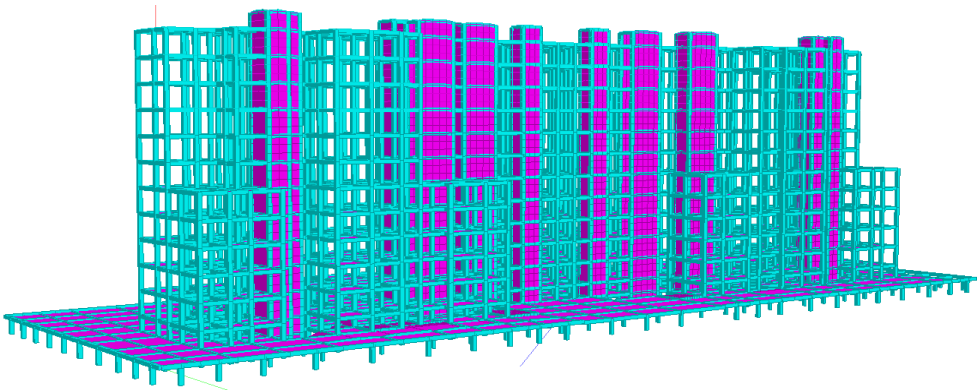
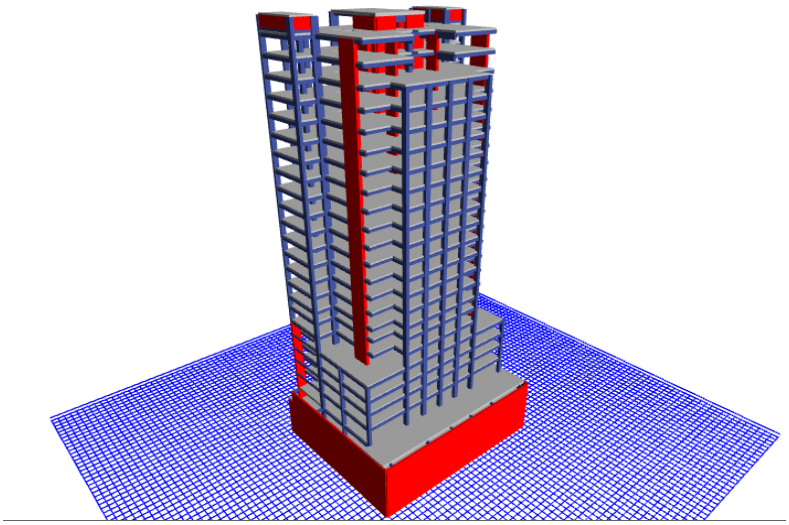
STRUCTURE PORTFOLIO





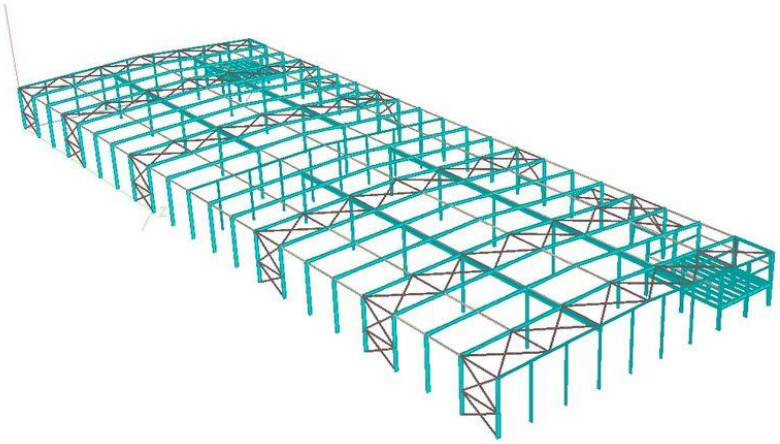


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TABLE OF CONTENT

Introduction:

This portfolio consist of total 4 projects, each project floor plan is drawn in AutoCAD software. The software involves in modeling, analysis & design of structure in ETABS & STAAD.Pro (Analysis and Design of individual project done independently on both ETABS & STAAD.Pro software). RCDC software is used for detailing of the structure and SAFE software is used for Foundation Design.

PROJECT 1:

(I). Basic Details:

- **Project type:** Commercial building of G+3 storey with Shear wall for Liftcabin.
- **Size: (**23.820 x 25.80)m^2
- **Area of building:** Ground, 1st, 2nd& 3rd floor = 614.04^2 of each.

Plan & Elevation: The proposed plan consist of G+3 storey commercial building having 4 no. of flats on each 1st ,2nd & 3rd floor. The building contains totalno. of flats = 4x3 = 12 flats.

(II). Statement of project:

a) Salient features:

- Utility of building: Commercial Building.
- No. of stories: G+3
- Shape of the building: Rectangular Shaped.
- No. of staircase:1
- No. of Lift: 1
- Type of construction: RCC framed structure.
- Type of walls: Red Brick wall.

b) Geometric details:

- Height of floors: 3.2m each.
- Total height of building: 12.6m.

(III). Material used:

- Concrete: M25 grade
- All Steel: Fe500 grade

(IV). Code considered:

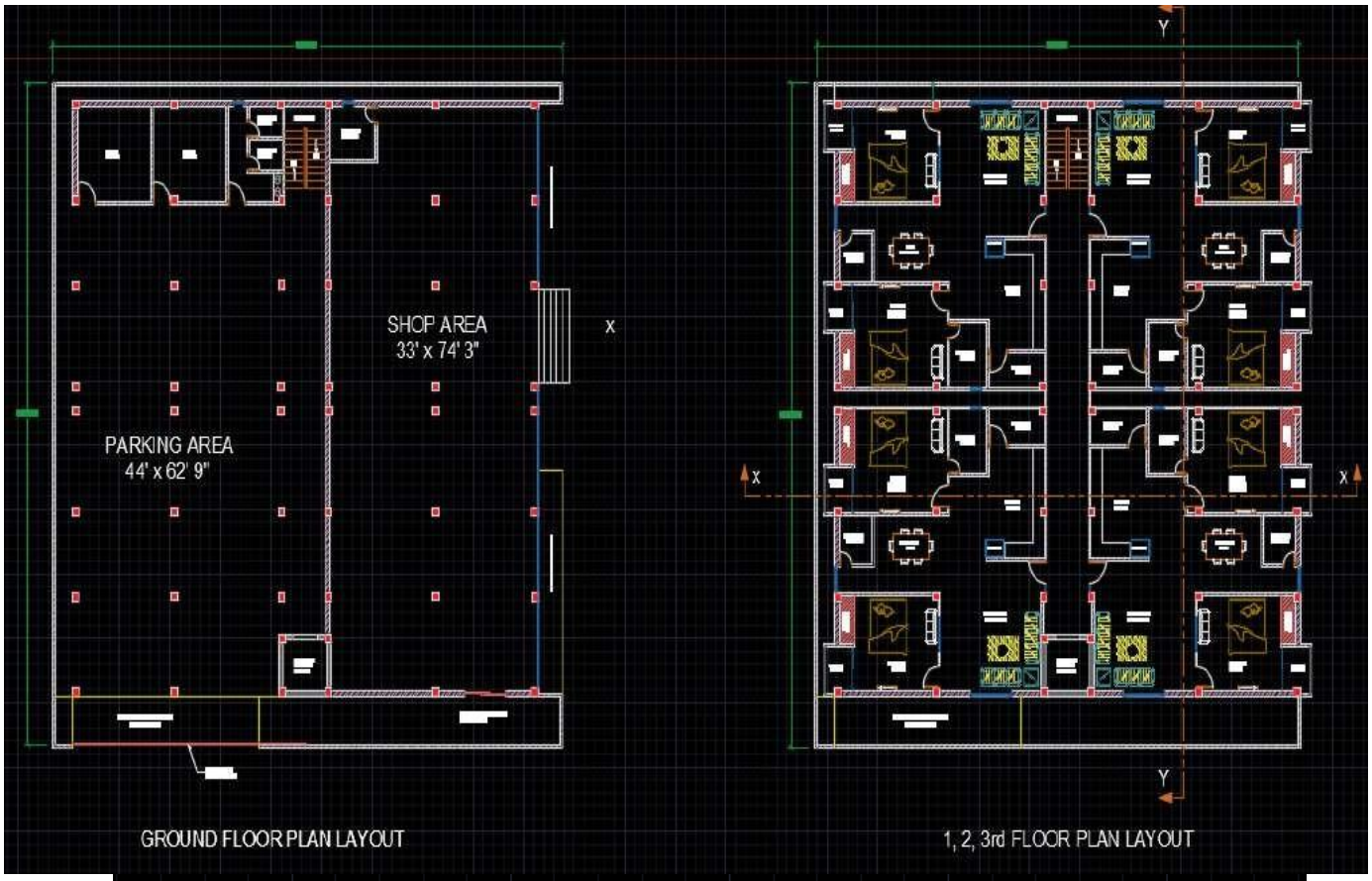
- IS:456-2021 for RCC design.
- IS:875-2015 (Part-1,2,3) for DL,LL & Wind load respectively.
- IS:1893-2016 (Part-1) for Seismic load.
- IS:13920-2016 for Ductile detailing.
- SP-34(1987) for Detailing of Reinforcement in RCCstructure.

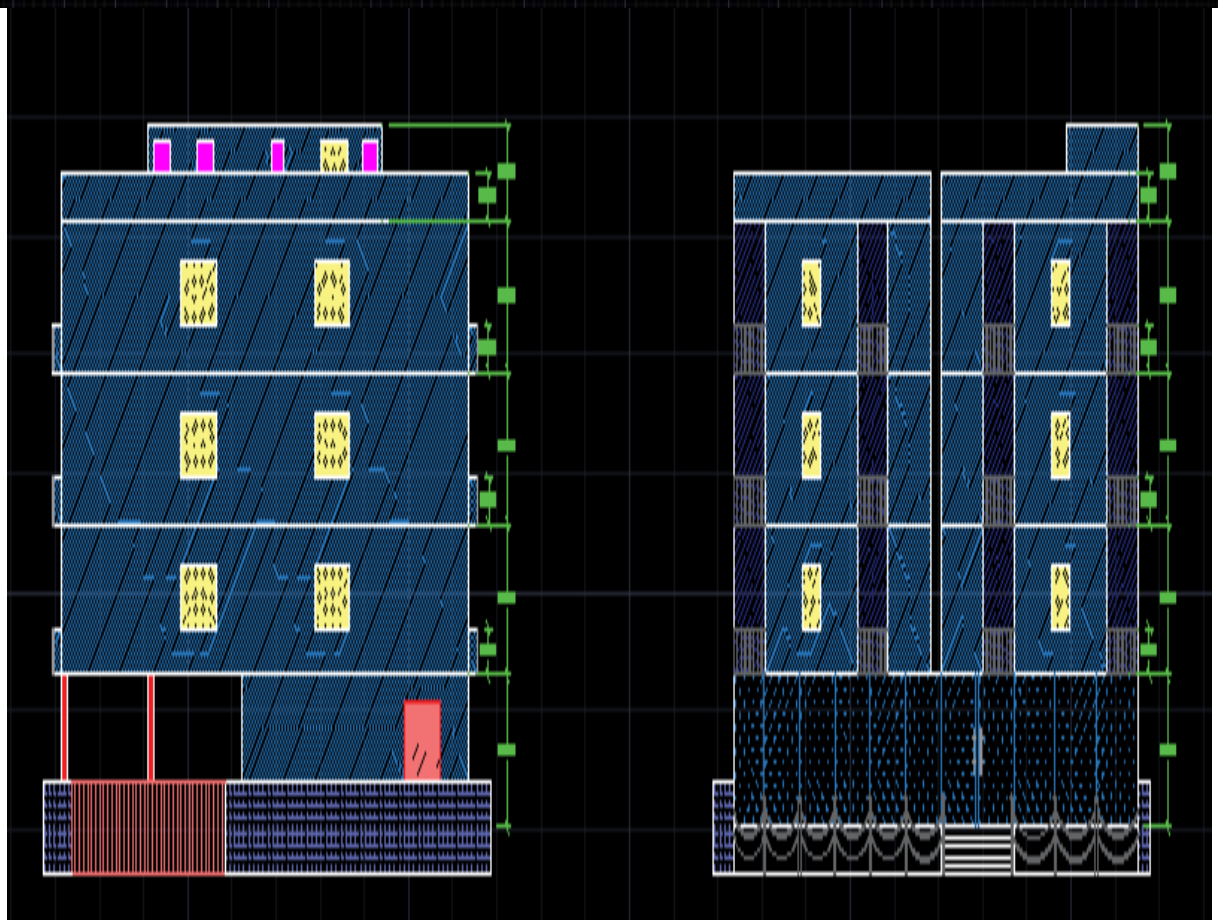
(V). Load considered:

- Live load = 4KN/m (IS 875 part 2)
- Wall load for 230mm wall = 12.02KN/m((3.2-0.45)X19X0.23)
- Wall load for 100mm wall = 7.84KN/m
- Parapet wall load = 1.91KN/m
- Floor load of 0.15m thickness (DL) = 4.75KN/m

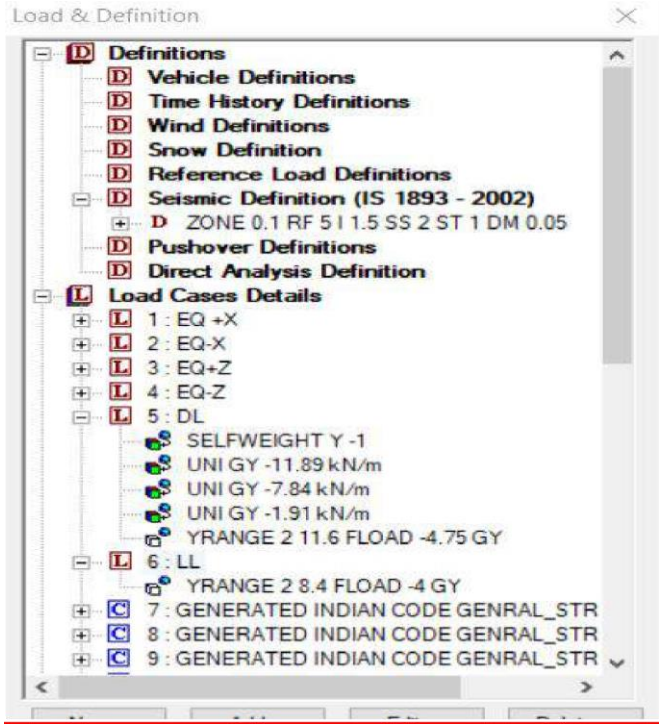
(VI). For Foundation Design:

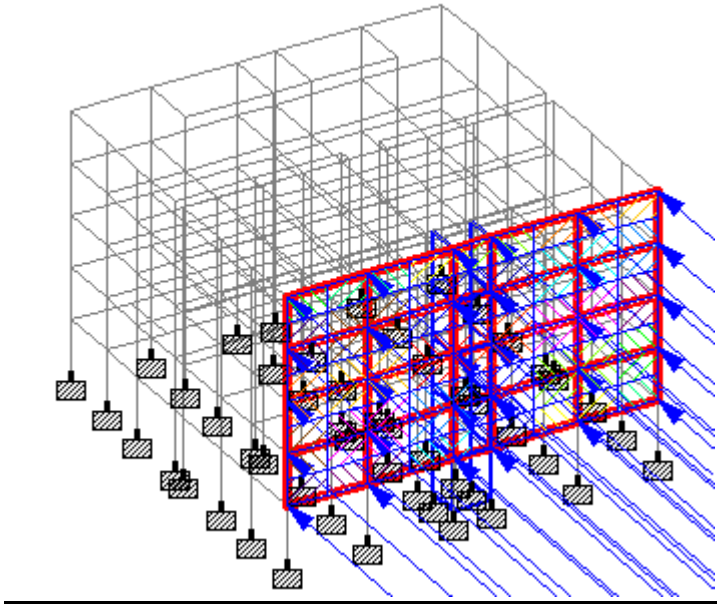
- Type of Foundation: Isolated sloped & Combined footing.
- SBC of Soil: 180KN/m^2



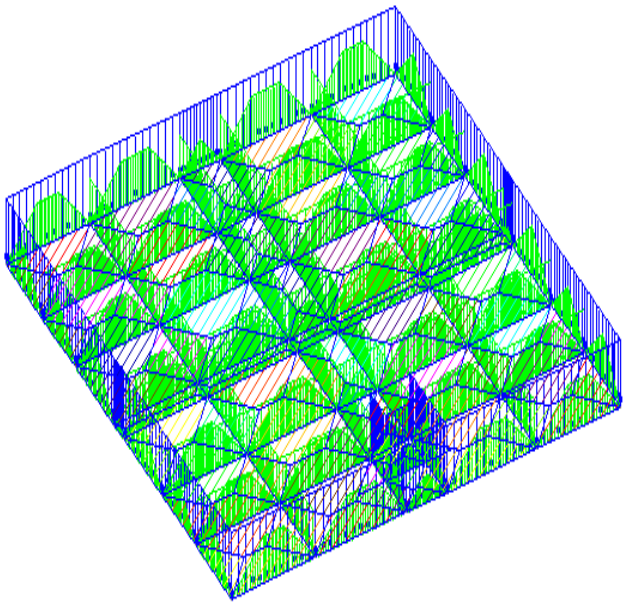


Building plan and elevation

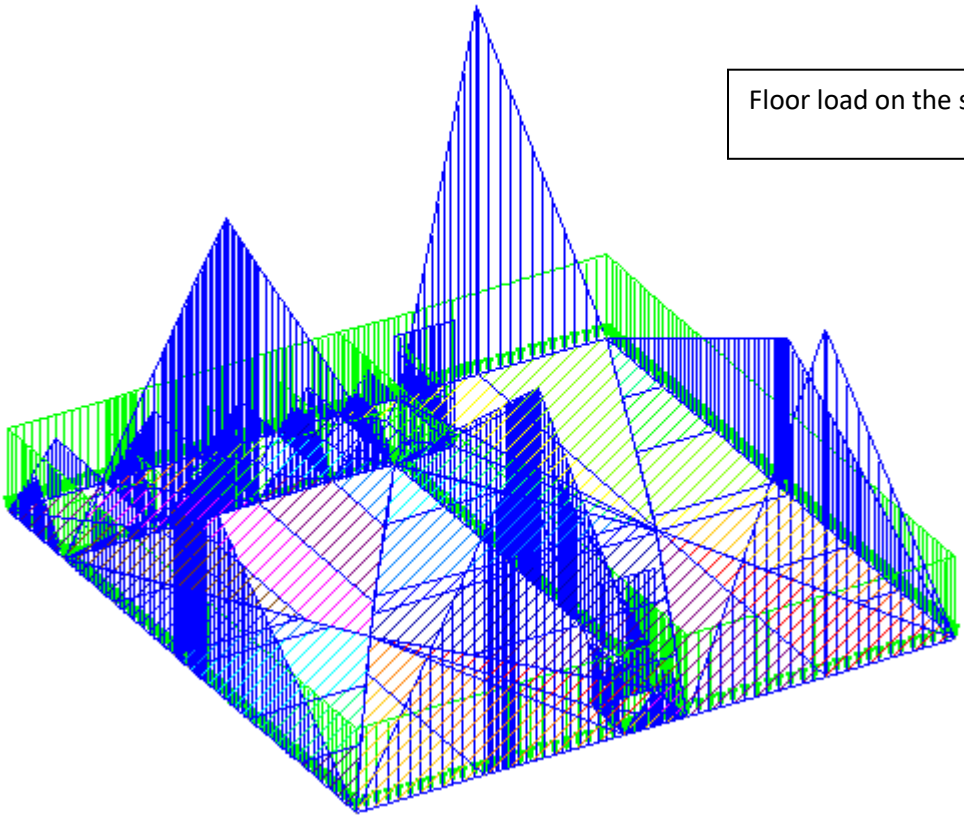




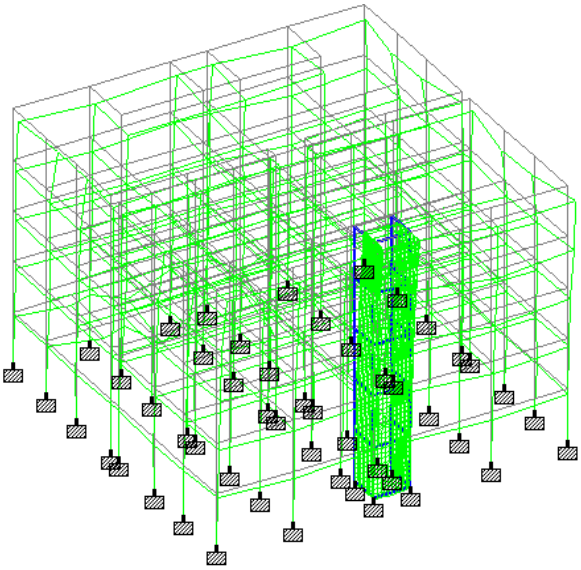
Wind load application on structure



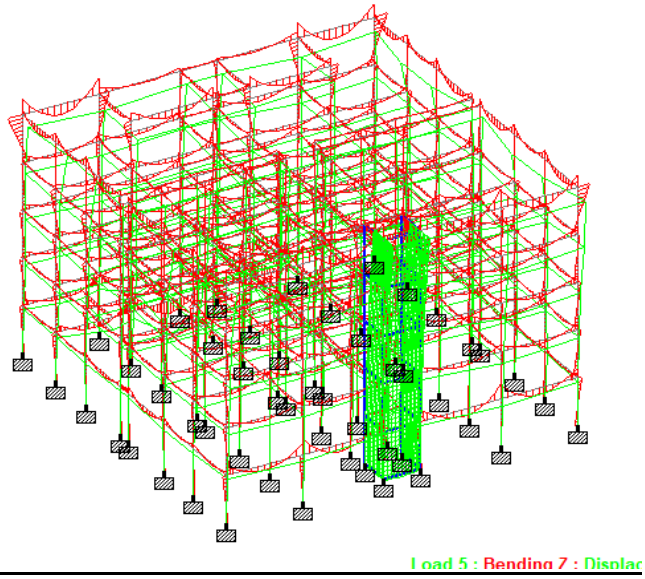
Wall load applied on the beams.



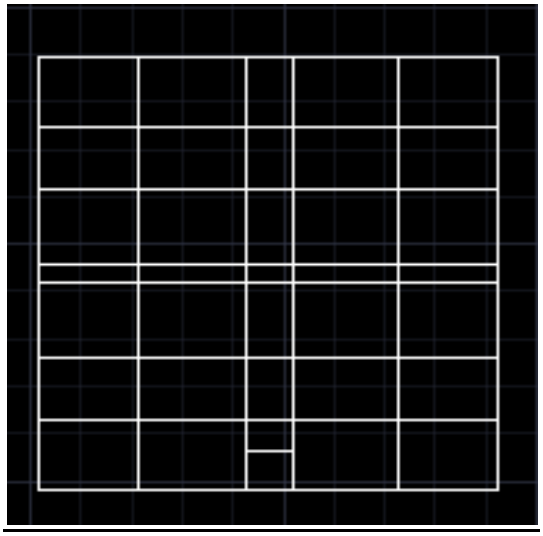
Floor load on the structure.



Deflection of the structure.

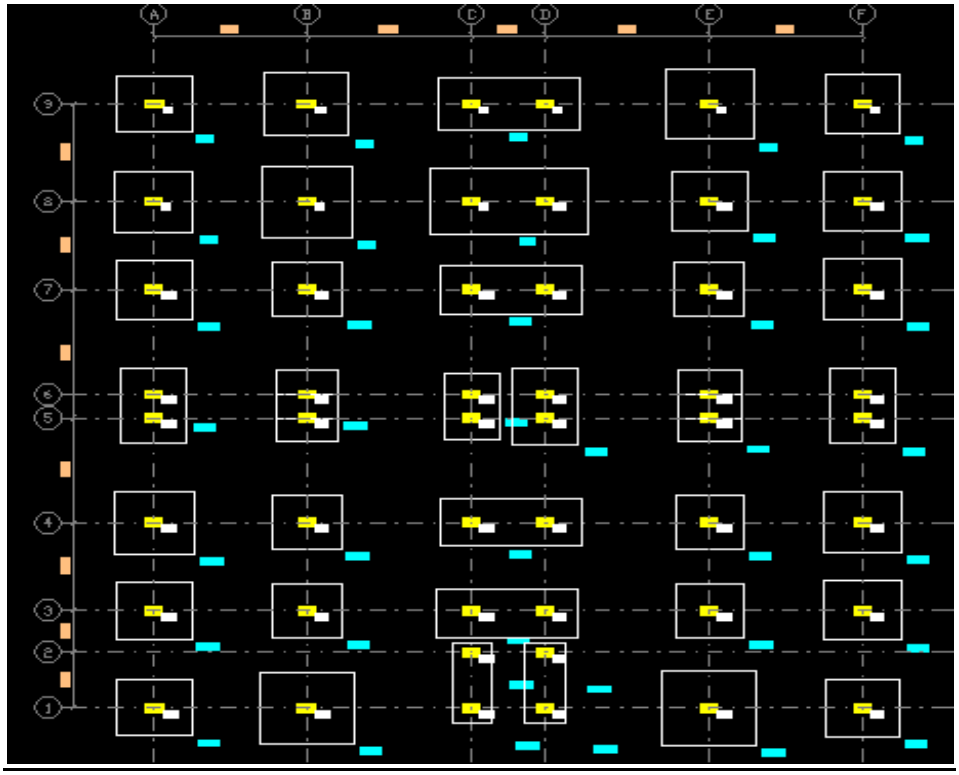


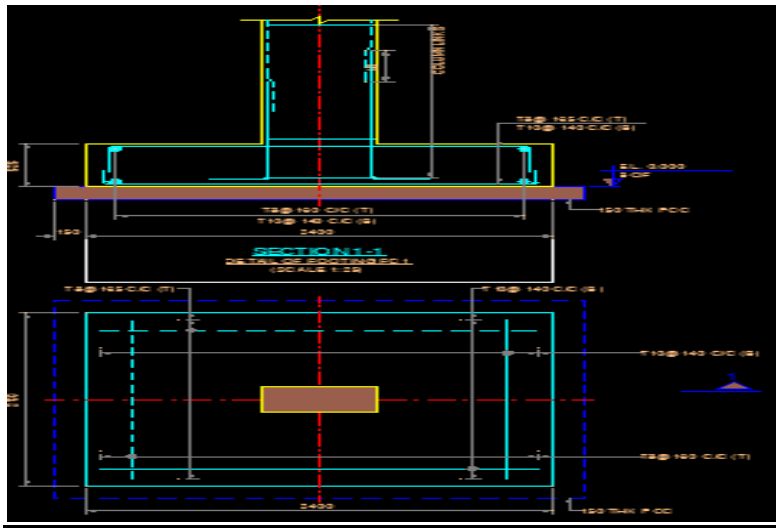
Bending moment of the structure.



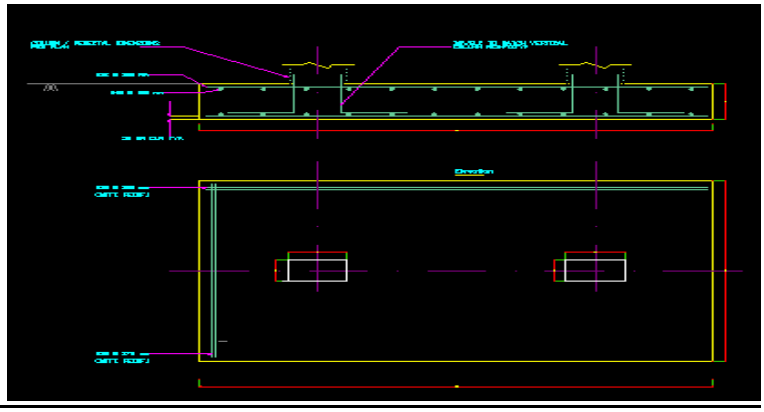
Centre line of the structure.

Footing layout of the structure.

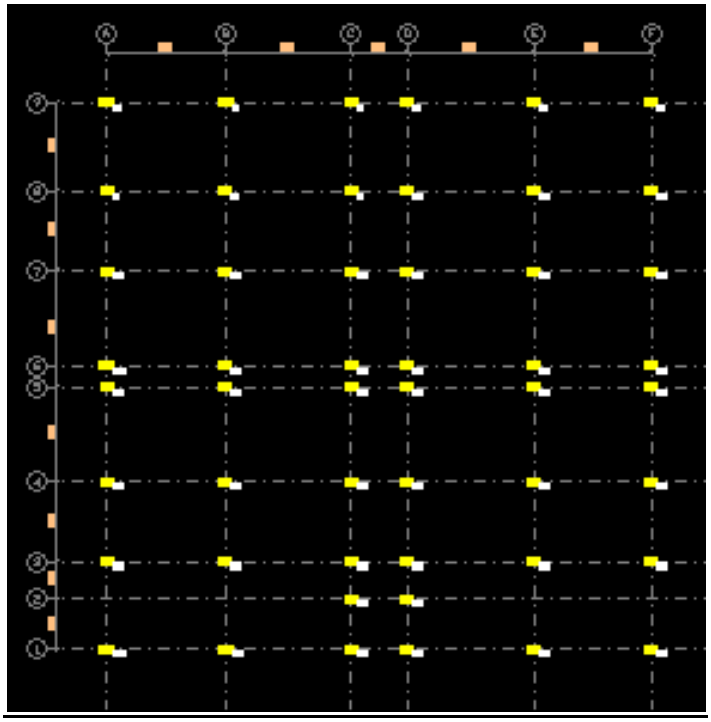




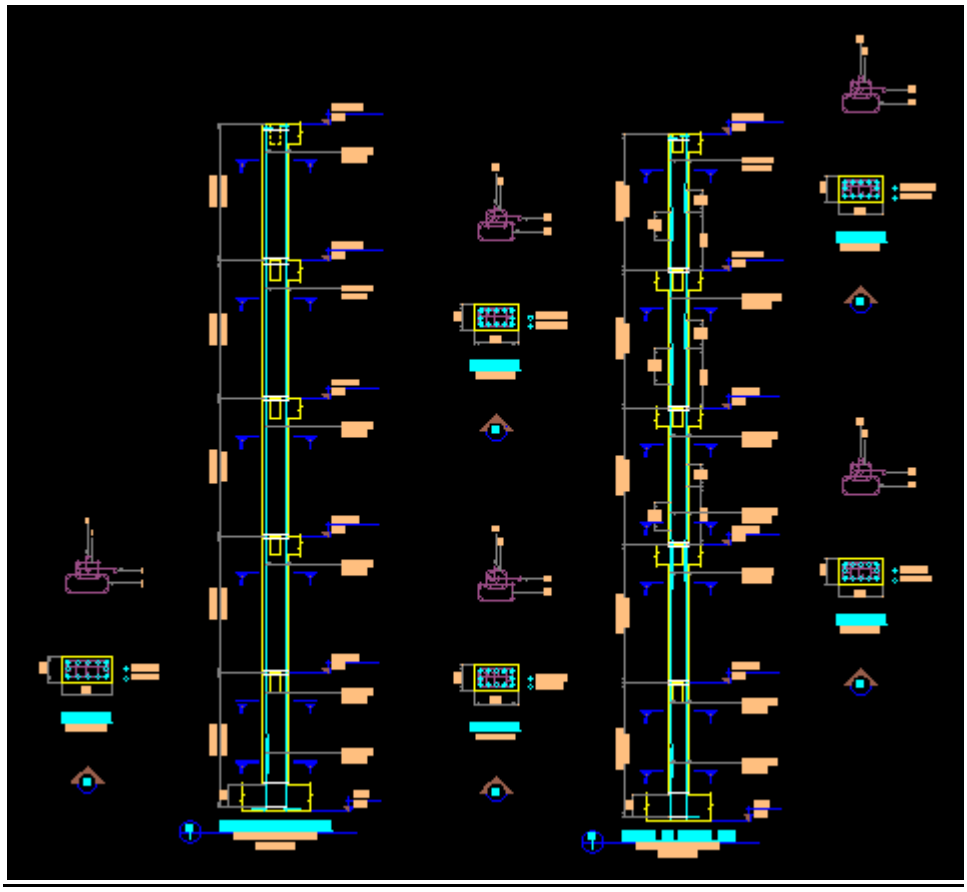
Details of isolated footing

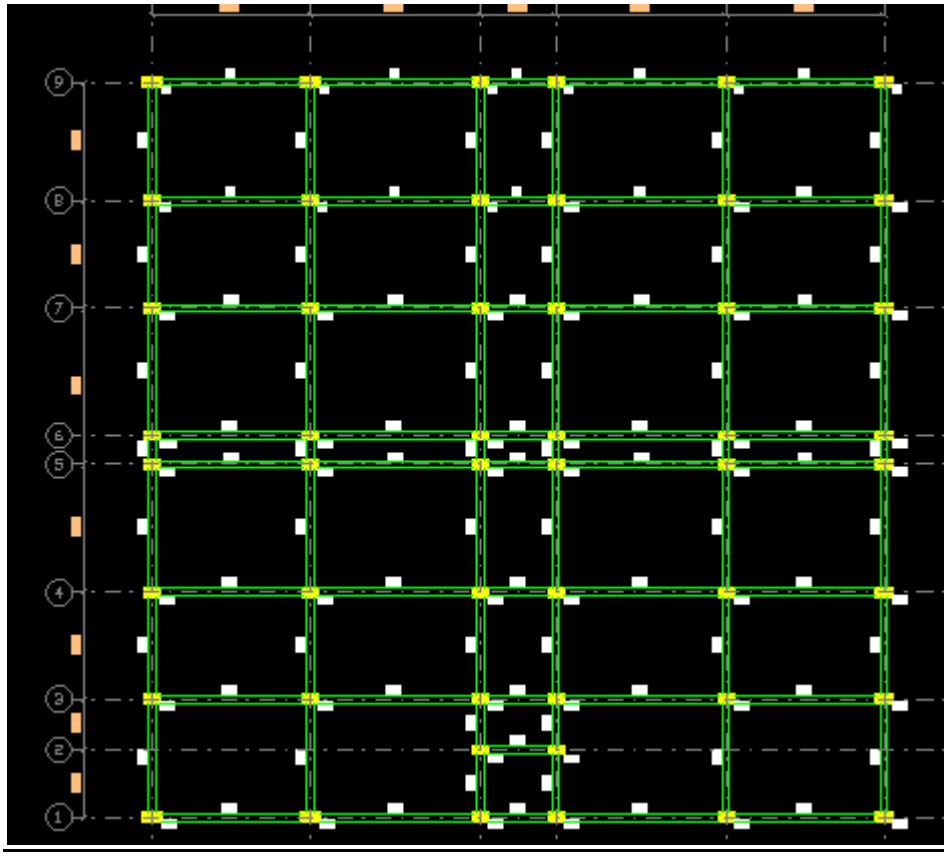


Details of Combined footing



Column layout of Structure.

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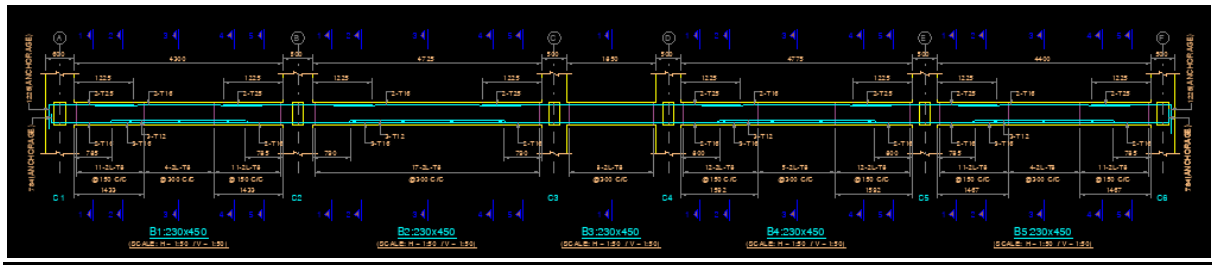
7
6
5
4
3
2
1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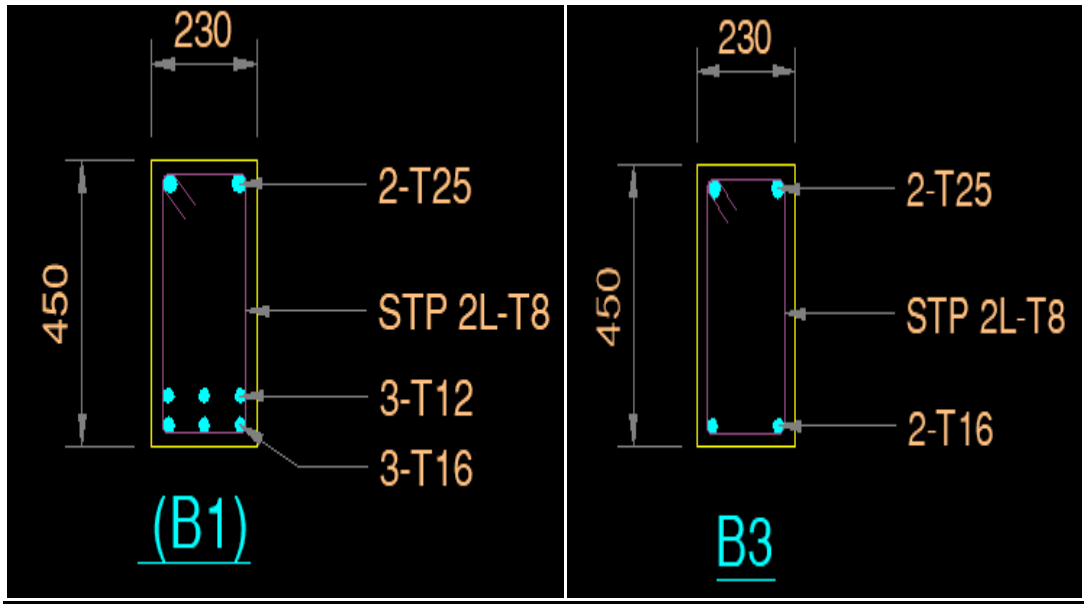
B2;230x450
B3;230x450
B4;230x450
B5;230x450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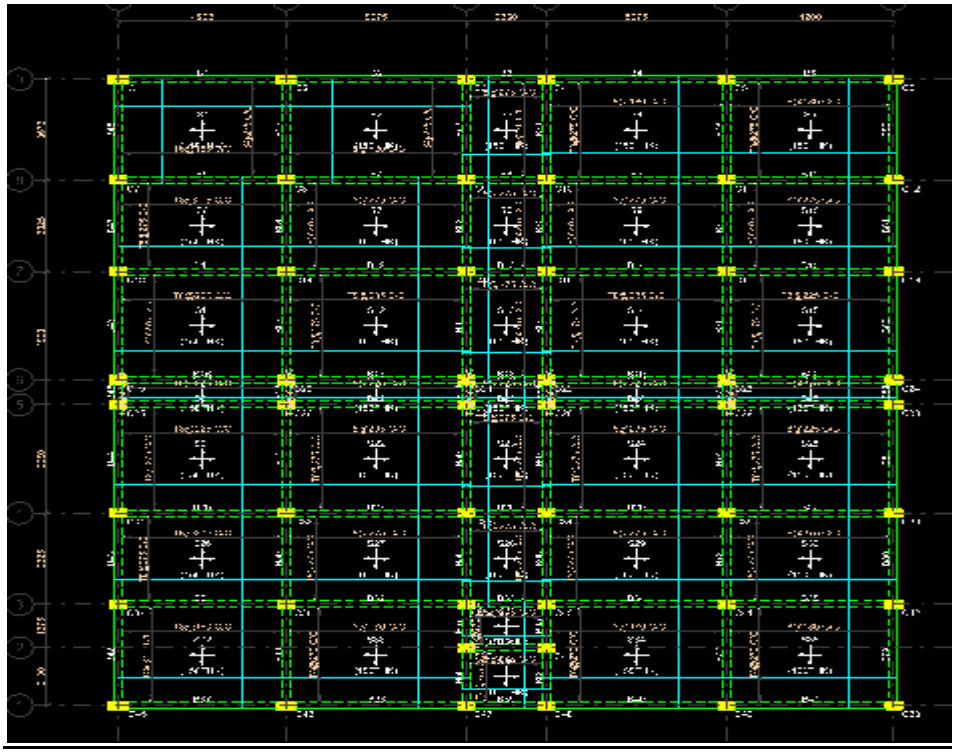
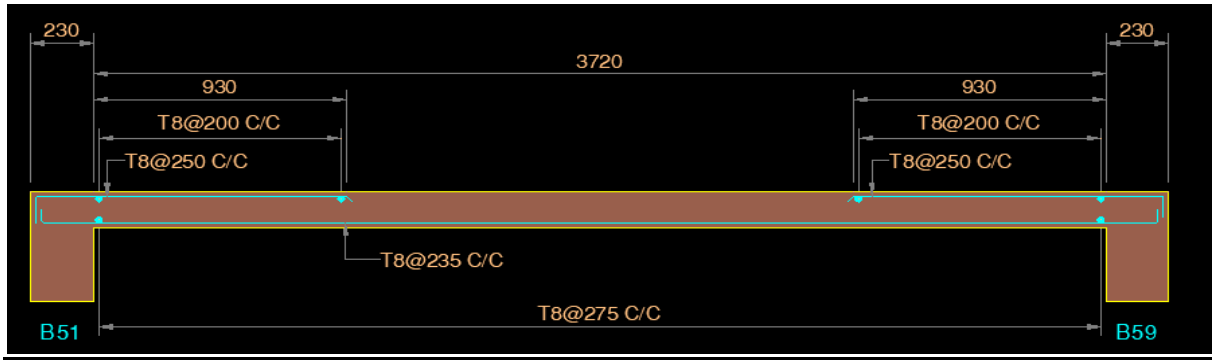
450
2-T25
STP 2L-T8
3-T12
3-T16
(B1)
230
450
2-T25
STP 2L-T8
2-T16
B3

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3720
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930
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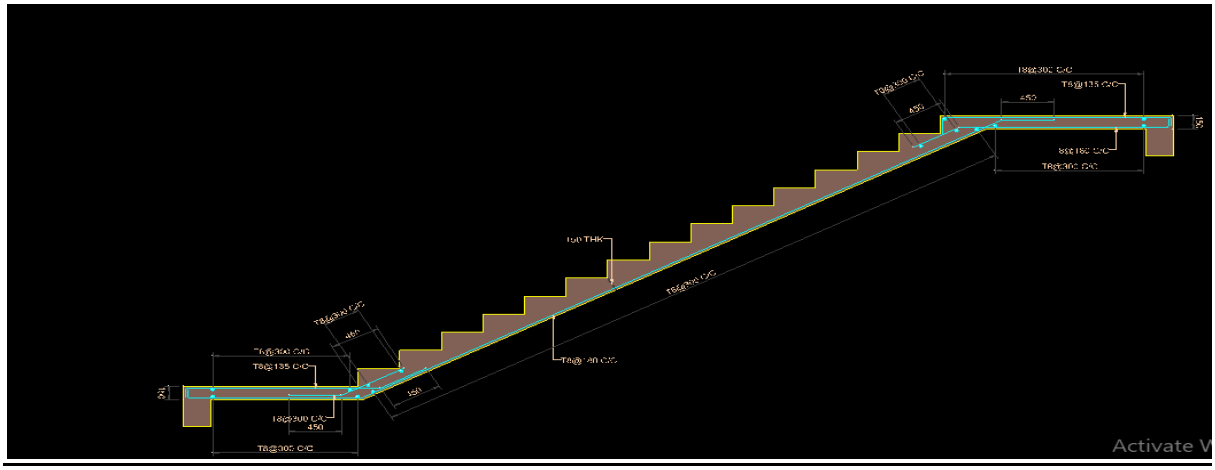
T8@275 C/C
B51
B59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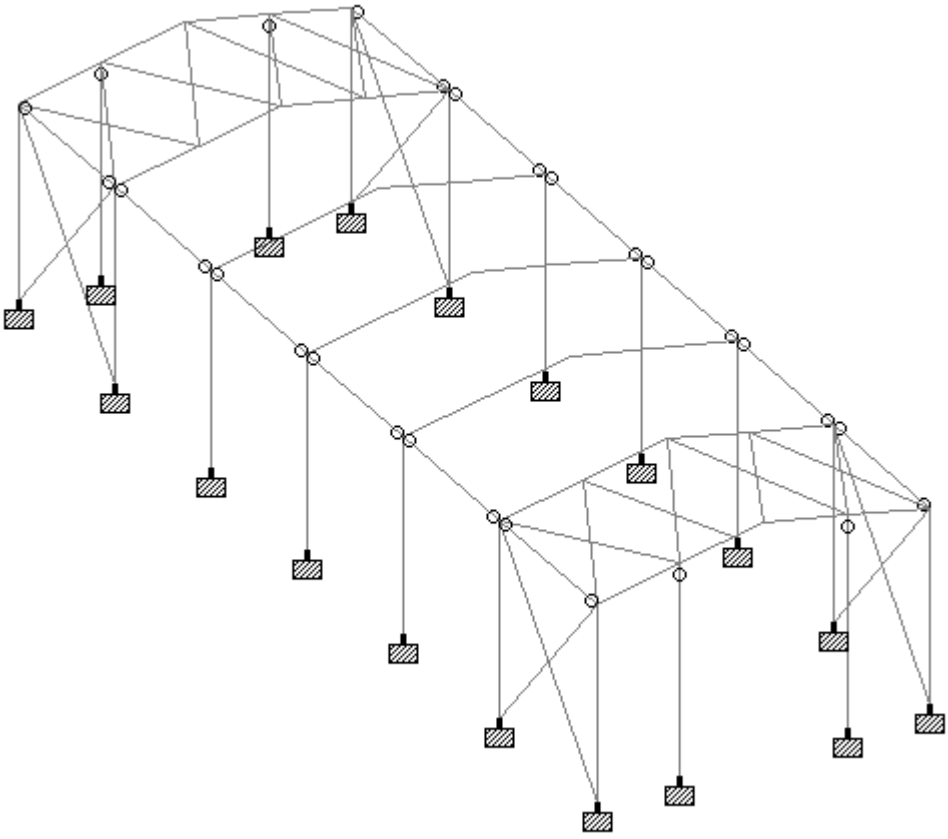
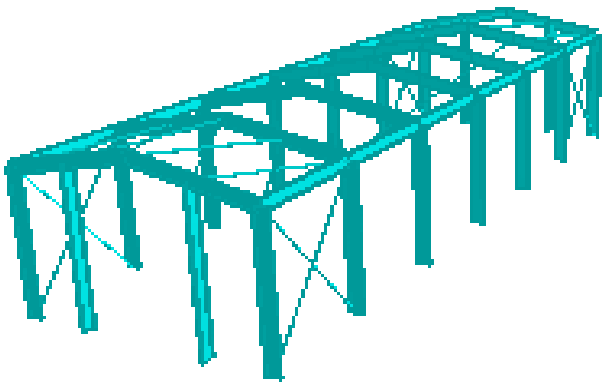
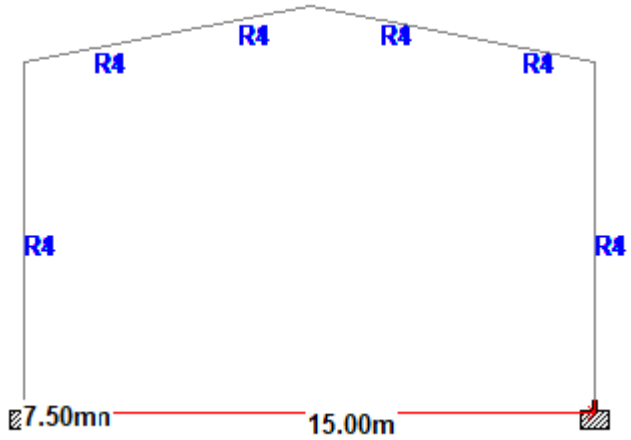
T8@300 C/C

WAREHOUSE DESIGN:







PROJECT DETAILS:

(I). Statement of project:

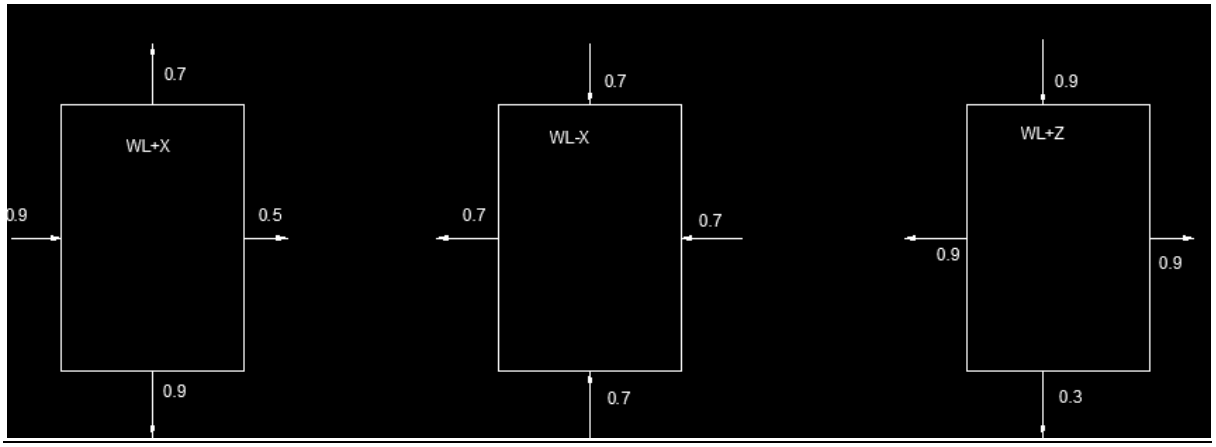
- Utility of building: Commercial Building.
- Shape of the building: Rectangular Shaped.
- Type of construction: Pre engineered structure.
- Height of floor: 8.8m
- Slope of the structure= 1:10

(II). Code considered:

- IS:800-2007 for Steel design.
- IS:875-2015 (Part-1,2,3) for DL,LL & Wind load respectively.
- IS:1893-2016 (Part-1) for Seismic load.

(III). Load considered:

- Dead load
  Dead load of sheeting =4 KN/m^2
  Dead load of sag rod=10 KN/m^2
  Hence dead load considered as 0.15KN/m^2 X 7.5=1.125 KN/m
- Live load on roofing= 0.75 KN/m^2
  Hence it is considered as =0.75X7.5=5.625KN/m^2



Wind pressure co-efficient on structure

Wind load calculation on structure is calculated as,

Vz= K1,K2,K3,K4,Vb

Vb=50m/s K1=1 K2=0.91, K3=1.K4=1.15,OFW=1.15

Vz= 50X0.91X1X1.15X1.15=60.17m/s

Pz=0.6 Vz^2=0.6X(60.17)^2=2.17 KN/m^2

Wind speed for less than 10m may be reduced by 20% for stability and design of framing =2.17X0.8=1.73 KN/m^2.

Pd= ka kd kc pz

Kd=1,Ka=0.86,Kc=0.9

Pd=0.774X1.73=1.343 KN/m^2

+/-0.2 is considered for internal pressure

Wind load calculation on columns

Wind load =1.1X1.343X7.5= 11.06 KN/m

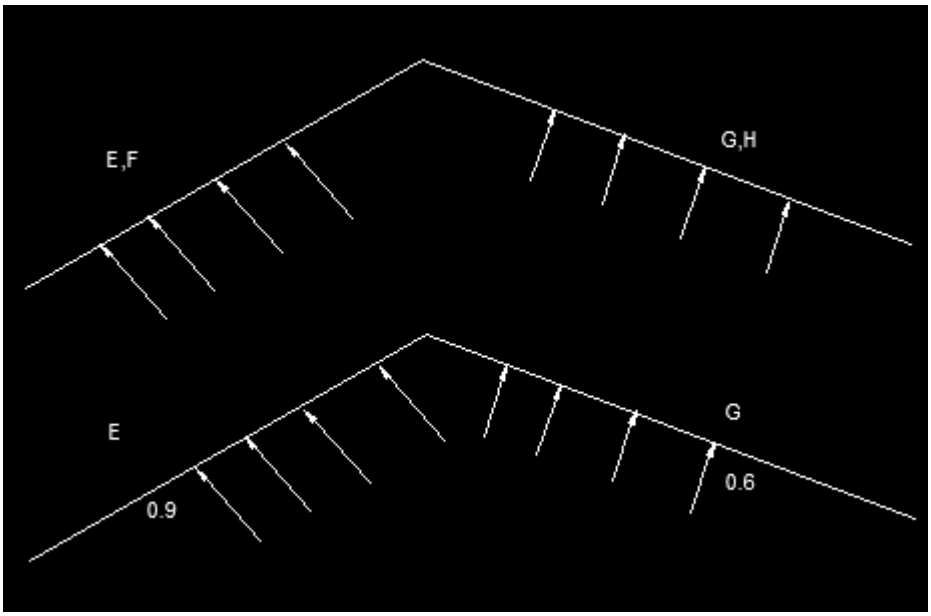
=0.7X1.343X7.5=7.05 KN/m

=0.9X1.343X7.5=9.065 KN/m

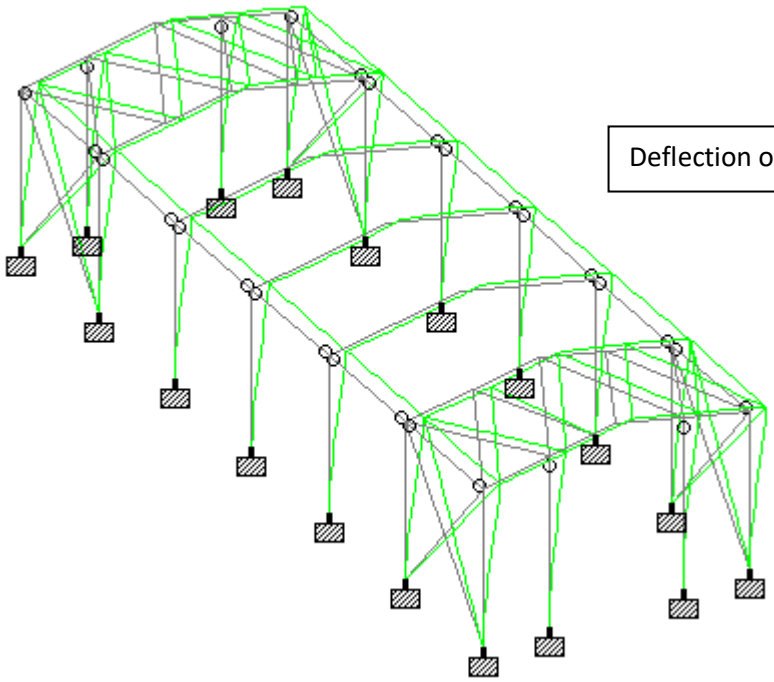
Wind load calculation on Roof

Wind load =1.1X1.343X7.5= 11.06 KN/m

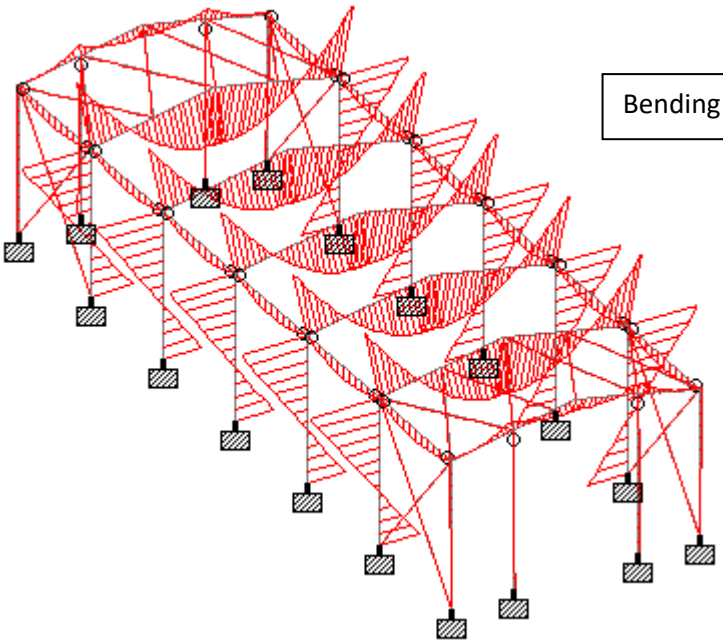
=0.8X1.343X7.5=8.065 KN/m



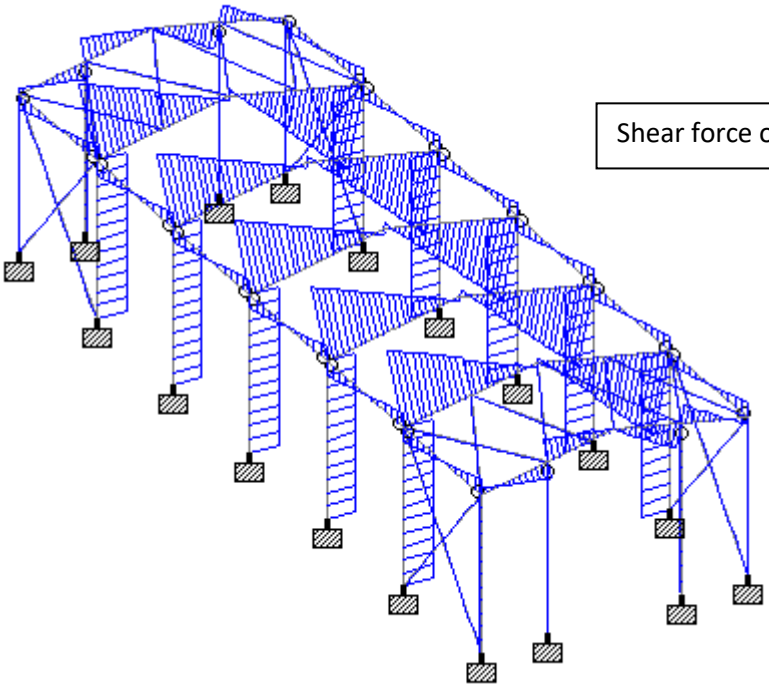
Wind pressure co-efficient on roof of structure.



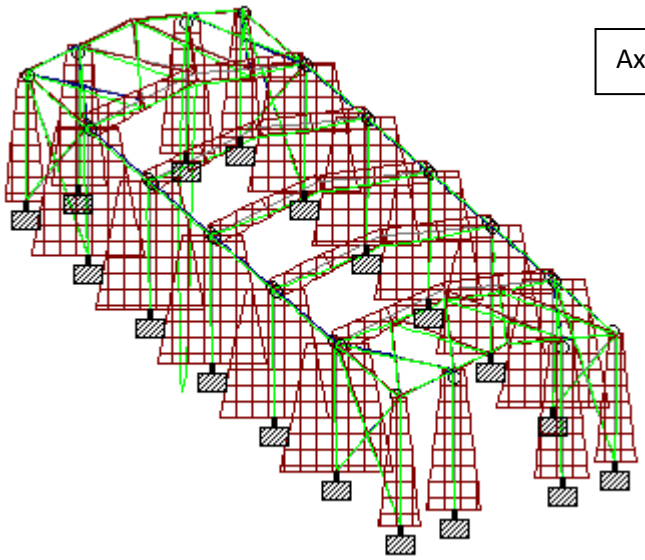
Deflection of structure after analysis.



Bending moment of structure after analysis.



Shear force of structure after analysis.

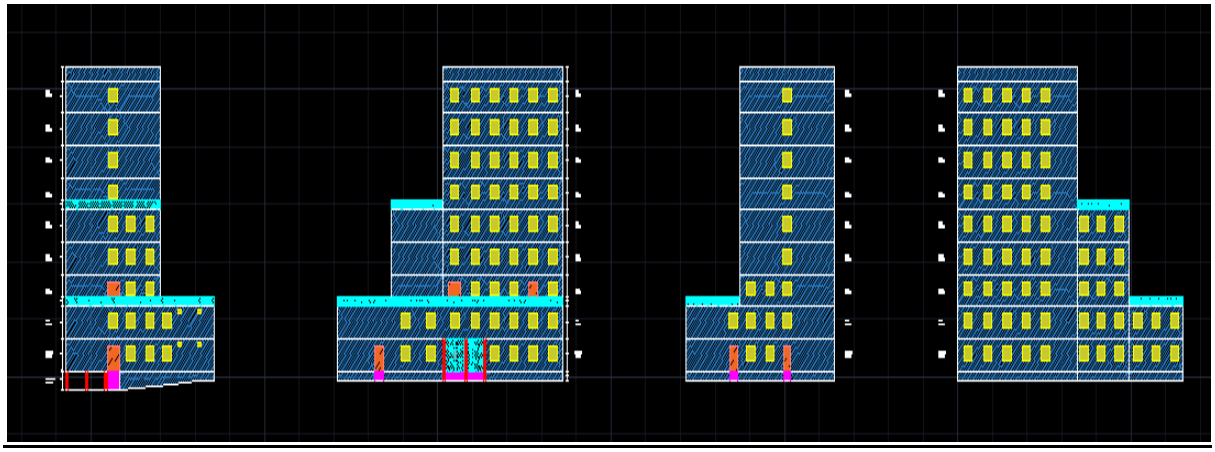


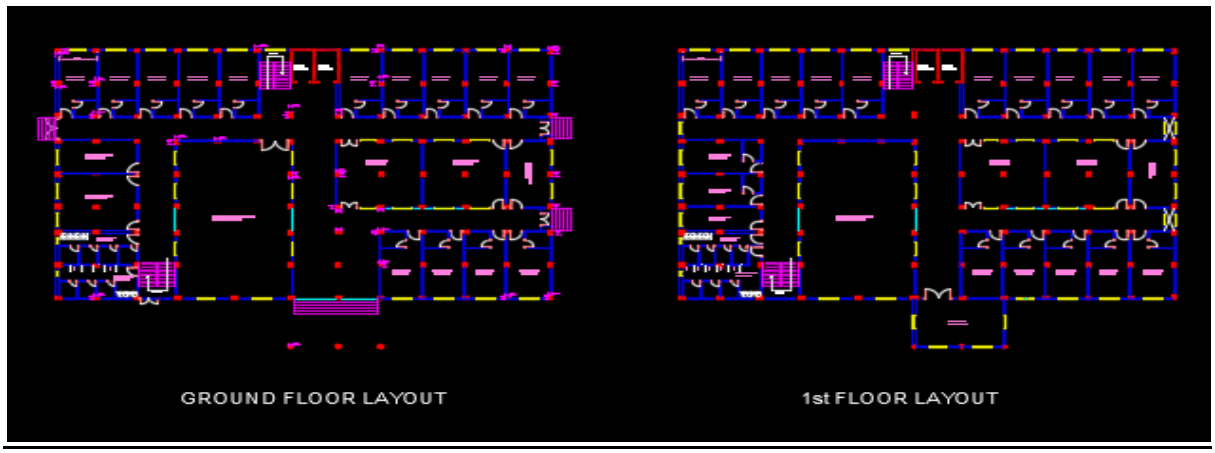
Axial force of structure after analysis.

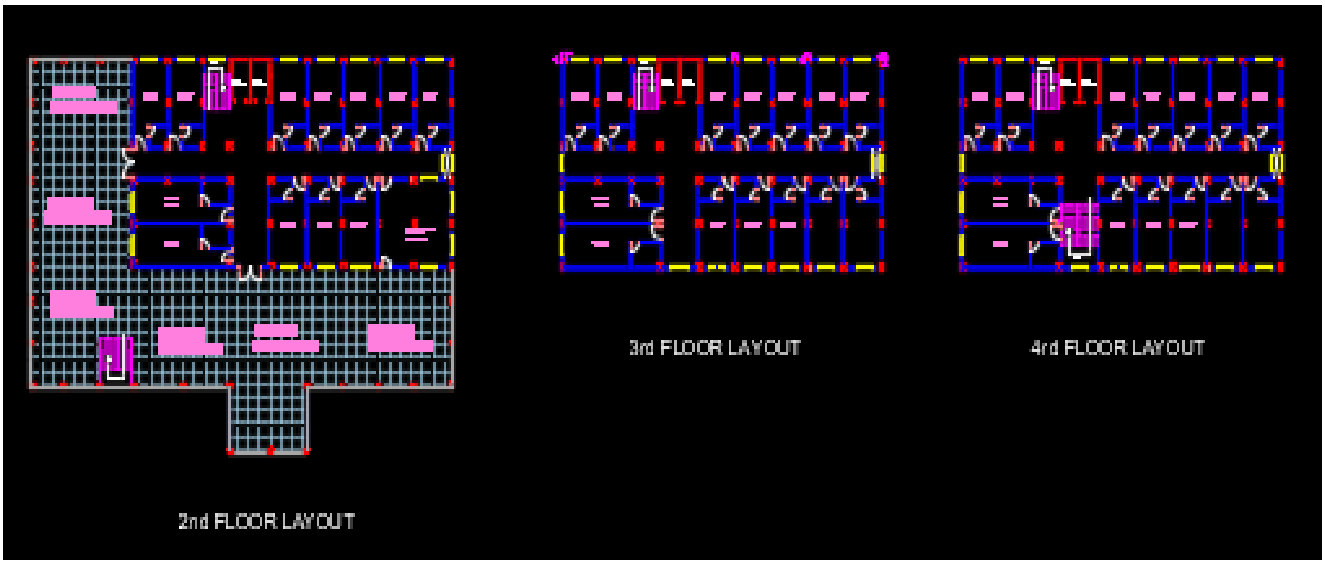
(I). Basic Details:

- **Project type:** Hotel building of G+8 storey with Shear wall for Lift cabin.
- **Size: (**40.768 x 26.650)m^2
- **Area of building:** Ground, 1st & 2nd floor = 1125.18m^2 of each. 3rd , 4th & 5th floor = 526.38m^2 of each.6th , 7th, 8th floor = 368.27m^2 of each.

(II). Plan & Elevation: The Plan consist of Reception area, Waiting area, Hotel's restaurant area, Hotel's Kitchen, Pvt. Party Rooms, Hotel's Laundry area, Lift & Staircase area, Common Toilets, & Hotel's rooms at ground floor and having living Rooms of Single Bedroom, Double Bedroom & Triple Bedroom on rest floors and also attached Washroom in each room.







Plan of the building at various stories

Statement of project:

a) Salient features:

- Utility of building: Hotel Building.
- No. of stories: G+8.
- Shape of the building: Rectangular irregular Shaped.

- No. of staircase: 2
- No. of Lift: 2
- Type of construction: RCC framed structure.
- Type of walls: AAC block.

b) Geometric details:

- Height of floors: 3.5m each.
- Total height of building: 32.5m.

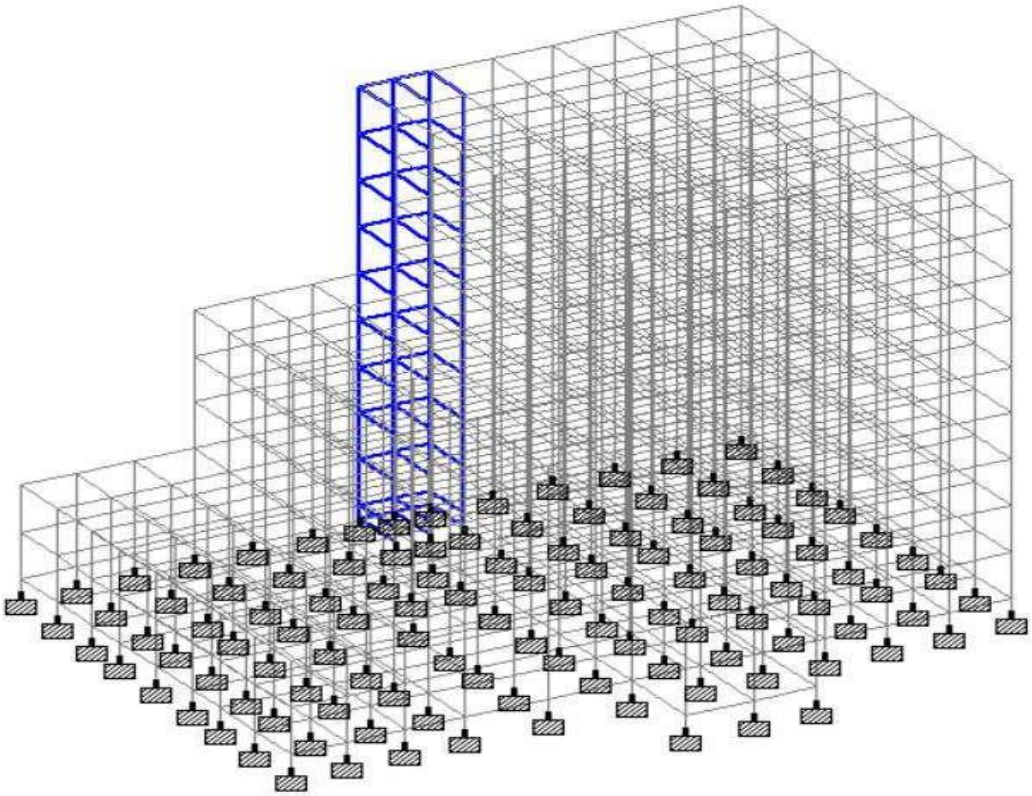
(III). Code considered:

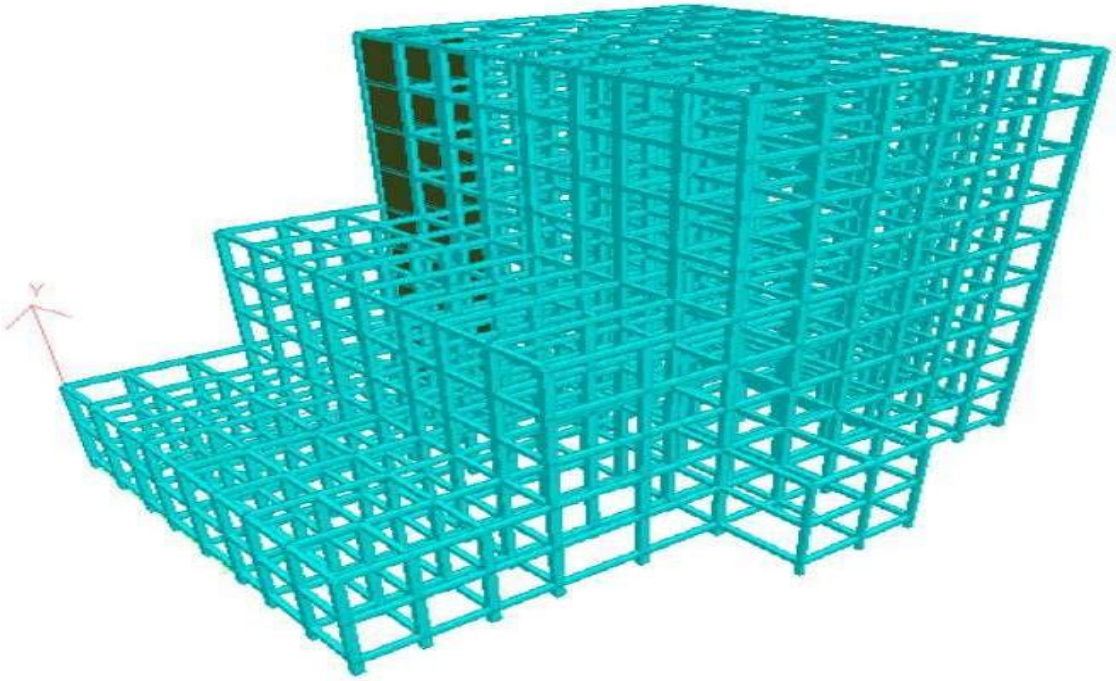
- IS:456-2021 for RCC design.
- IS:875-2015 (Part-1,2,3) for DL,LL & Wind load respectively.
- IS:1893-2016 (Part-1) for Seismic load.
- IS:13920-2016 for Ductile detailing.
- SP-34 for Detailing of Reinforcement in RCCstructure.

(IV). Load considered:

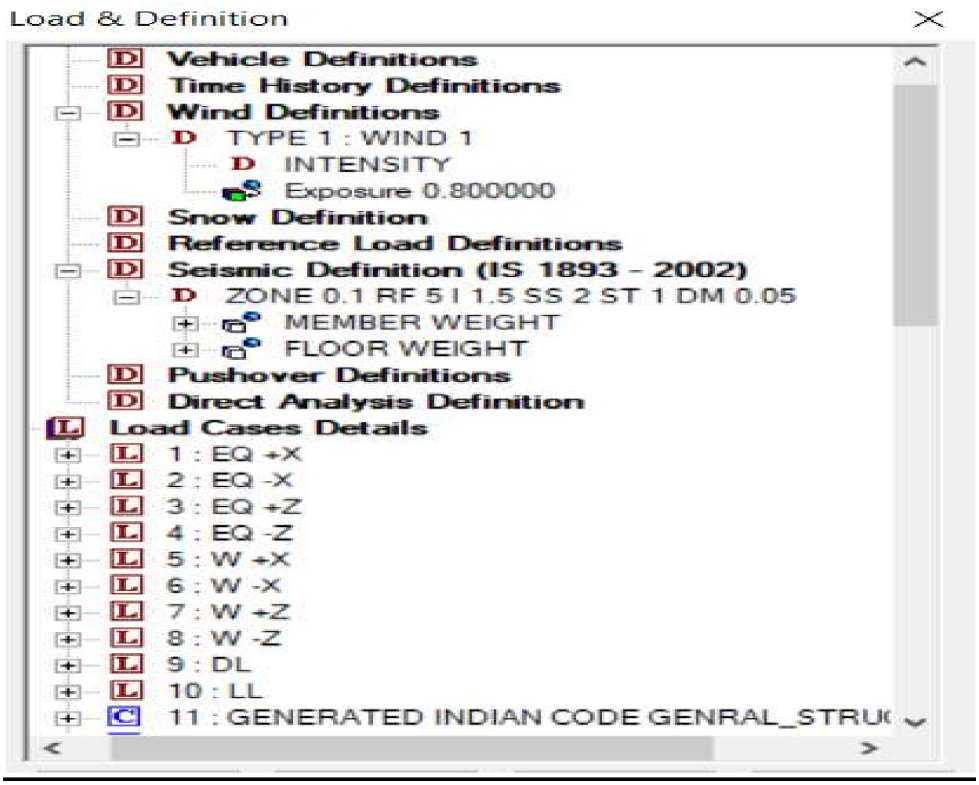
- Dead load = 1.5KN/m
- Live load = 4KN/m
- Wall load for 0.150m wall = 3.07KN/m
- Parapet wall load = 1KN/m
- Floor load of 0.15m thickness (DL) = 4.75KN/m
- Load combinations as per IS:875-2015 (Part-V)

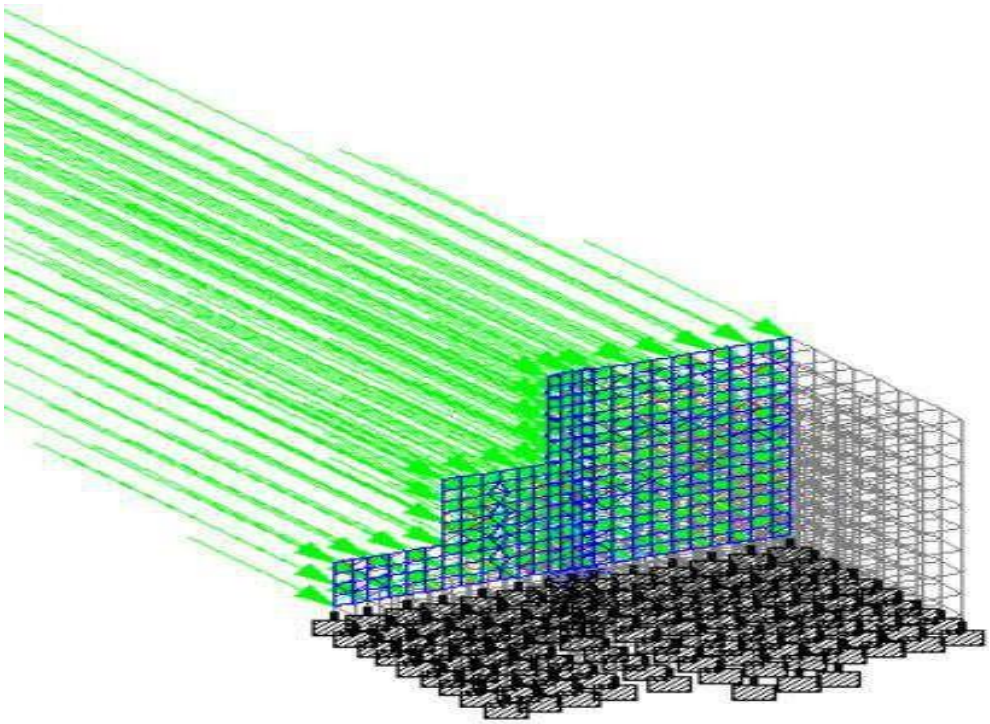
Modeling of Structure



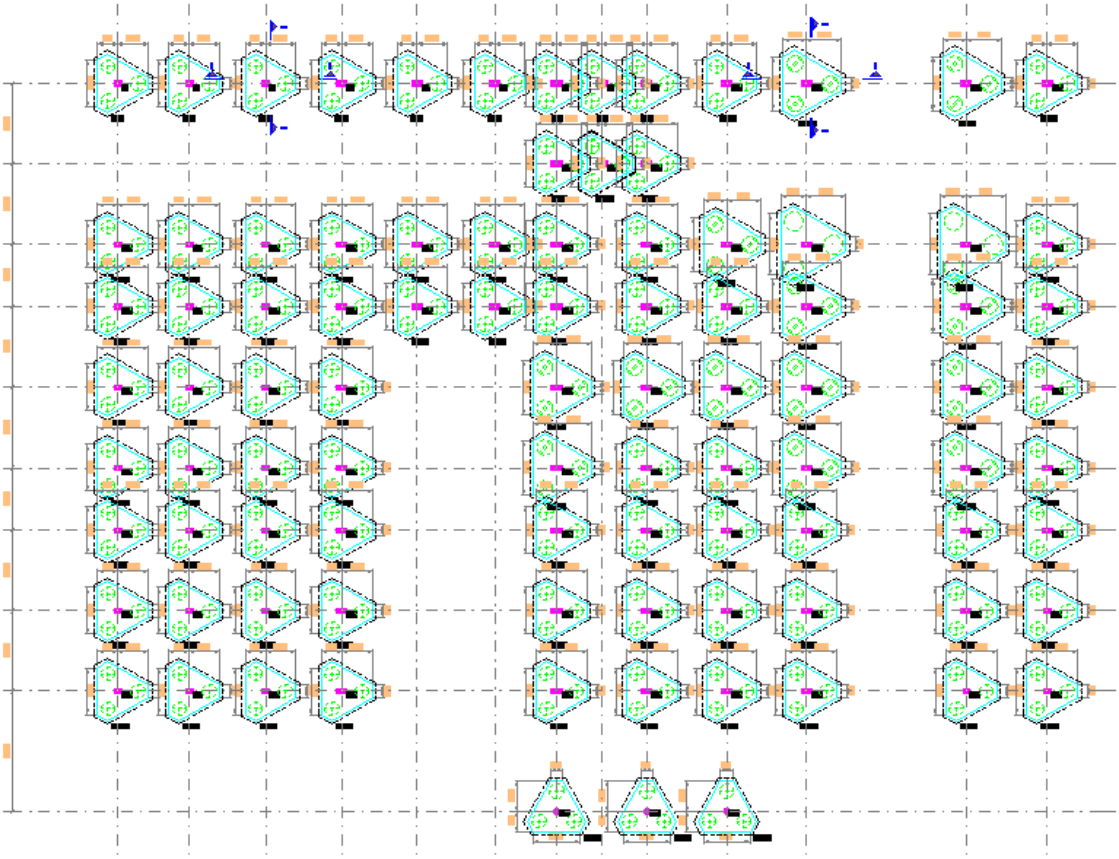


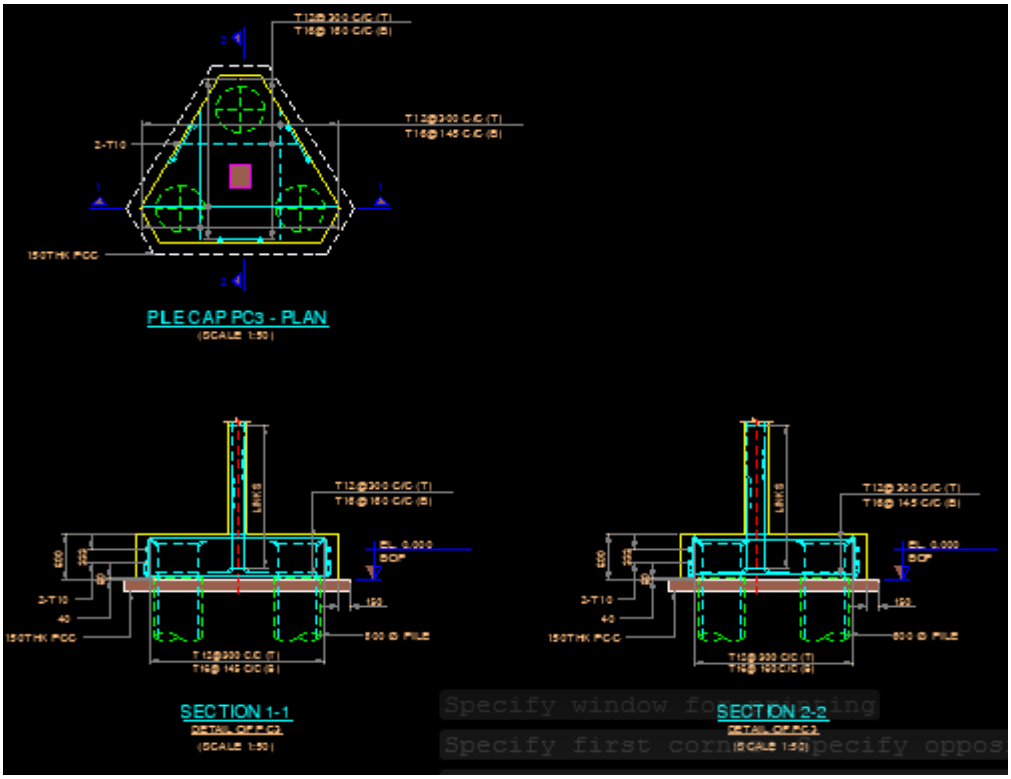
Application of Loads

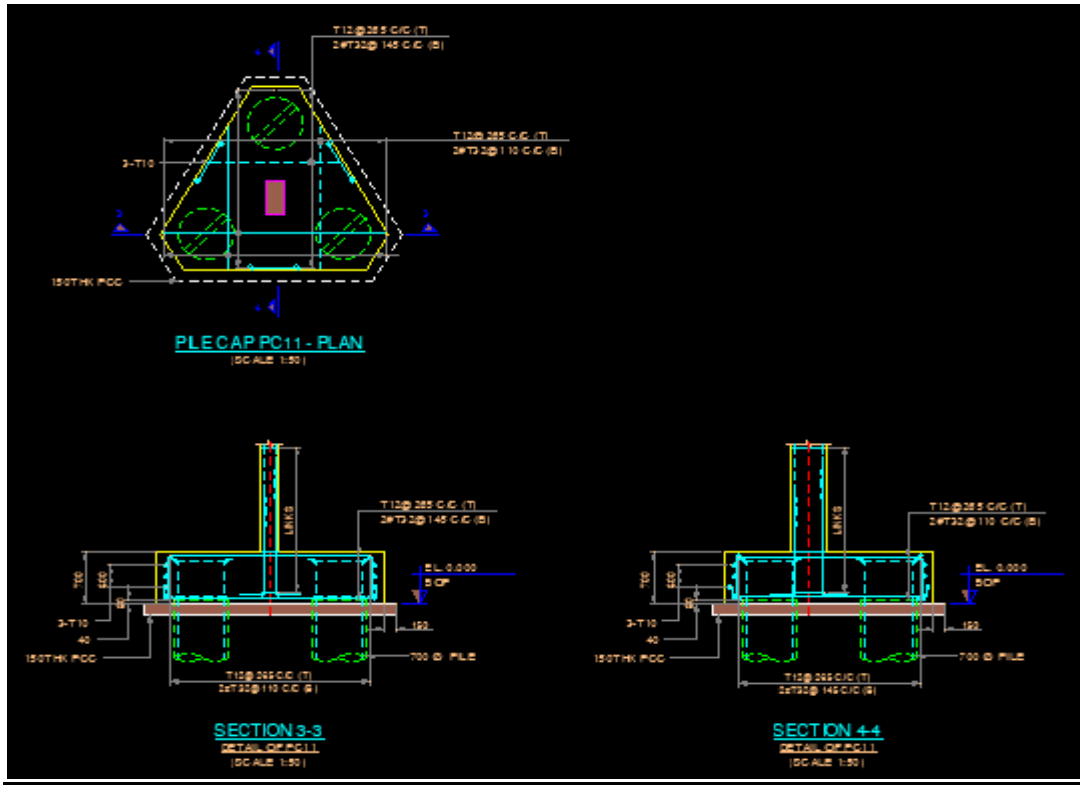




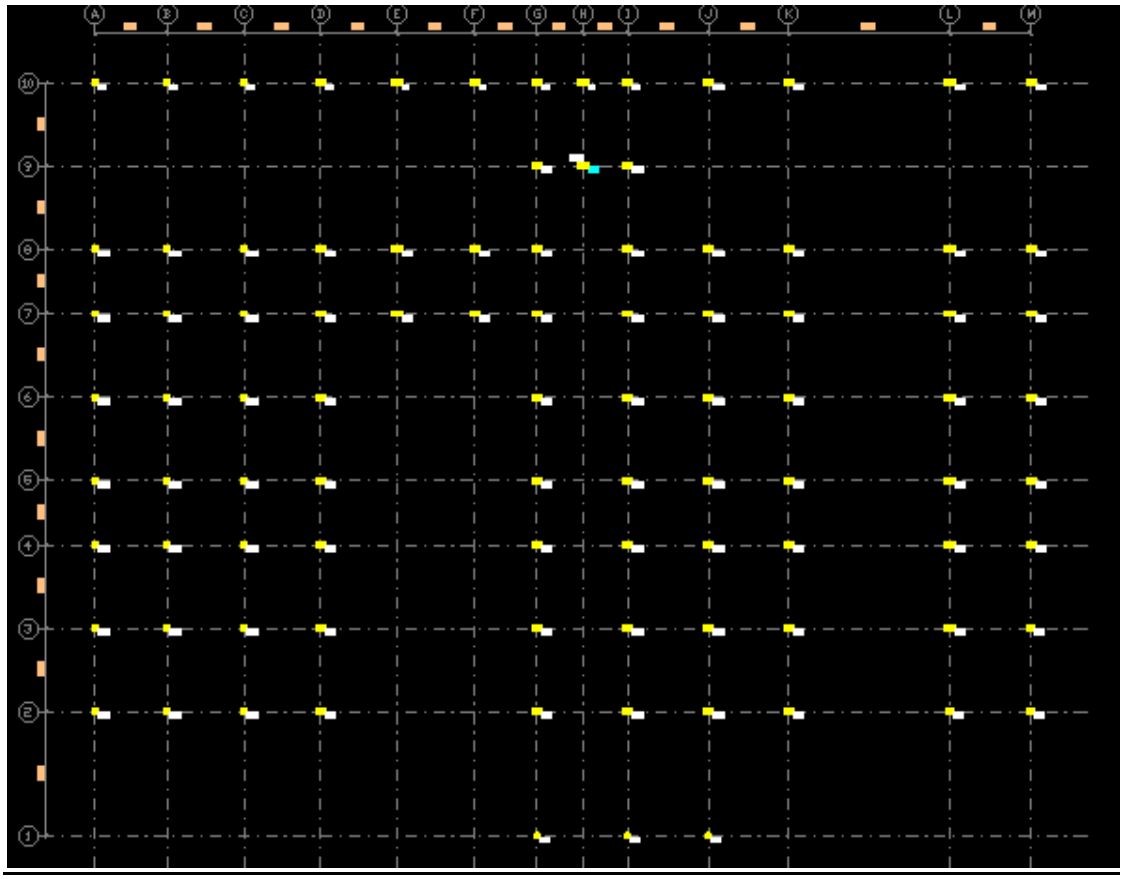
Pile footing layout of the structure



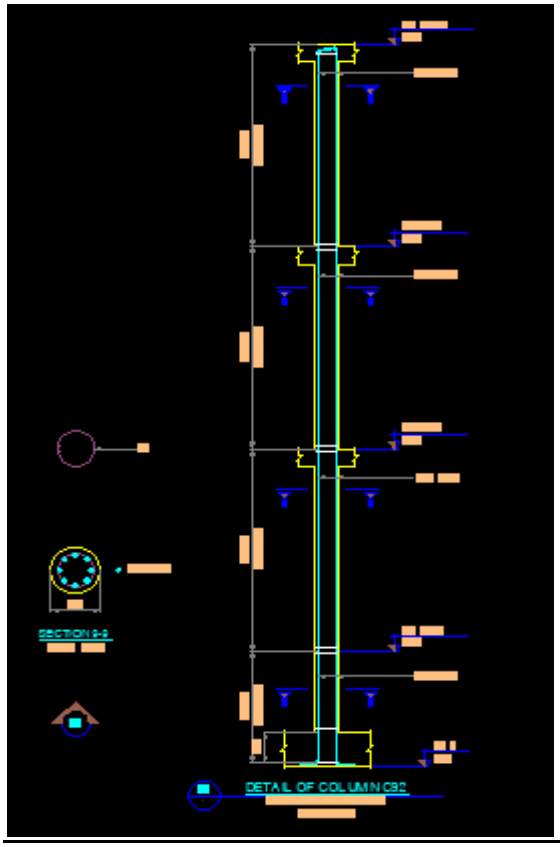


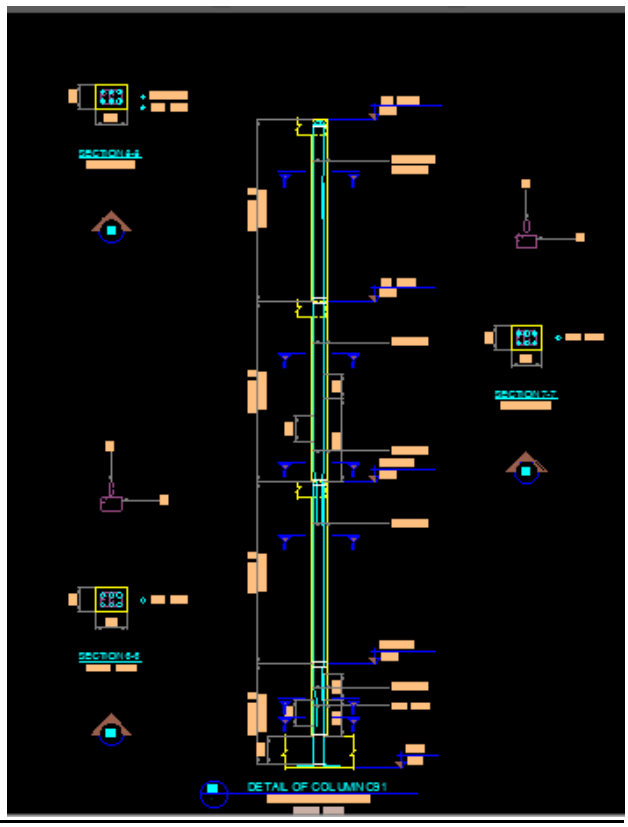


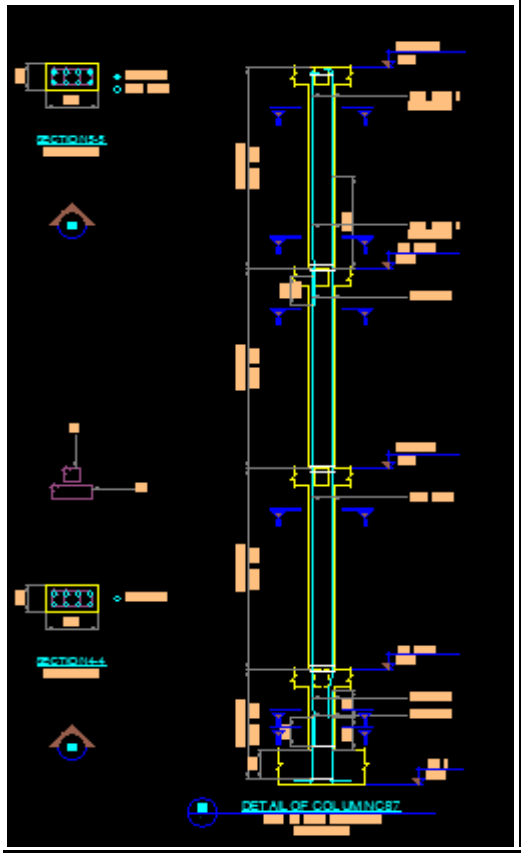
Detailled section of the pile footings.

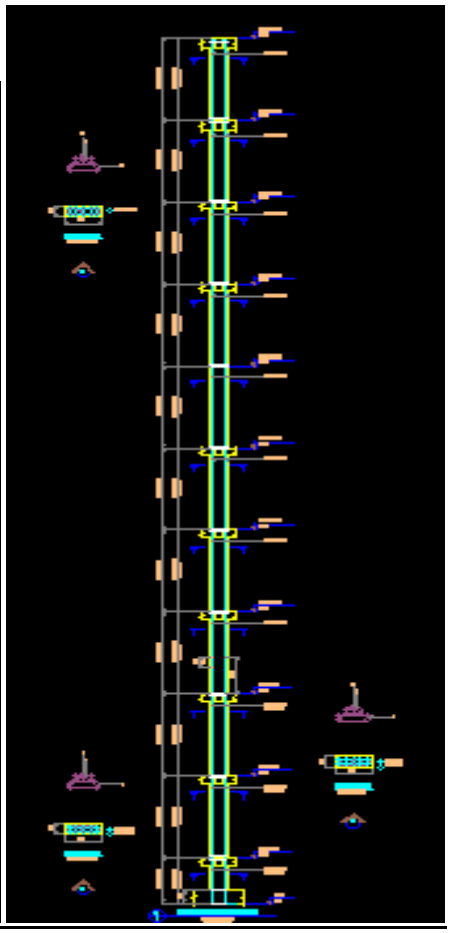


Column layout of the structure

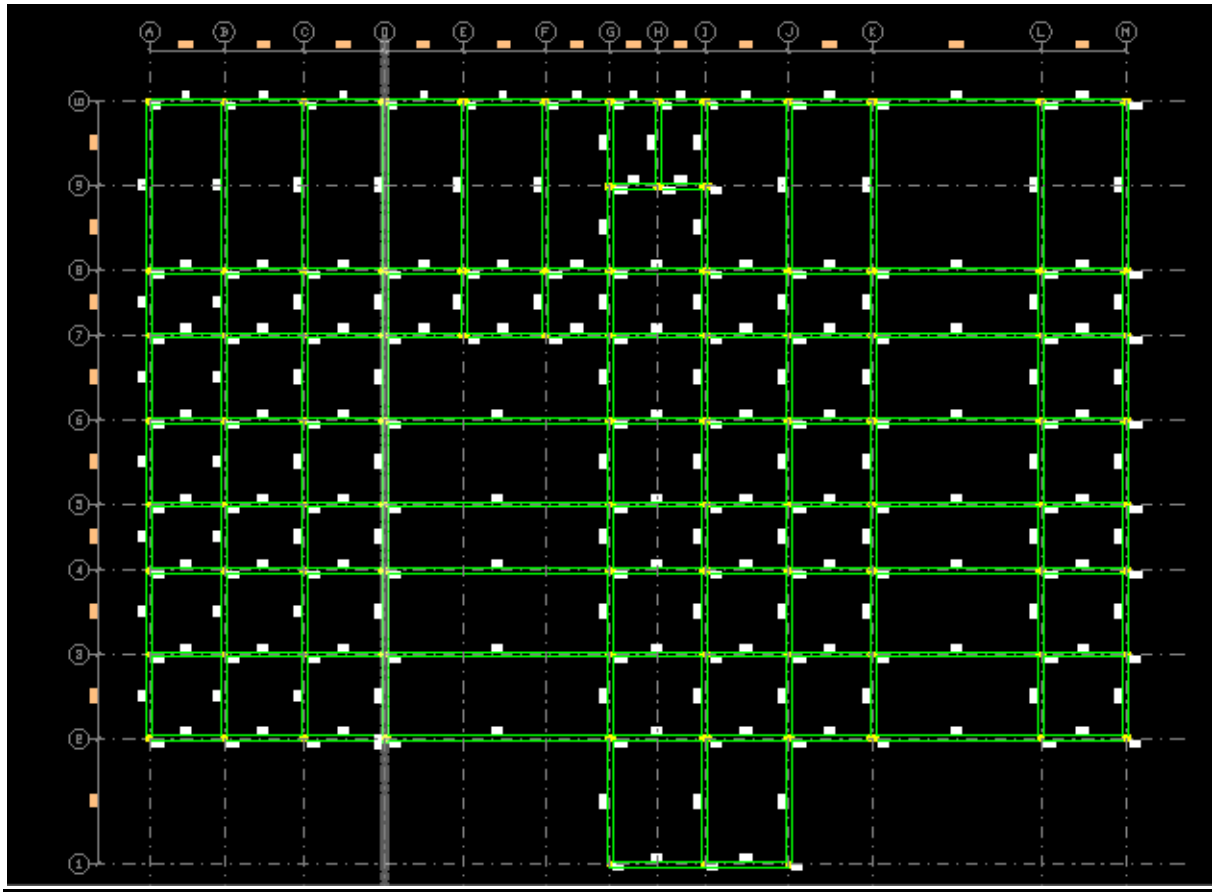


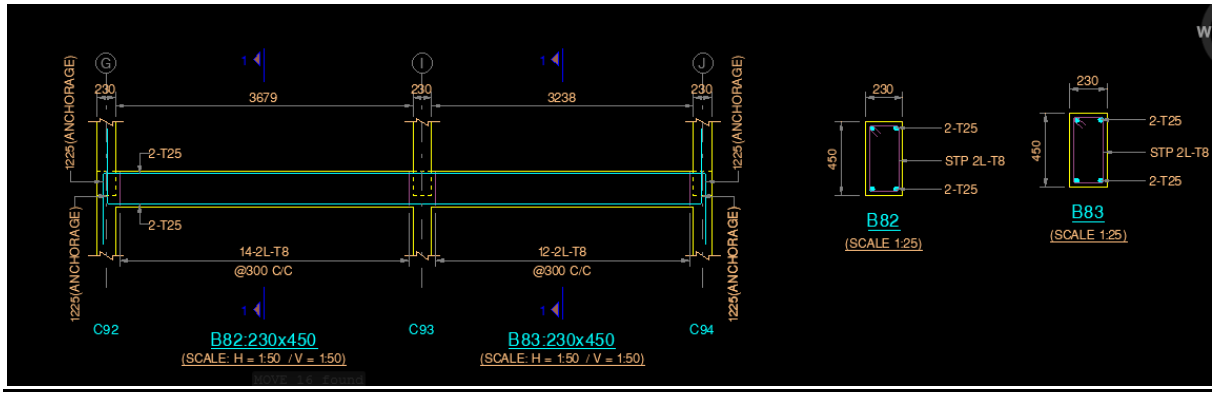




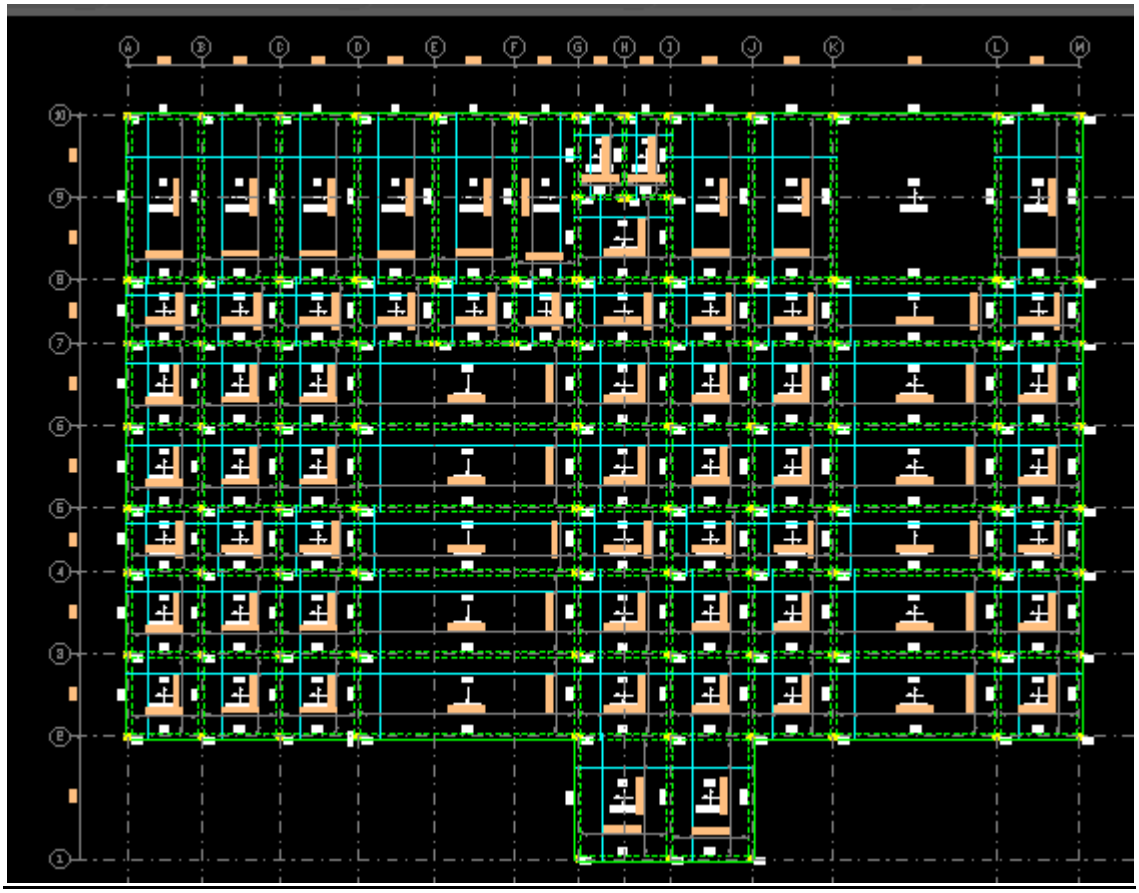


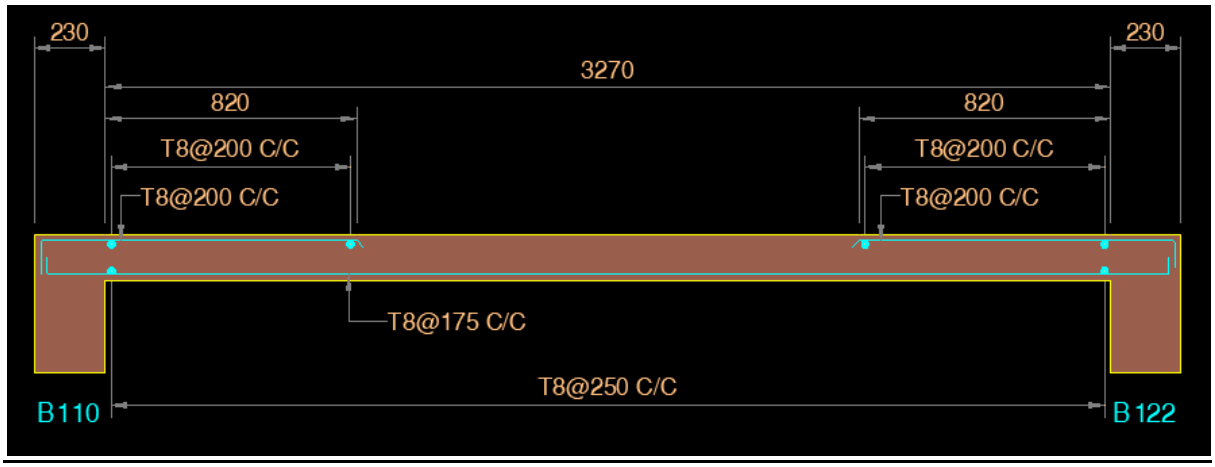
Column detailed drawing and elevation.





Beam layout and cross-sectional diagram.





Slab layout and cross-sectional diagram.