DELTA BUILDING SYSTEMS
MEMBER OF PLENA

Financial and Structural study of the advantages of using Autoclaved Aerated concrete AAC as

BUILDING WALL SYSTEM

Project

I CITY

BUILDING TYPE: u shape

Owner MOUNTAIN VIEW

Main consultant DMA

STRUCTURAL DESIGN:- DELTA BLOCK

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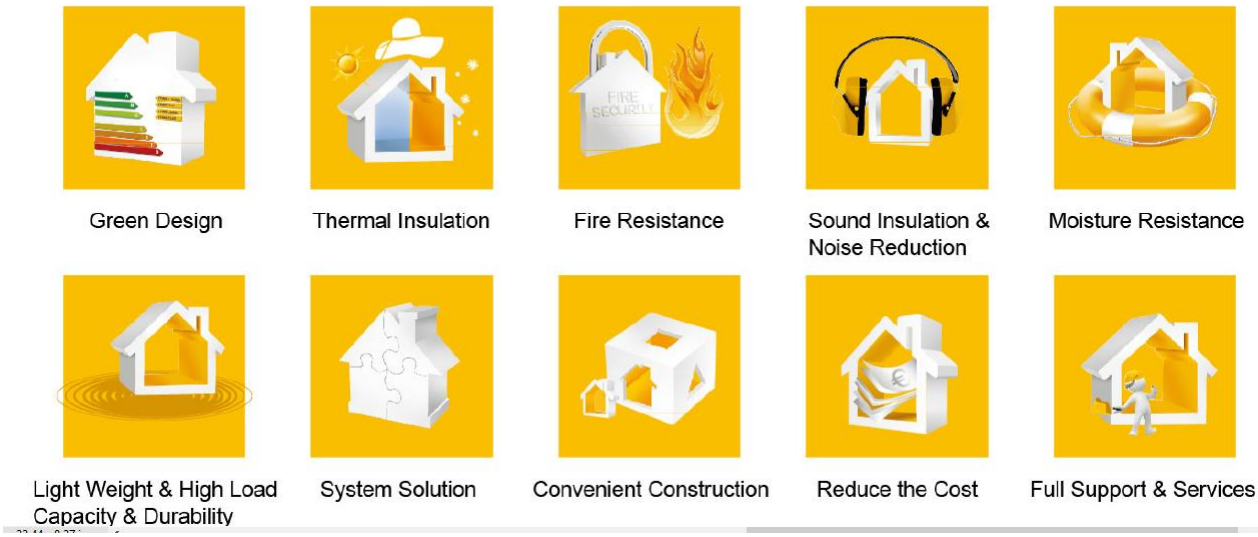
- **Introduction:-**

AUTOCLAVED AERATED CONCRETE TEN ADVANTAGES :-

Ten Advantages



DELTA BLOCK

DELTA Block are solid unreinforced Autoclaved aerated concrete AAC with a dry density of 550 kg/m³ . Blocks are available in a 200mm course height and are all 600mm long. Thicknesses of 100, 120 , 150, 200, 250, 300, 400 mm are available.

The blocks are glued together with DELTA MORTER Adhesive to form solid masonry walls OR can Glued together by ordinary MORTER (350 kg cement/m3 sand).

The normal finish for DELTA block walls is to render them with DELTA STUCCO A AND DELTA STUCCO B Render, which is trowelled on in two 5mm layer AND 2 mm layer, texture rendered and then coated with an acrylic paint. (refer to The DELTA BLOCK Coating Guide).

Project description and statical system

This project is compound consist of different types of building

Type :-U SHAPE

THE STUDY CONTAINS THE COMPARISON BETWEEN ONE FLOOR ONLY

The statical system is beam & column system , the building is totally designed to resist the vertical and horizontal loads acting on it and according to EGYPTIAN STANDARD.

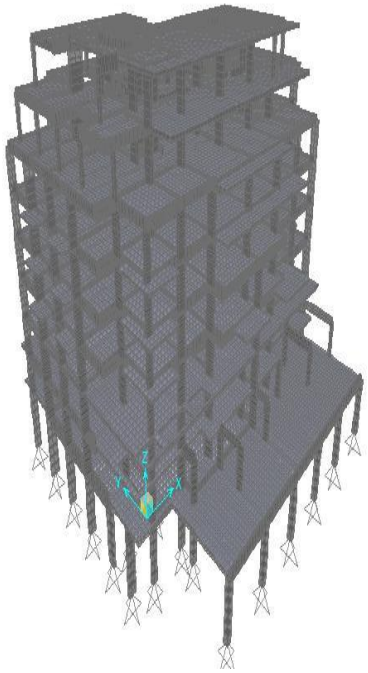
- **Structural loads**
    1. **Common Live load 200 kg/m2**
    2. **Live load in balcony , bathroom and kitchen 300 kg/m2**
    3. **Common flooring cover 200kg/m2**
    4. **Density of walls 2000 kg/m3**
    5. **Density of plain concrete 2200 kg/m3**
    6. **Density of reinforced concrete 2500 kg/m3**

Structural design consist the following

1. **The design of reinforced concrete slabs and beams**

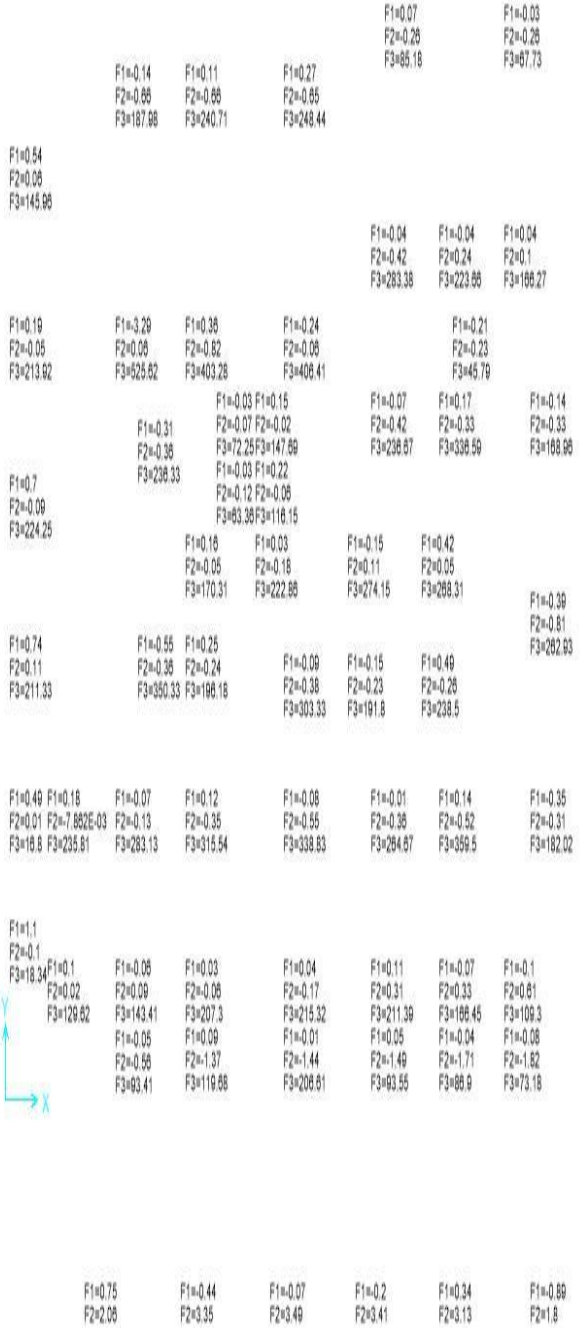
All design is according to Egyptian standards .

U SHAPE



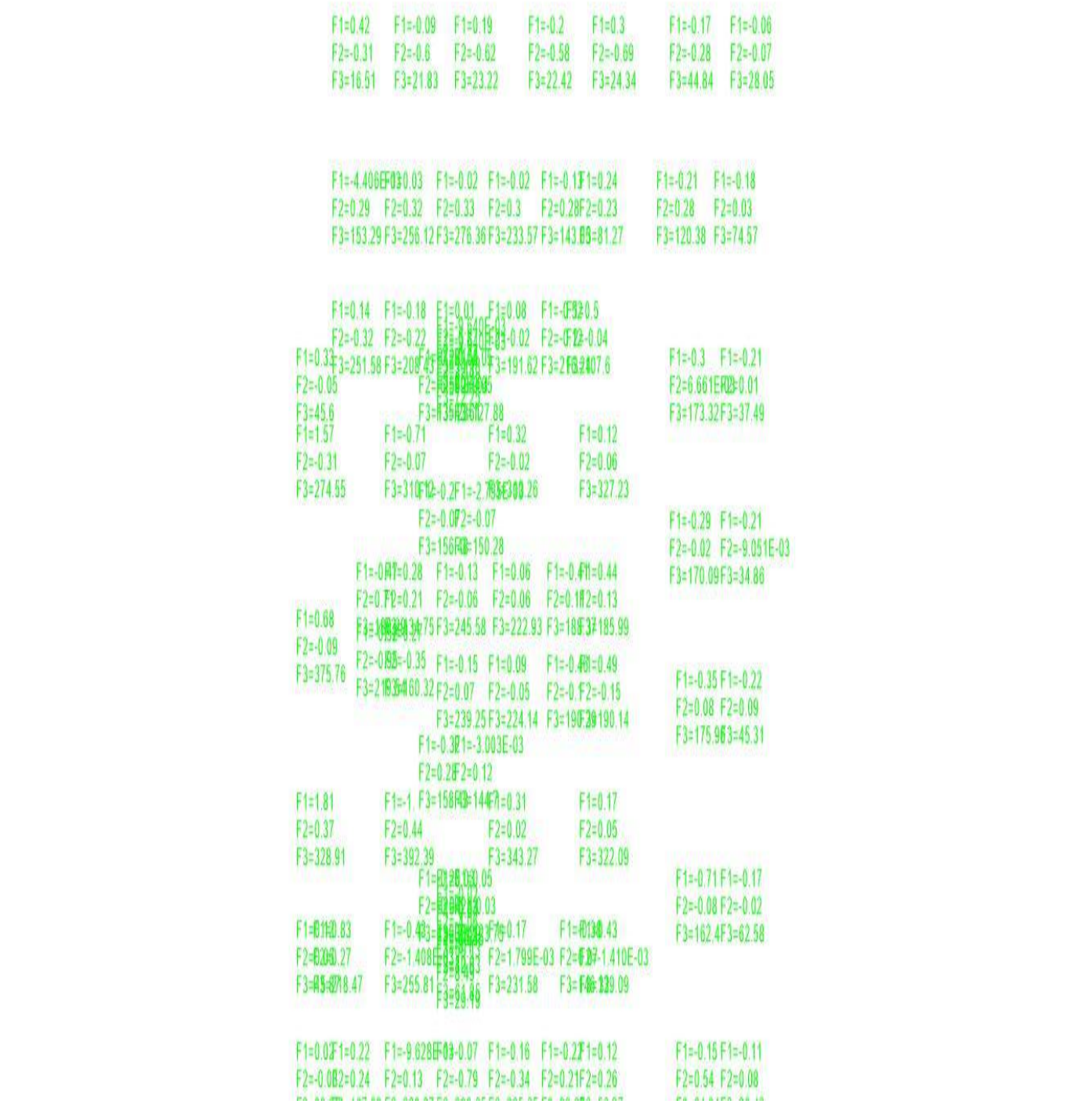
1-1 sap 3D MODEL

- **LOADS ON FOUNDATIONS**



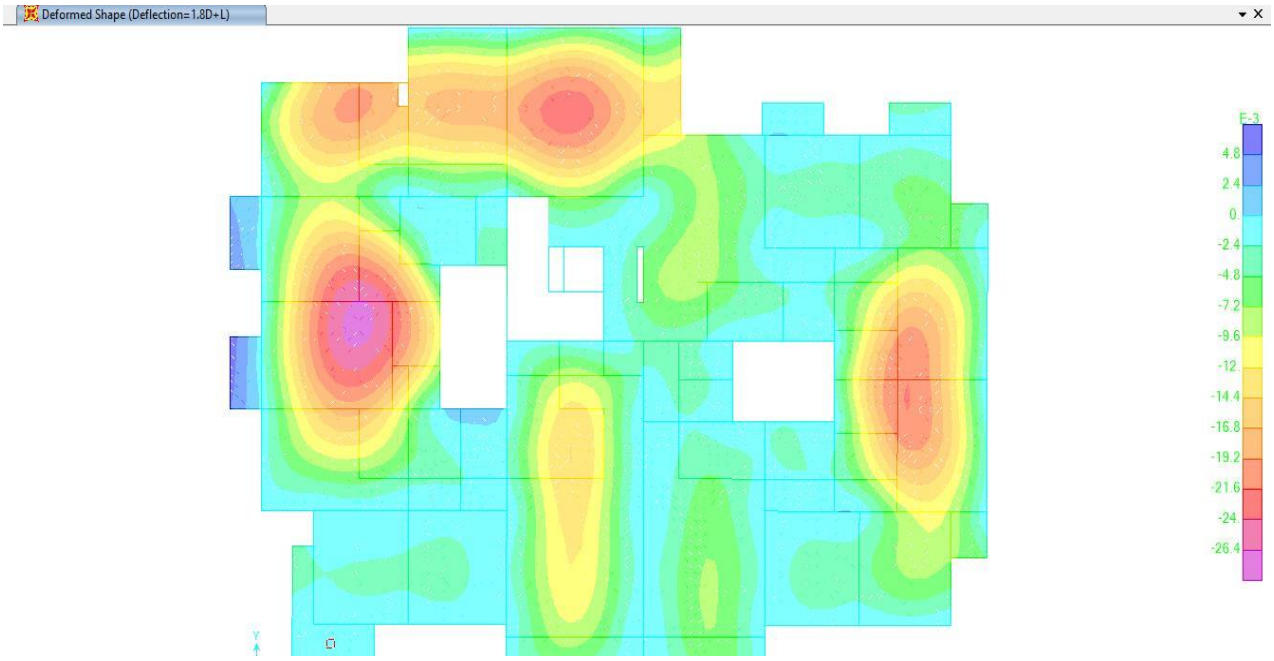
1-2 sap ULTIMATE BASE REACTION

Joint Reactions (ultimate)

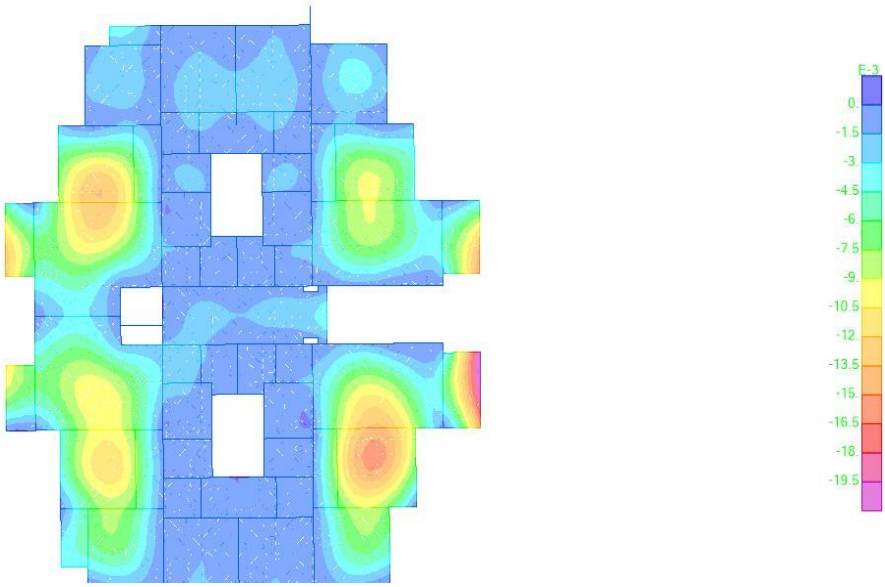


Story at level 9.15 m

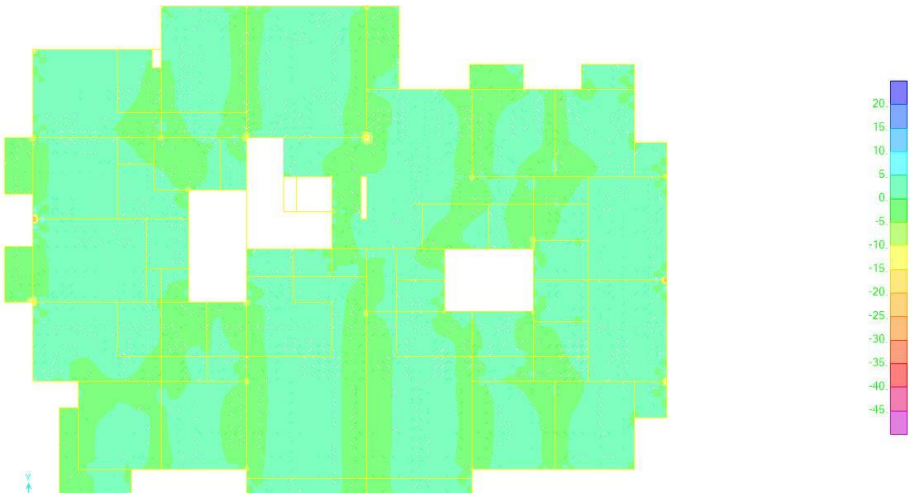
Deflection Part 1



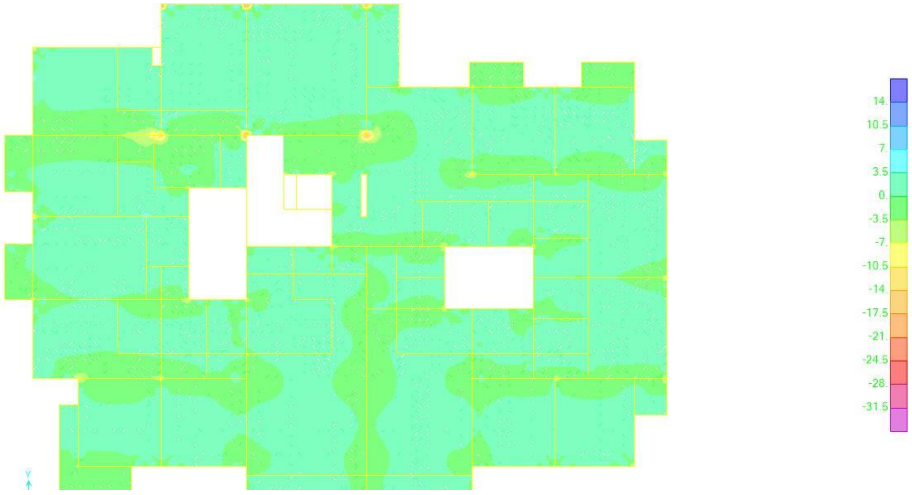
Deflection Part 2



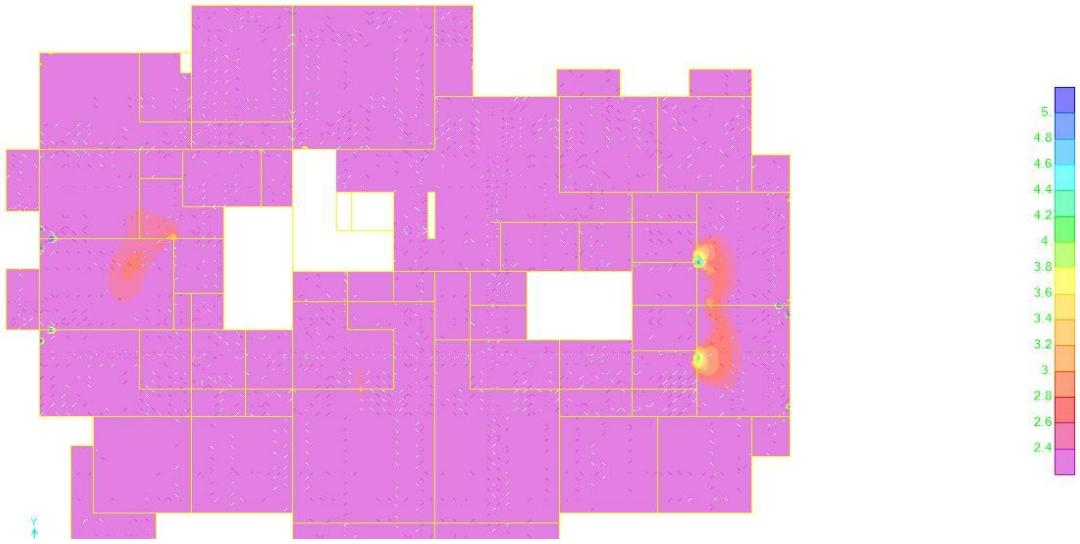
M1-1


20.
15.
10.
5.
0.
-5.
-10.
-15.
-20.
-25.
-30.
-35.
-40.
-45.

M2-2


14.
10.5
7.
3.5
0.
-3.5
-7.
-10.5
-14.
-17.5
-21.
-24.5
-28.
-31.5

- **M1-1 mesh 10T @200 mm**



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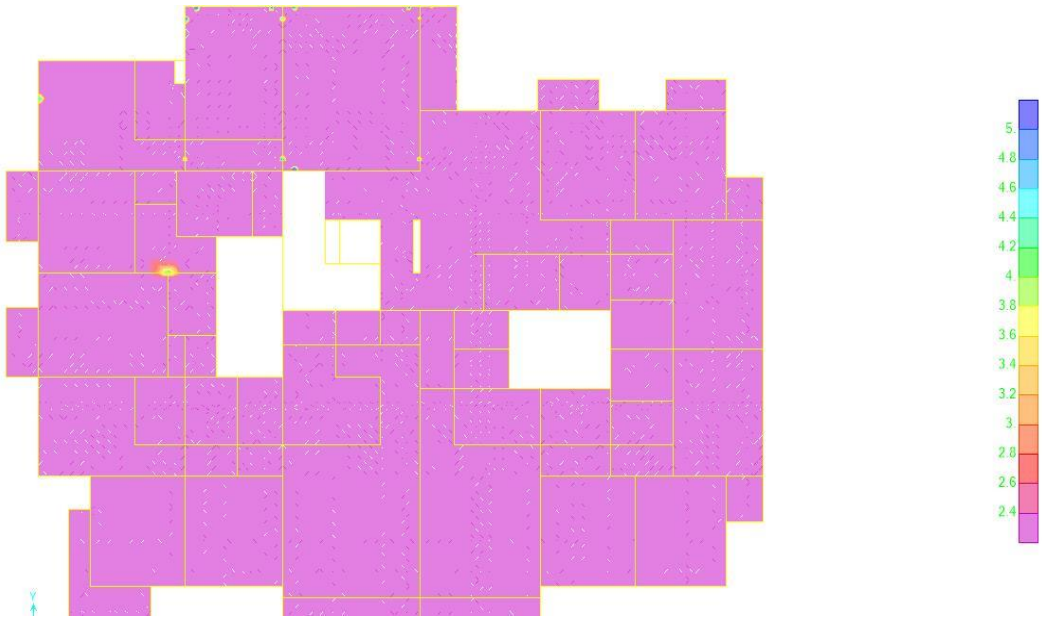
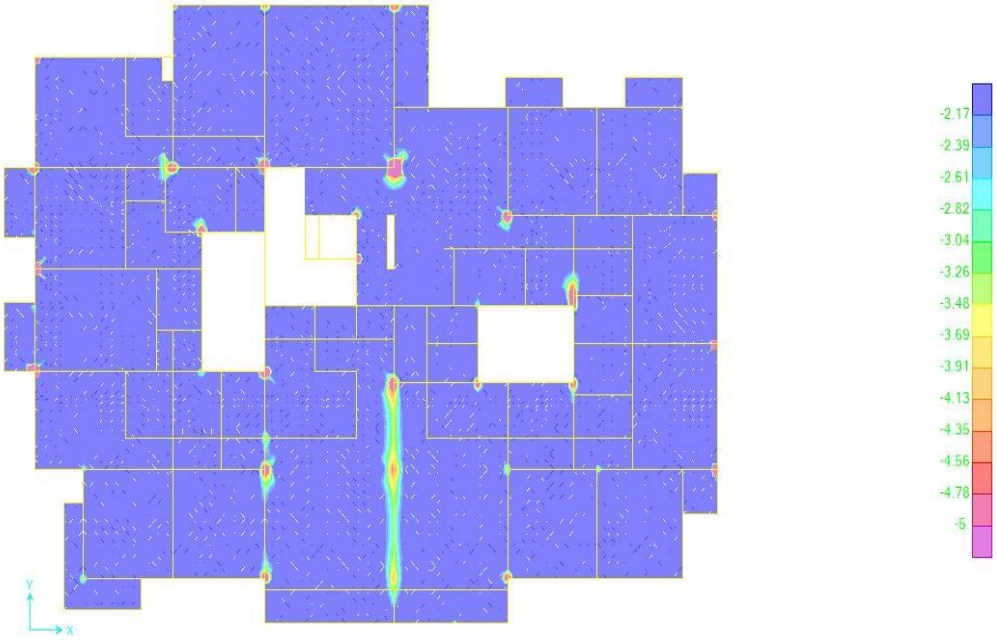


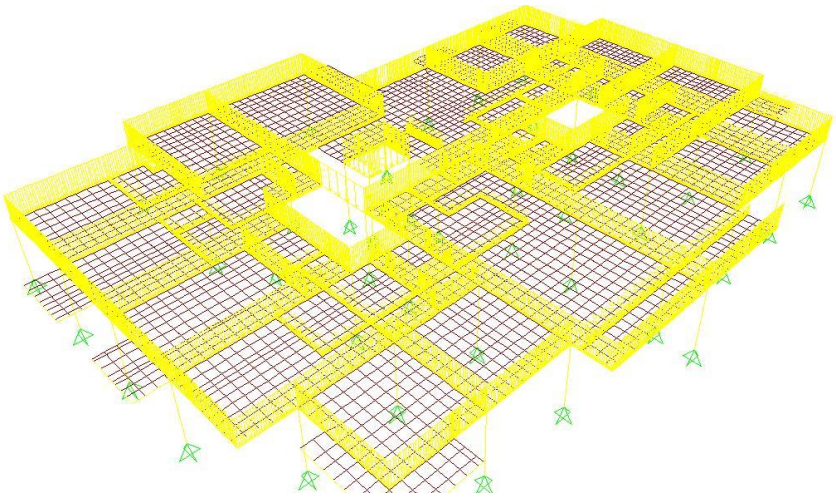
- **M1-1 TOP mesh 10T @200 mm**



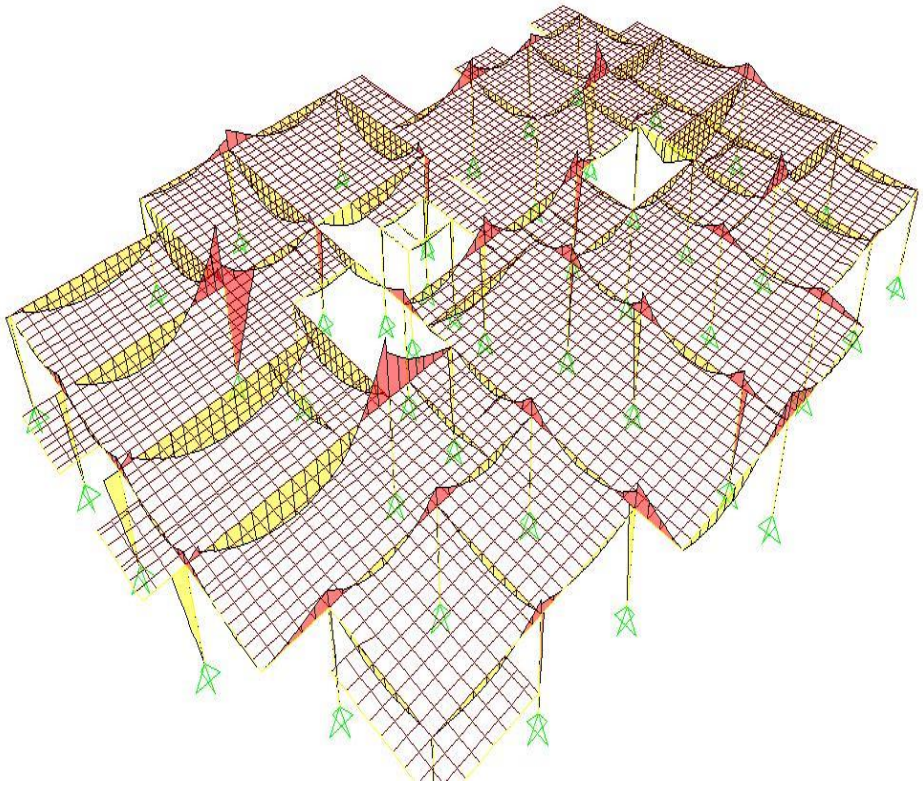
- **M2-2 TOP mesh 10T @200 mm**

LOADS ON BEAMS DUE TO WALL LOADS

=1.2 TON/M' = 2*.2*3.1



- **STRESSES ON BEAMS**



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Tables of quantities

1. LOADS ON FOUNDATION

	DELTA BLOCK	CEMENT BRICKS
TOTAL LOADS ON FOUNDATIONS	48716	67000
TOTAL SAVING LOADS ON FOUNDATIONS	18284	
% OF SAVING LOADS	27.3 %	
% OF SAVING FOUNDATIONS	UP TO 10 %	

2. FLOORS AND BEAMS (ONE FLOOR) AT LEVEL 9.15

	DELTA BLOCK	CEMENT BRICKS
TOTAL QUANTITY OF RC IN M3	957	998.4
TOTAL SAVING	41.4	
% OF SAVING	4.15 %	
TOTAL QUANTITY OF REINFORCEMENT	114.26	123.4
TOTAL SAVING	9.14	
% OF SAVING	7.4%	
TOTAL QUANTITY BLOCKS/M3	540.6	540.6
COST OF 1 M3	786	722
TOTAL COST OF MASONARY	424911.6	390313.2
TOTAL COST OF CEMENT IN MASONARY	22705.2	47200
TOTAL COST OF CONCRETE 1000/M3	957000	998400
TOTAL COST OF REIFRCEMENT12000/TON	1371120	1480800
TOTAL COST OF ONE FLOOR	2775736.5	2916713.2
TOTAL SAVING IN ON FLOOR	140976.7	
TOTAL % OF SAVING IN ON FLOOR	4.83%	

Technical Department

Eng.Essam Samy