.9	12710.2	27389.9	14150	1439.8	200	500	3.45	3.55	4	4	128.1	320	130.3	320	64.1	65.2	No Message	No Message
MID	P1	Top	Uniform	12	12	150	0.447	Top Leg 2	24393.8	8690.2	27389.9	12710.2	5013.7	200	500	0.08	1.18	4	4							No Message	No Message
MID	P1	Bottom	Uniform	12	12	150	0.775	Bottom Leg 1	27389.9	12710.2	27389.9	14150	1439.8	200	500	4.96	5.19	4	4	178.1	320	183	320	89.1	91.5	No Message	No Message
MID	P1	Bottom	Uniform	12	12	150	0.775	Bottom Leg 2	24393.8	8690.2	27389.9	12710.2	5013.7	200	500	3.15	3.26	4	4	315.5	1114.1	346.3	1114.1	157.8	173.2	No Message	No Message

Appendix E
SHEAR WALL ANALYSIS SWIMMING

TABLE: Shear Wall Pier Design Summary - ACI 318-14

Story	Pier Label	Station	Design Type	Edge Rebar	End Rebar	Rebar Spacing	Required Reinf. Percentage	Current Reinf. Percentage	Pier Leg	Leg X1	Leg Y1	Leg X2	Leg Y2	Length	Thickness	Shear Rebar	Compressive Stress Left	Compressive Stress Right	Compressive Stress Limit Left	Compressive Stress Limit Right	C Depth Left	C Limit Left	C Depth Right	C Limit Right	Boundary Zone Left	Boundary Zone Right	Warnings	Errors
						mm	%	%		mm	mm	mm	mm	mm	mm	mm²/m	MPa	MPa	MPa	MPa	mm	mm	mm	mm	mm	mm		
1ST	P5	Top	Uniform	10	10	250	0.25	0.32	Top Leg 1	27169.9	32300	49669.9	32300	22500	200	500	0.08	0.14	4	4							No Message	No Message
1ST	P5	Top	Uniform	10	10	250	0.25	0.32	Top Leg 2	27169.9	30799.7	27169.9	32300	1500.3	200	500	0.12	0.24	4	4							No Message	No Message
1ST	P5	Top	Uniform	10	10	250	0.25	0.32	Top Leg 3	27169.9	30799.7	28489.7	29029.9	2207.7	200	500	0.84	1.55	4	4							No Message	No Message
1ST	P5	Bottom	Uniform	10	10	250	0.25	0.32	Bottom Leg 1	27169.9	32300	49669.9	32300	22500	200	500	0.12	0.45	4	4							No Message	No Message
1ST	P5	Bottom	Uniform	10	10	250	0.25	0.32	Bottom Leg 2	27169.9	30799.7	27169.9	32300	1500.3	200	500	0.35	1.1	4	4							No Message	No Message
1ST	P5	Bottom	Uniform	10	10	250	0.25	0.32	Bottom Leg 3	27169.9	30799.7	28489.7	29029.9	2207.7	200	500	0.002238	1.9	4	4							No Message	No Message