



University of Asia Pacific

Project

Course Code: CE 418

Submitted To:

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University of Asia Pacific

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Section: B

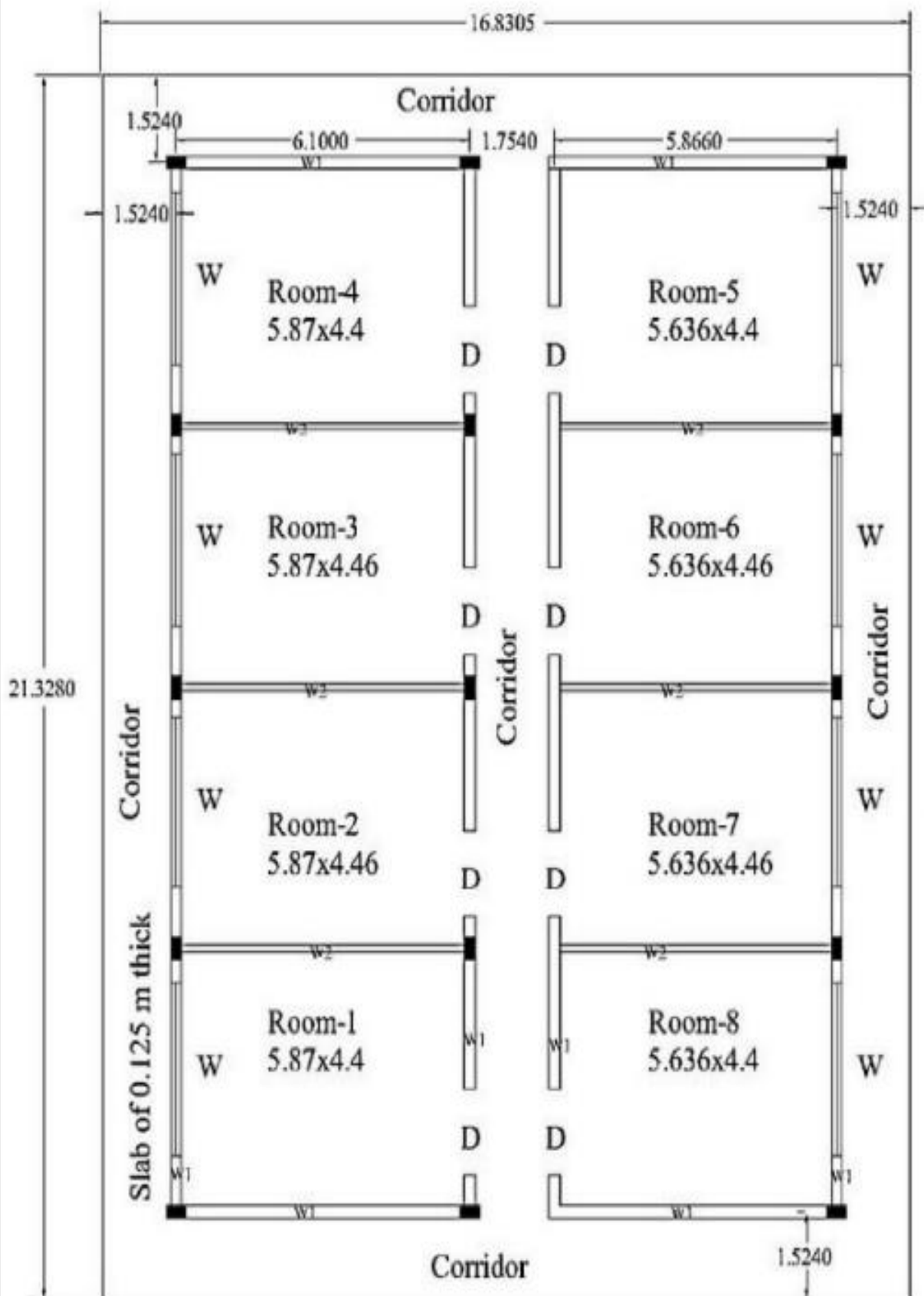


Fig:10 Story Building

District: Noakhali

Total Story: 10

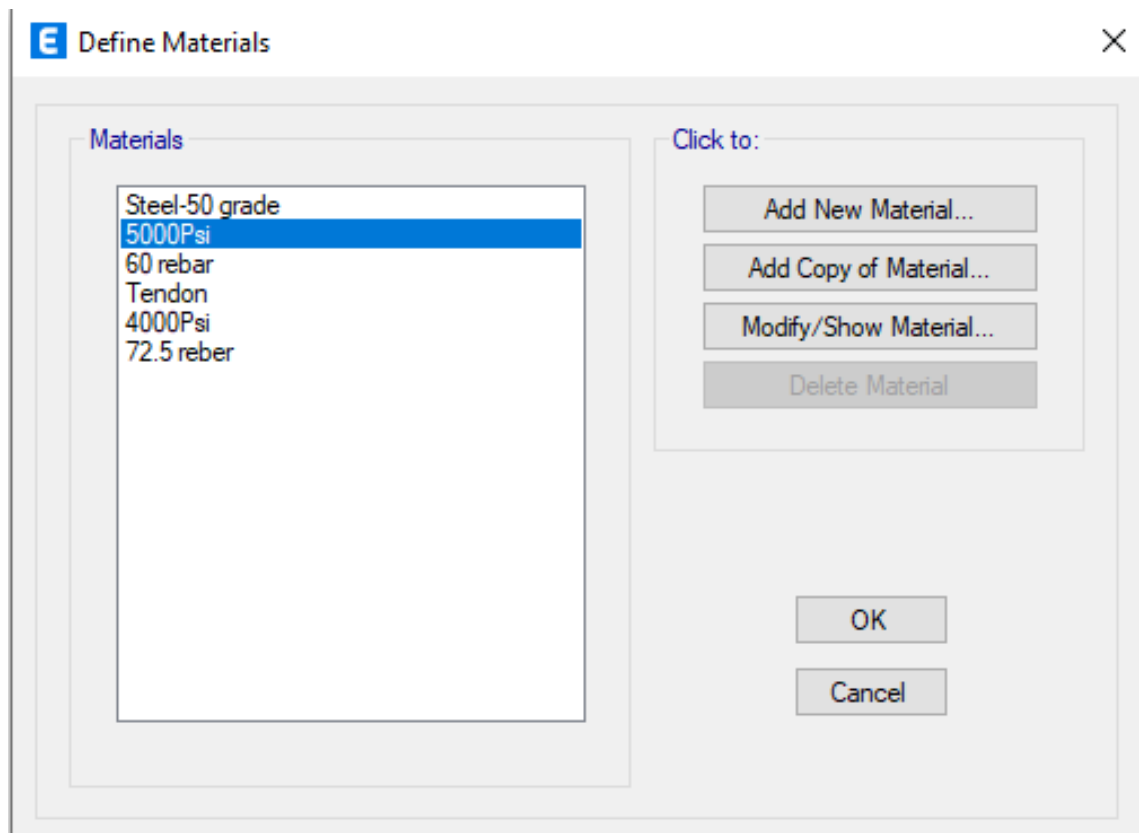
Building Type: Shopping Center

Soil Type: 2

Story height: 10ft

Base Height: 5ft

Material Property:



E

Material Property Data

×

General Data

Material Name

5000Psi

Material Type

Concrete

▼

Directional Symmetry Type

Isotropic

▼

Material Display Color

Change...

Material Notes

Modify/Show Notes...

Material Weight and Mass

☒ Specify Weight Density

☐ Specify Mass Density

Weight per Unit Volume

2.356E-08

kN/mm³

Mass per Unit Volume

0

kN-s²/mm⁴

Mechanical Property Data

Modulus of Elasticity, E

27.7894

kN/mm²

Poisson's Ratio, U

0.2

Coefficient of Thermal Expansion, A

0.0000055

1/F

Shear Modulus, G

11.5789

kN/mm²

Design Property Data

Modify/Show Material Property Design Data...

Advanced Material Property Data

Nonlinear Material Data...

Material Damping Properties...

Time Dependent Properties...

Modulus of Rupture for Cracked Deflections

☒ Program Default (Based on Concrete Slab Design Code)

☐ User Specified

OK

Cancel

Frame Section:

Frame Properties



Filter Properties List

Type

Filter

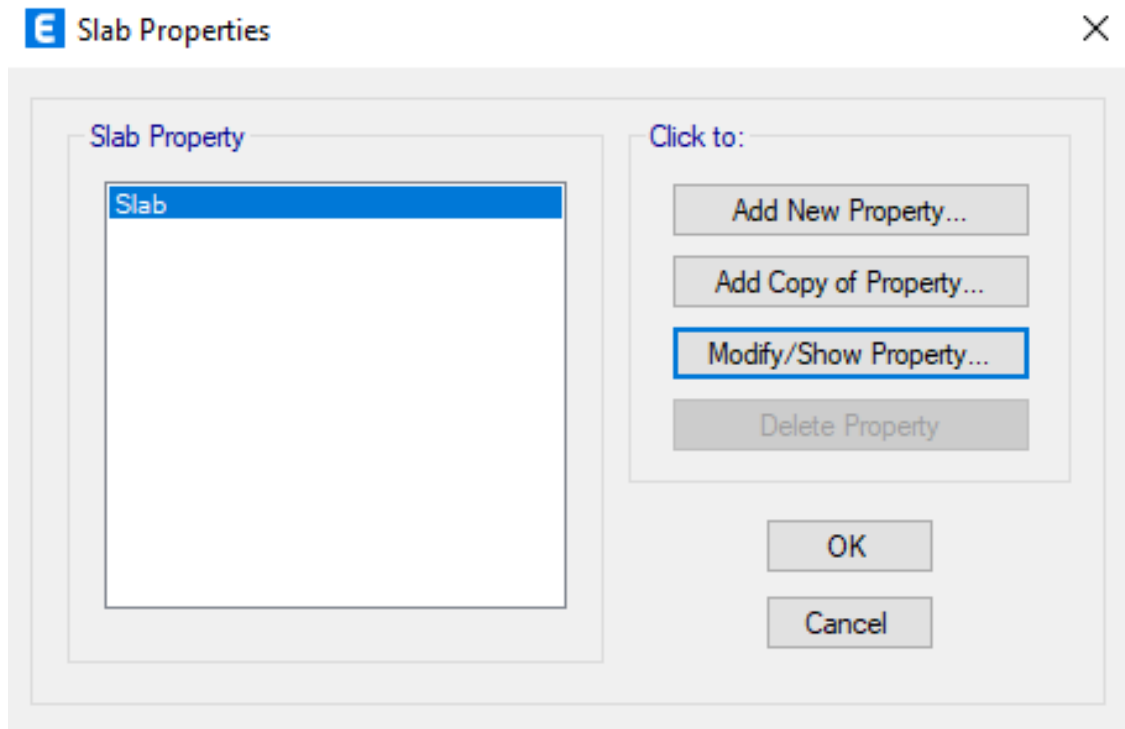
Properties

Find This Property

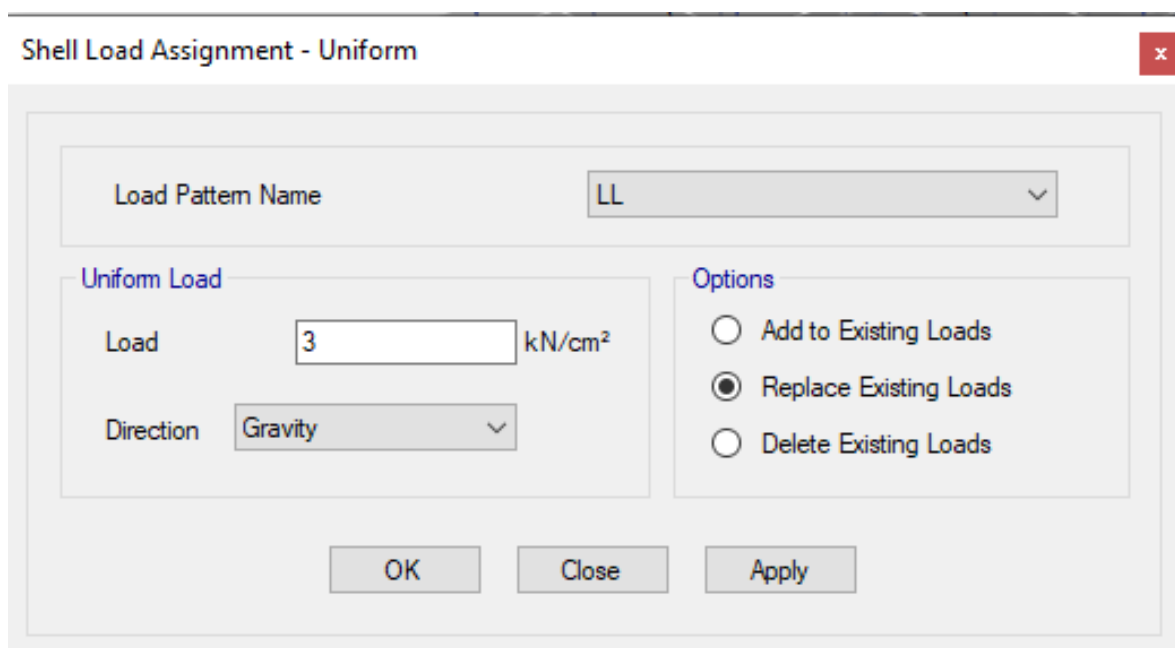
Col- 230mmX400mm
Col- 230mmX400mm
Col- 400mmX300mm
Col 500mmX350mm
Floor beam- 280mmX280mm
W1- 230mmX500mm
W2- 110mmX400mm

Click to:

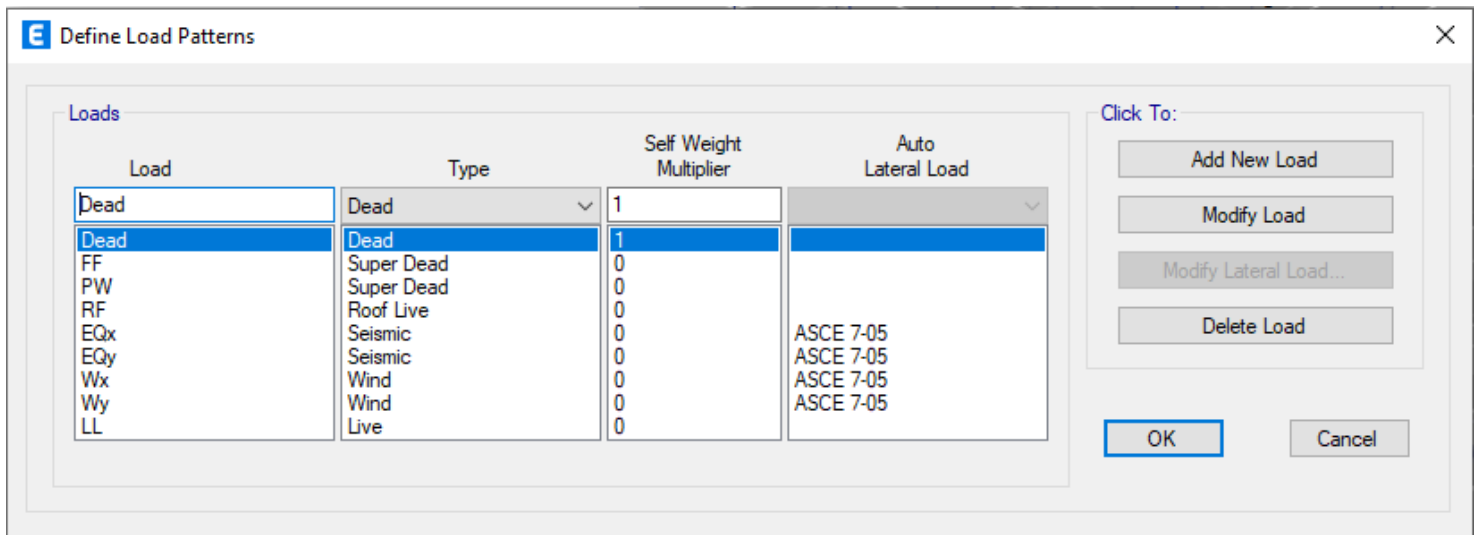
Slab Section:



Load:



Load Pattern:



The "Define Load Patterns" dialog box is used to define and manage load patterns. It features a table with columns for Load, Type, Self Weight Multiplier, and Auto Lateral Load. A "Click To:" panel on the right contains buttons for "Add New Load", "Modify Load", "Modify Lateral Load...", and "Delete Load".

Load	Type	Self Weight Multiplier	Auto Lateral Load
Dead	Dead	1	
Dead	Dead	1	
FF	Super Dead	0	
PW	Super Dead	0	
RF	Roof Live	0	
EQx	Seismic	0	ASCE 7-05
EQy	Seismic	0	ASCE 7-05
Wx	Wind	0	ASCE 7-05
Wy	Wind	0	ASCE 7-05
LL	Live	0	

Click To:

Add New Load

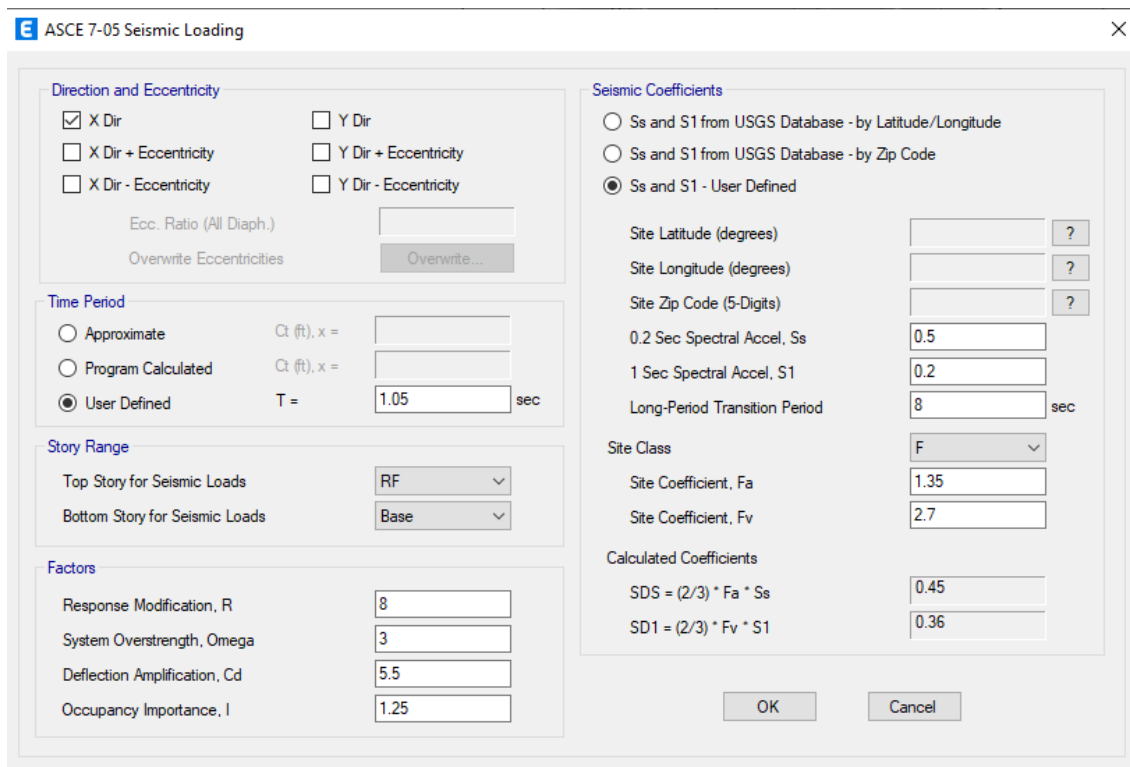
Modify Load

Modify Lateral Load...

Delete Load

OK Cancel

Direction and Eccentricity:



The "ASCE 7-05 Seismic Loading" dialog box is used to configure seismic loading parameters. It includes sections for Direction and Eccentricity, Time Period, Story Range, Factors, and Seismic Coefficients.

Direction and Eccentricity

☒ X Dir ☐ Y Dir

☐ X Dir + Eccentricity ☐ Y Dir + Eccentricity

☐ X Dir - Eccentricity ☐ Y Dir - Eccentricity

Ecc. Ratio (All Diaph.)

Overwrite Eccentricities

Time Period

☐ Approximate ☐ Program Calculated ☒ User Defined

C_t (ft), x =

T = 1.05 sec

Story Range

Top Story for Seismic Loads RF

Bottom Story for Seismic Loads Base

Factors

Response Modification, R 8

System Overstrength, Omega 3

Deflection Amplification, Cd 5.5

Occupancy Importance, I 1.25

Seismic Coefficients

☐ Ss and S1 from USGS Database - by Latitude/Longitude

☐ Ss and S1 from USGS Database - by Zip Code

☒ Ss and S1 - User Defined

Site Latitude (degrees)

Site Longitude (degrees)

Site Zip Code (5-Digits)

0.2 Sec Spectral Accel, Ss 0.5

1 Sec Spectral Accel, S1 0.2

Long-Period Transition Period 8 sec

Site Class F

Site Coefficient, Fa 1.35

Site Coefficient, Fv 2.7

Calculated Coefficients

$SDS = (2/3) * Fa * Ss$ 0.45

$SD1 = (2/3) * Fv * S1$ 0.36

OK Cancel

Fig: EQx

ASCE 7-05 Seismic Loading

Direction and Eccentricity

☐ X Dir ☒ Y Dir
☐ X Dir + Eccentricity ☐ Y Dir + Eccentricity
☐ X Dir - Eccentricity ☐ Y Dir - Eccentricity

Ecc. Ratio (All Diaph.)

Overwrite Eccentricities

Time Period

☐ Approximate Ct (ft), x =
☐ Program Calculated Ct (ft), x =
☒ User Defined T = sec

Story Range

Top Story for Seismic Loads

Bottom Story for Seismic Loads

Factors

Response Modification, R

System Overstrength, Omega

Deflection Amplification, Cd

Occupancy Importance, I

Seismic Coefficients

☐ Ss and S1 from USGS Database - by Latitude/Longitude
☐ Ss and S1 from USGS Database - by Zip Code
☒ Ss and S1 - User Defined

Site Latitude (degrees) ?

Site Longitude (degrees) ?

Site Zip Code (5-Digits) ?

0.2 Sec Spectral Accel, Ss

1 Sec Spectral Accel, S1

Long-Period Transition Period sec

Site Class

Site Coefficient, Fa

Site Coefficient, Fv

Calculated Coefficients

SDS = (2/3) * Fa * Ss

SD1 = (2/3) * Fv * S1

E

Wind Load Pattern - ASCE 7-05

X

Exposure and Pressure Coefficients

☒ Exposure from Extents of Diaphragms

☐ Exposure from Frame and Shell Objects

☐ Include Shell Objects

☐ Include Frame Objects (Open Structure)

Wind Pressure Coefficients

☐ User Specified

☒ Program Determined

Windward Coefficient, Cpw

Leeward Coefficient, Cpl

Wind Exposure Parameters

Wind Direction and Exposure Width

Modify/Show...

Case (ASCE 7-05 Fig. 6-9)

Create All Sets

i

e1 Ratio (ASCE 7-05 Fig. 6-9)

0.15

e2 Ratio (ASCE 7-05 Fig. 6-9)

0.15

Wind Coefficients

Wind Speed (mph)

127.7291

Exposure Type

B

Importance Factor

1

Topographical Factor, Kzt

1

Gust Factor

0.85

Directionality Factor, Kd

0.85

Solid / Gross Area Ratio

Exposure Height

Top Story

RF

Bottom Story

GF

☐ Include Parapet

Parapet Height

cm

OK

Cancel

Load Combinations:

E Load Combinations

×

Combinations

1. 1.2D+1.6L+0.5Lr
2. 1.2D+1.6Lr+0.8W
DL COMBO

Click to:

Add New Combo...

Add Copy of Combo...

Modify/Show Combo...

Delete Combo

Add Default Design Combos...

Convert Combos to Nonlinear Cases...

OK

Cancel

E Load Combination Data

×

General Data

Load Combination Name

p. 1.2D+1.6Lr+0.8W

Combination Type

Linear Add

Notes

Modify/Show Notes...

Auto Combination

No

Define Combination of Load Case/Combo Results

Load Name	Scale Factor
DL COMBO	1.2
RF	1.6
Wx	0.8
Wy	0.8

Add

Delete

OK

Cancel

Building Model:

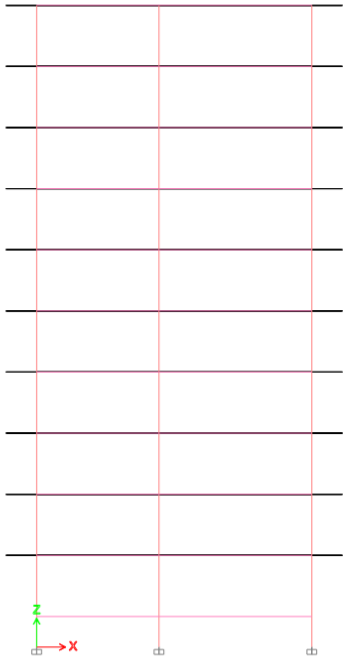


Fig: Elevation

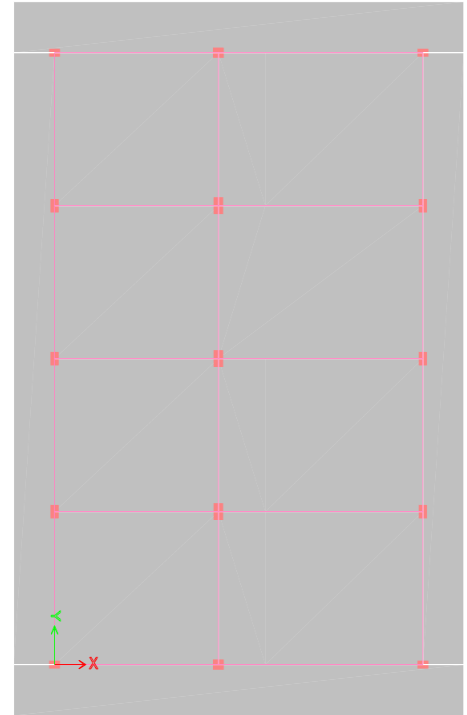


Fig: Plan View

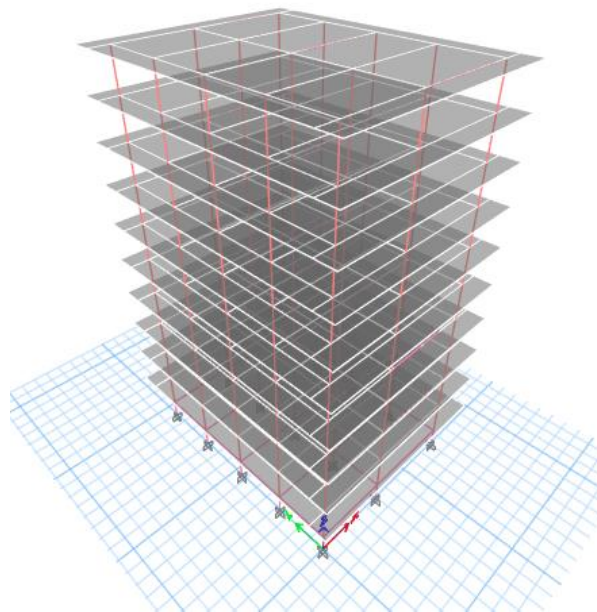
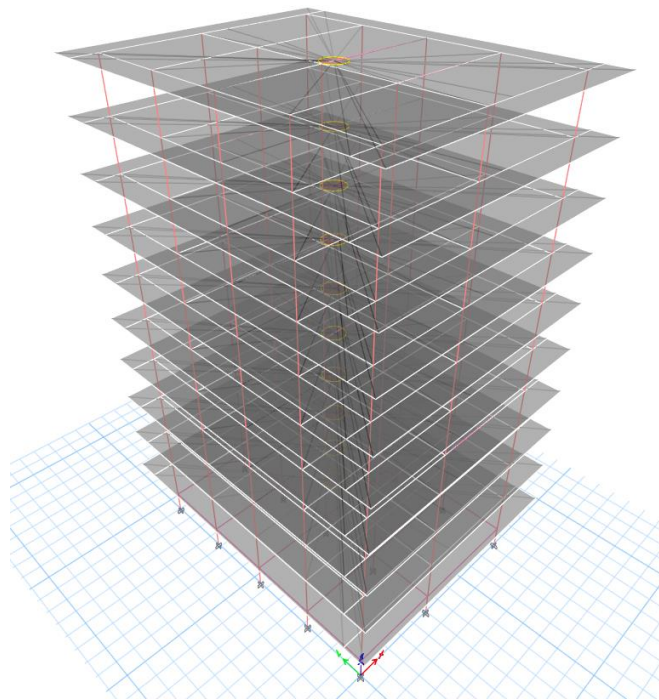
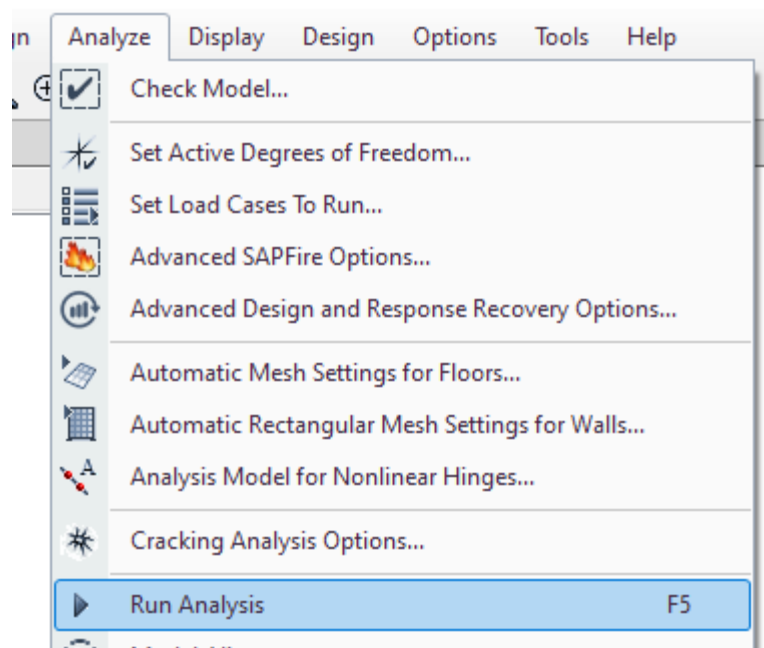


Fig: 3D View

Diaphragms:



Run Analysis and Design:



Result:

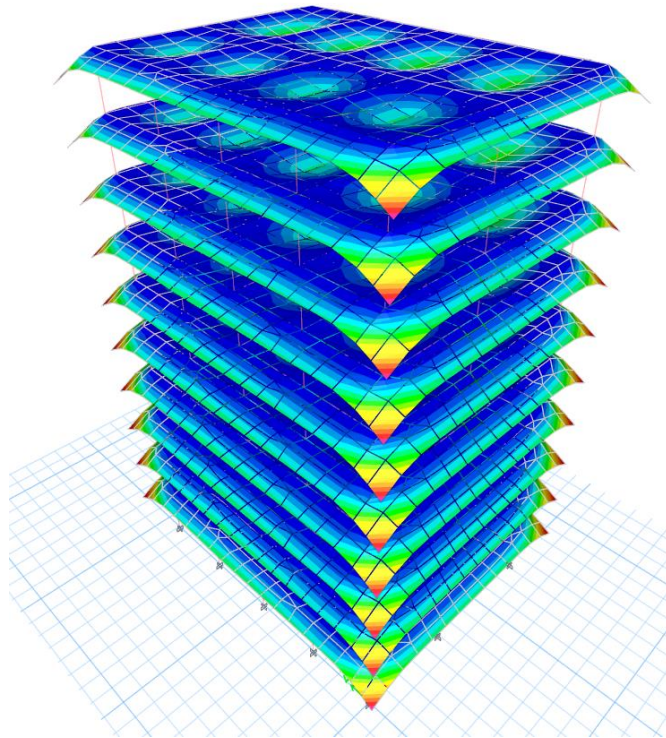


Fig: Deformed Shape

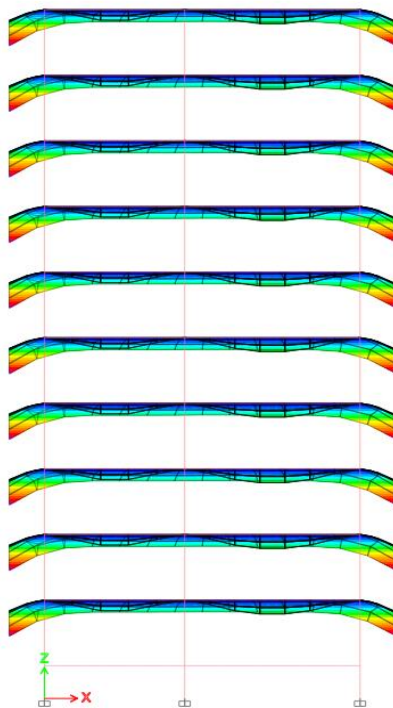


Fig: Elevation-01

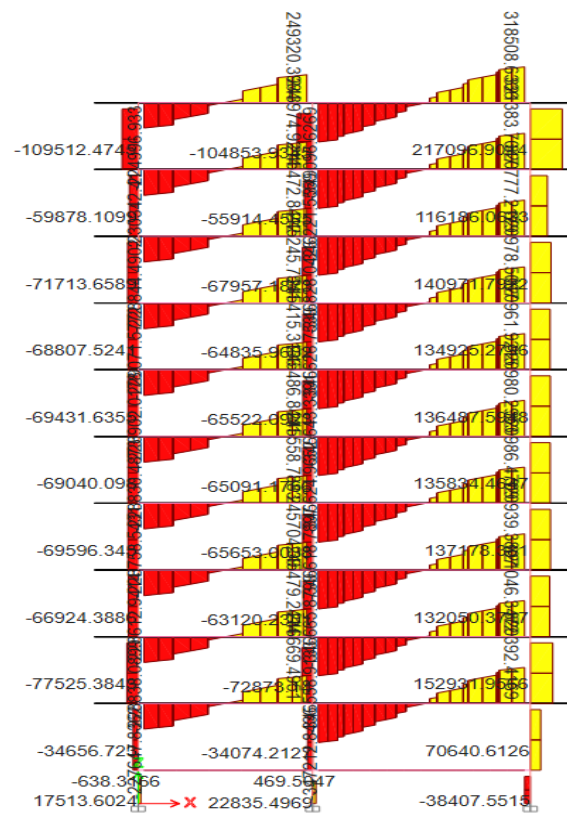


Fig: Shear 2-2 Diagram

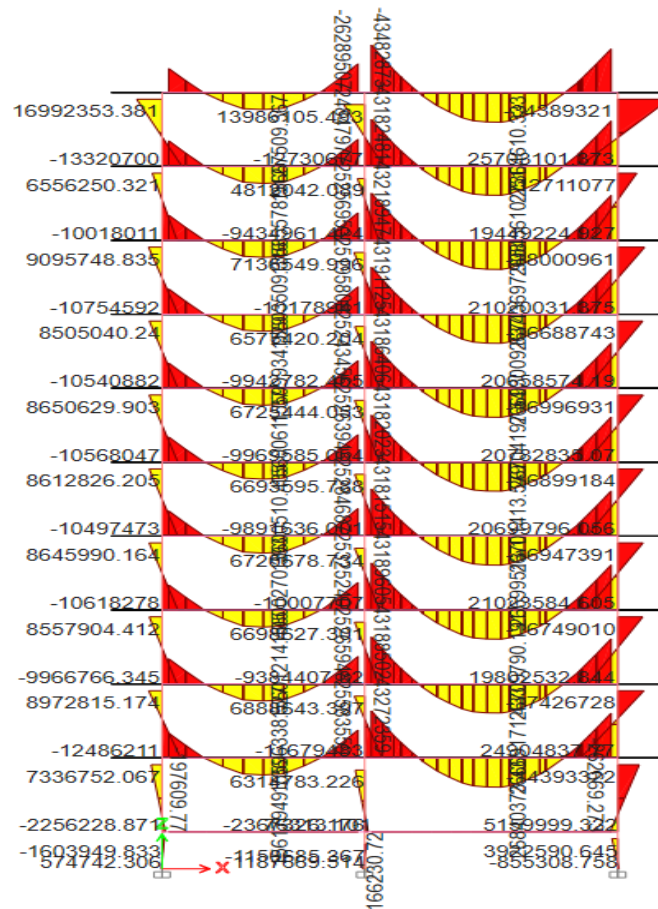


Fig: Moment 3-3 Diagram

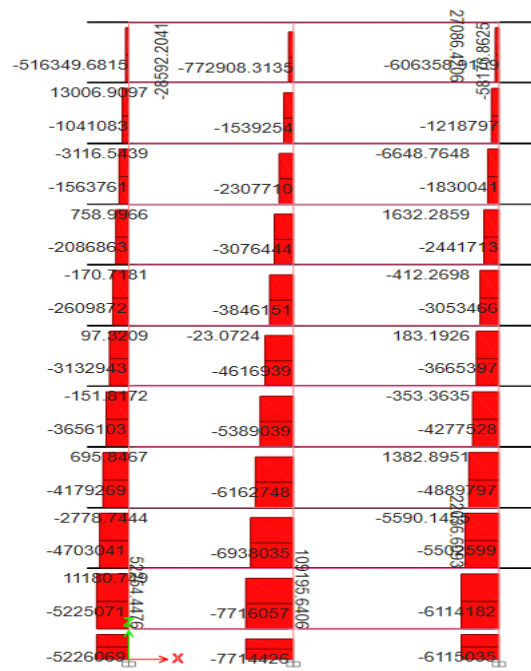
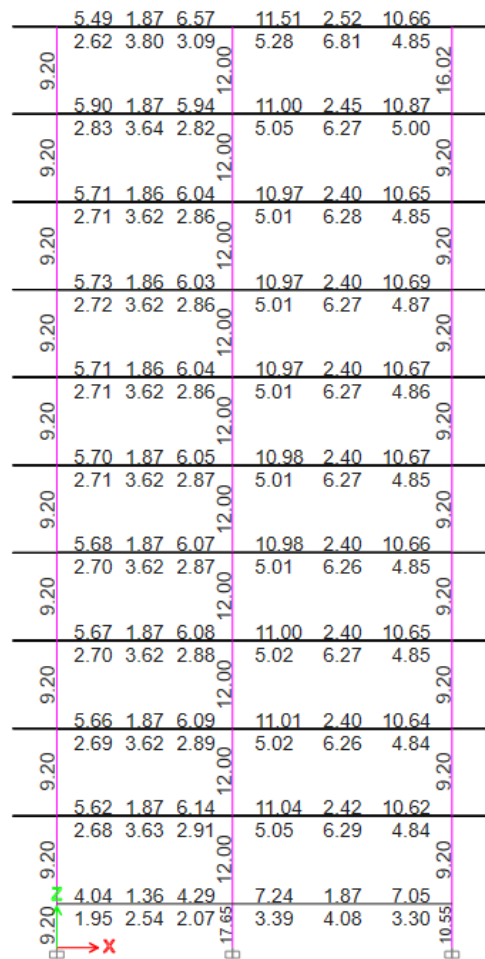
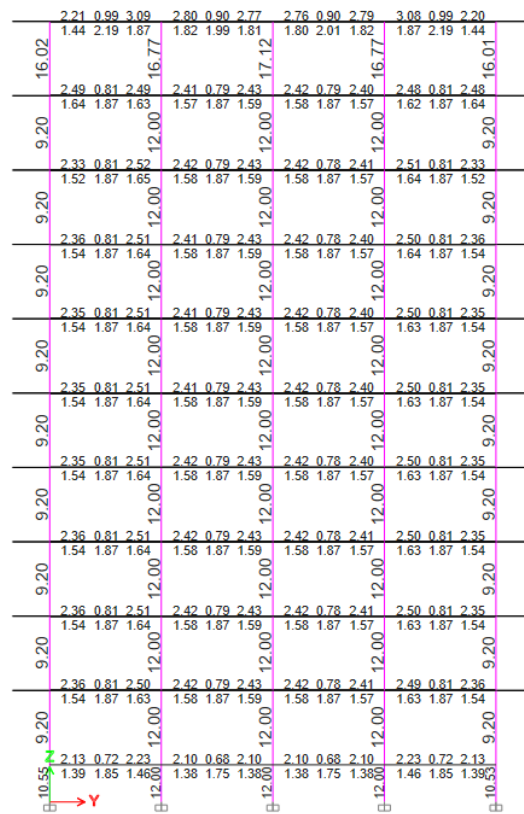


Fig: Axial Force Diagram



Elevation- A



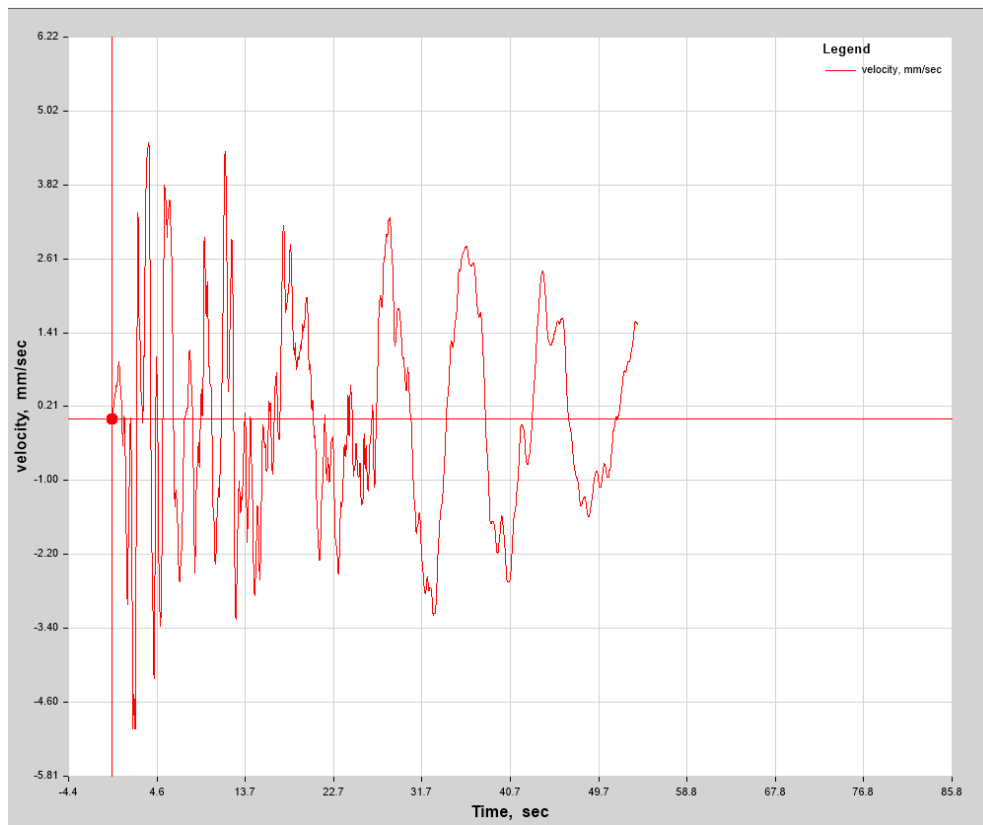


Fig: velocity

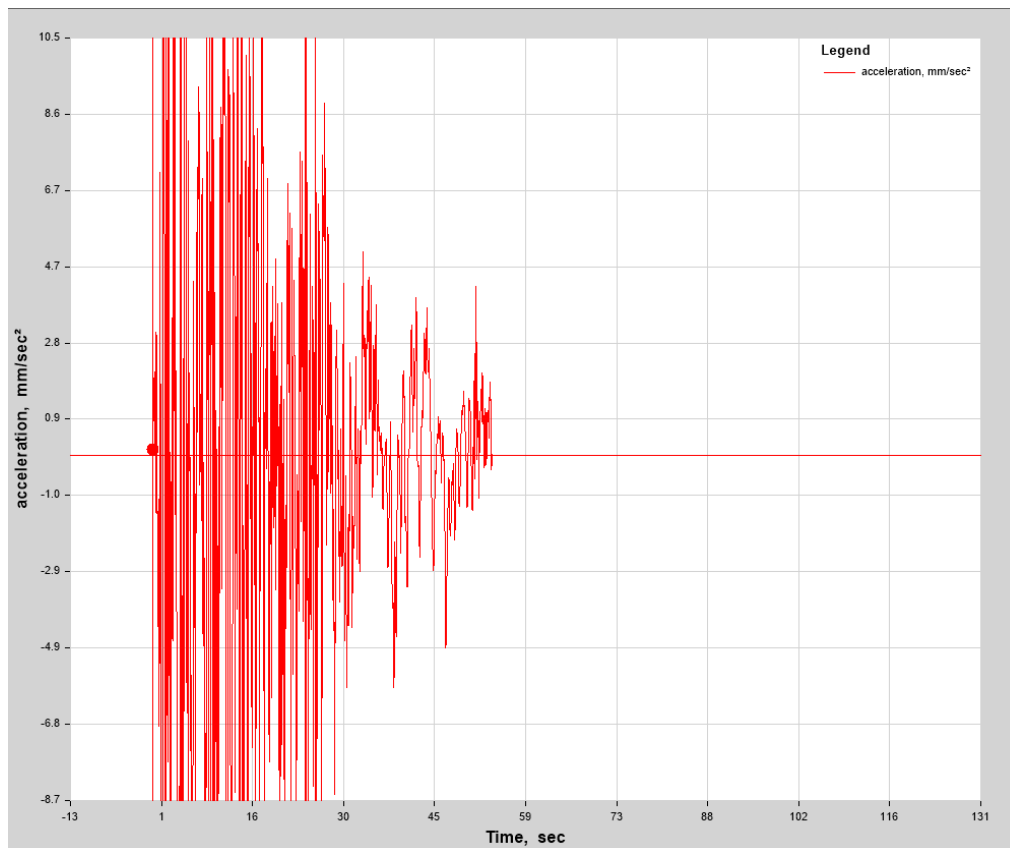
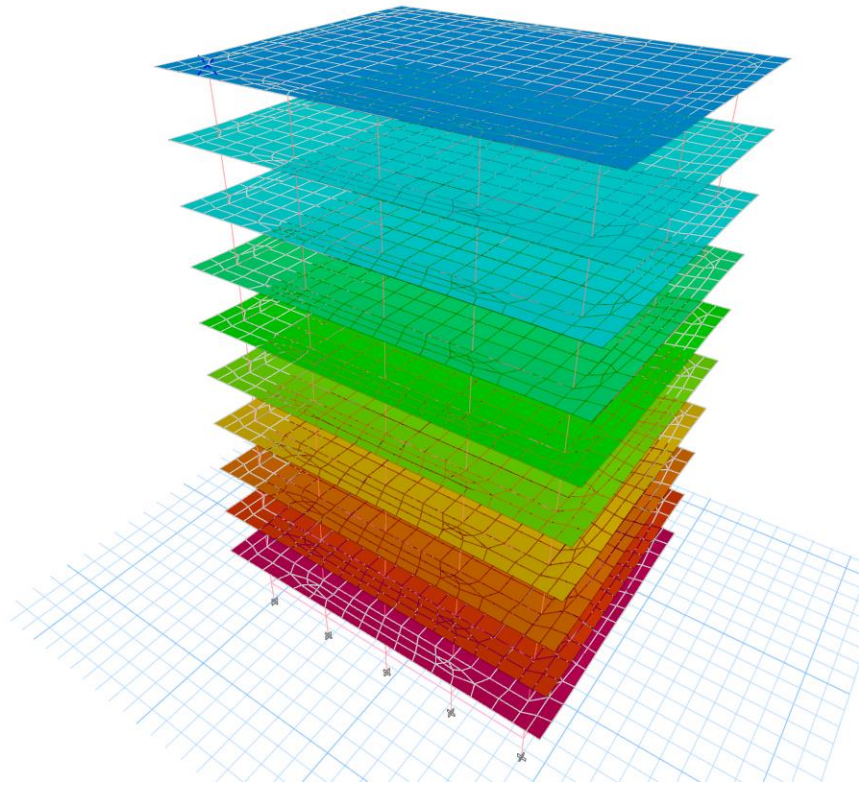
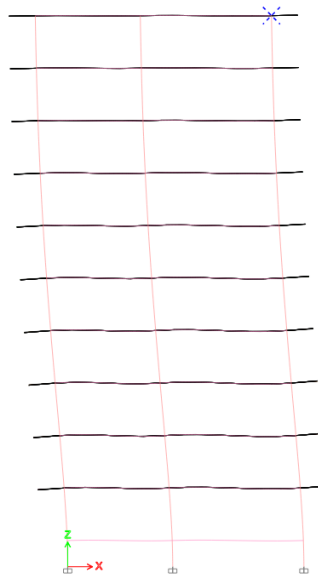
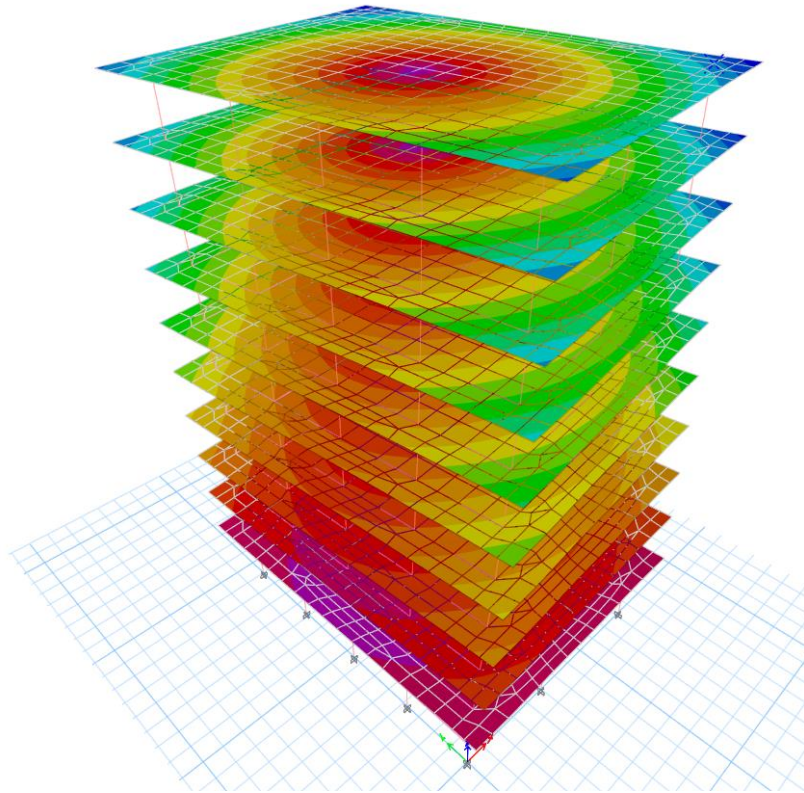
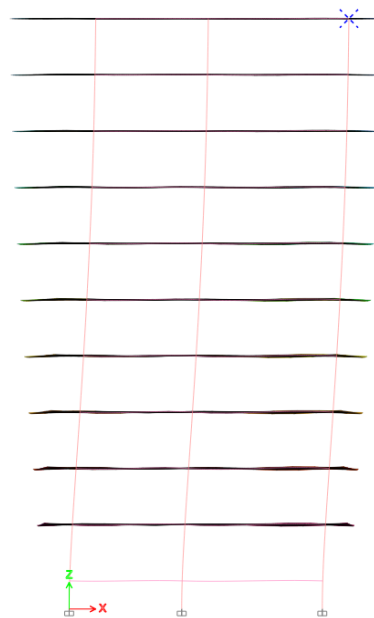
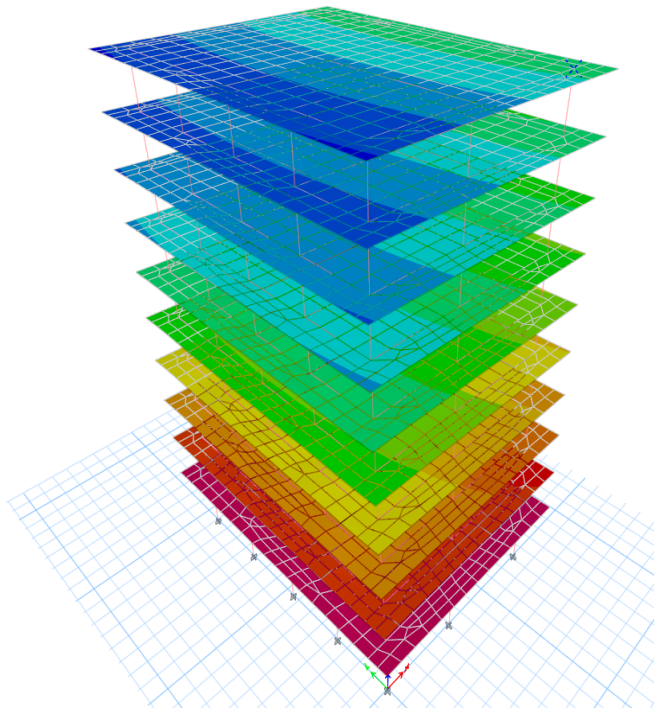


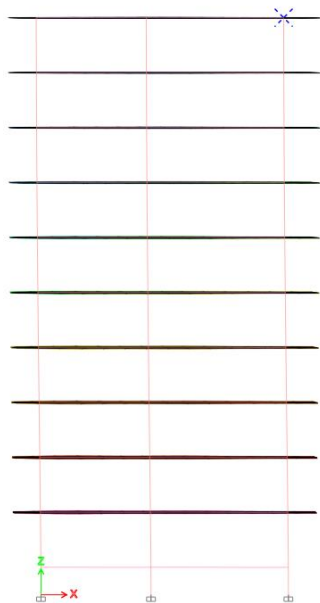
Fig: Acceleration

**3D View Mode-01****Elevation View-01 Mode-01**

**3D view Mode-02****Elevation-01 Mode-02**



3D view Mode-03



Elevation-01 Mode-03

Modal Frequency:

Mode-1:

$$f = \frac{1}{8.518} = 0.1174 \text{ Hz}$$

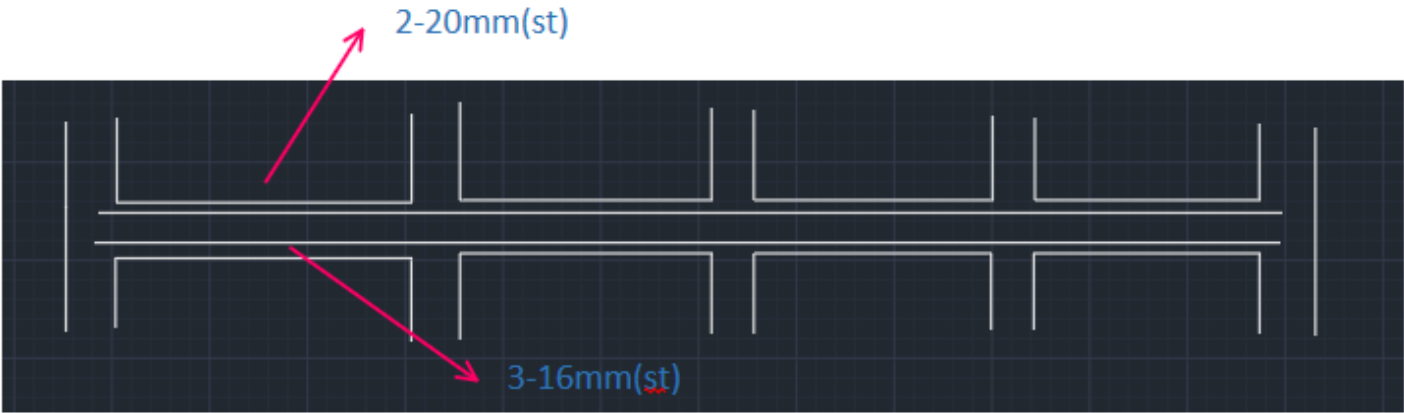
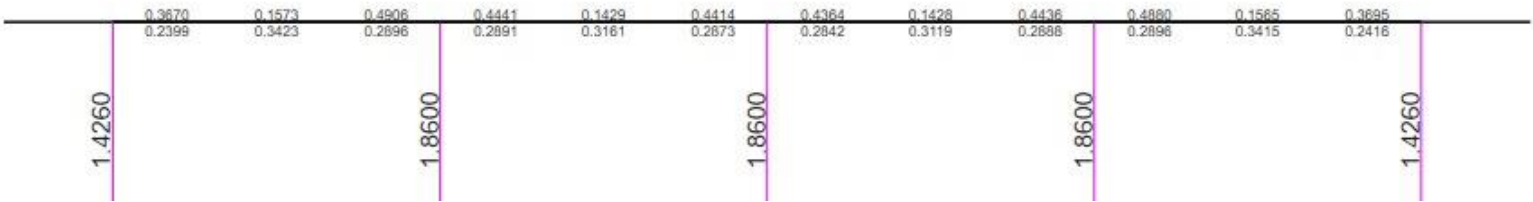
Mode-2:

$$f = \frac{1}{5.578} = 0.1793 \text{ Hz}$$

Mode-03:

$$f = \frac{1}{4.071} = 0.4564 \text{ Hz}$$

Beam Detailing (RF B1)



Column Detailing, Column-3C (16x12in²)

$$A=2.10\text{in}^2$$

