

PERFORMANCE EVALUATION OF REINFORCED CONCRETE FRAME STRUCTURE IN SAP 2000

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Introduction...

Performance levels

Level 1

➤ **Operational**

Minor disruption and required repairs are minor.

Level 2

➤ **Immediate occupancy**

The risk of life-threatening injury from structural failure is negligible.

Level 3

➤ **Life safety**

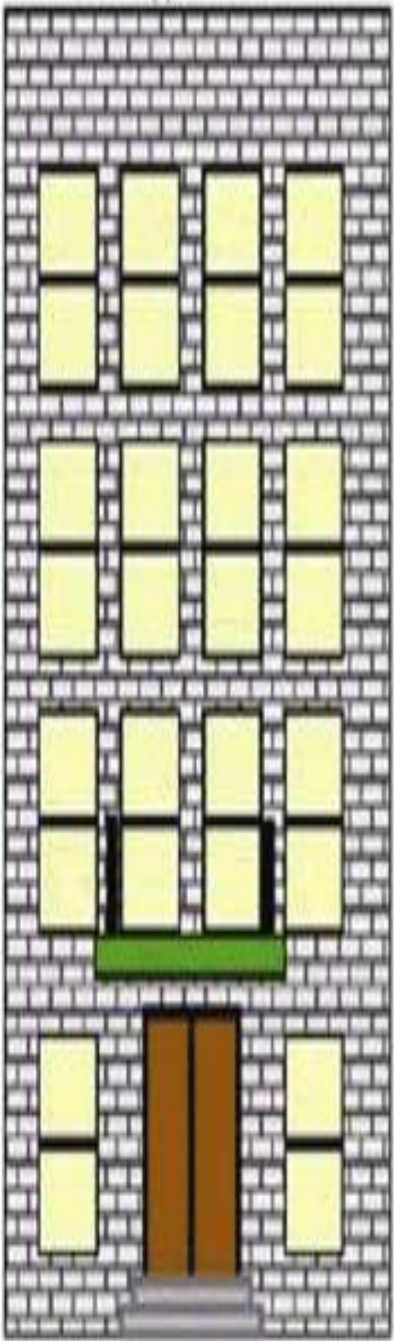
Damage state presents an extremely high probability of threat.

Level 4

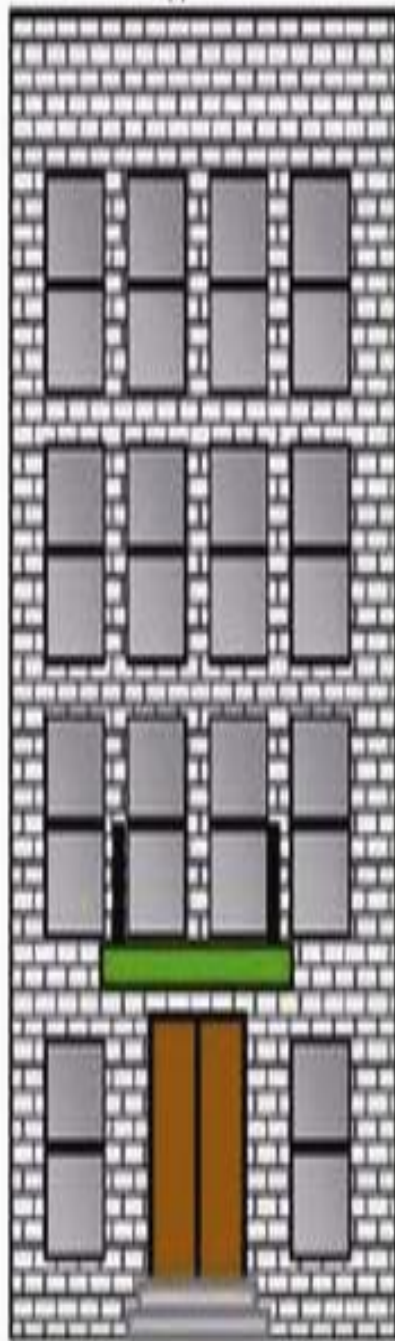
➤ **Structural Collapse**

Structure collapse occur.

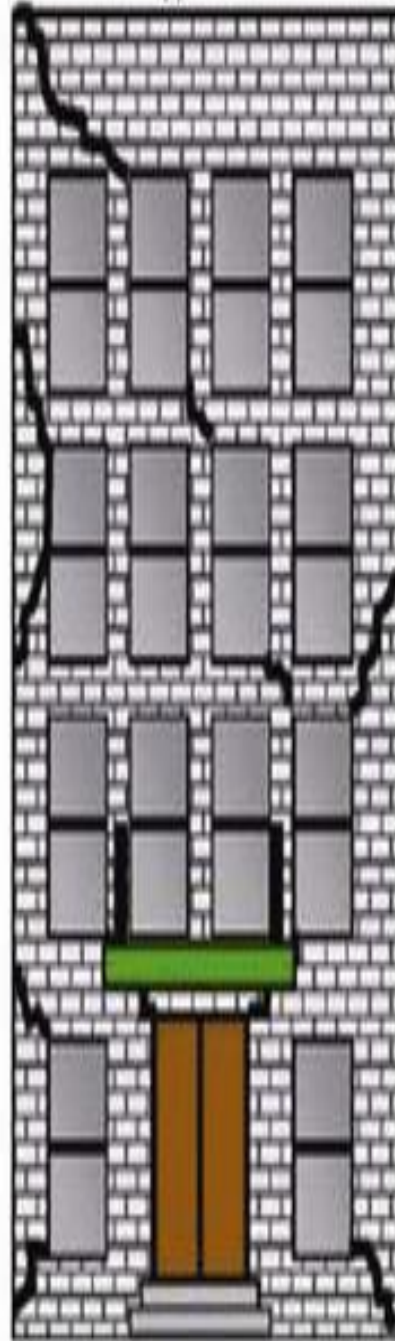
(a)



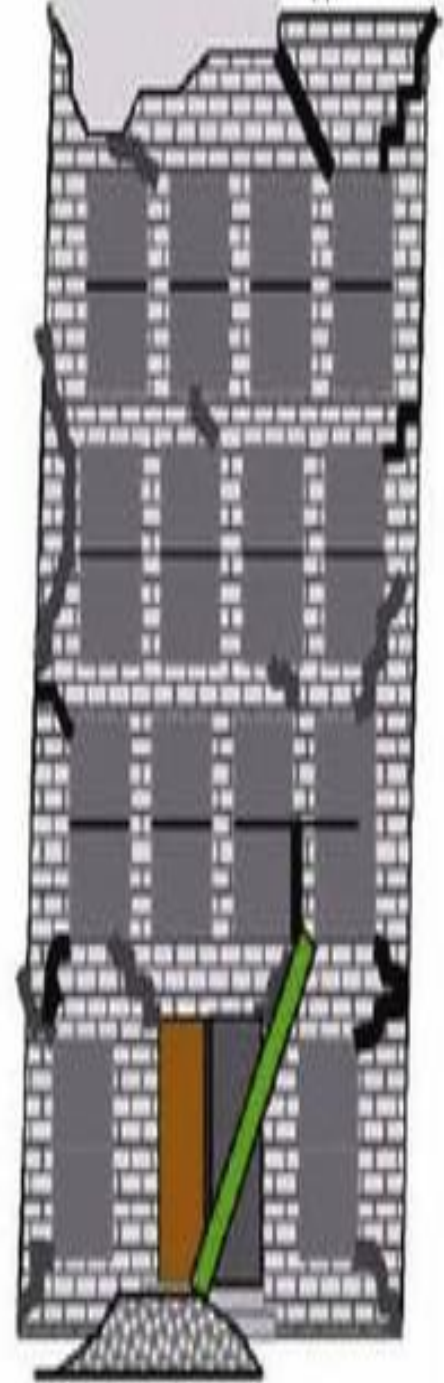
(b)



(c)



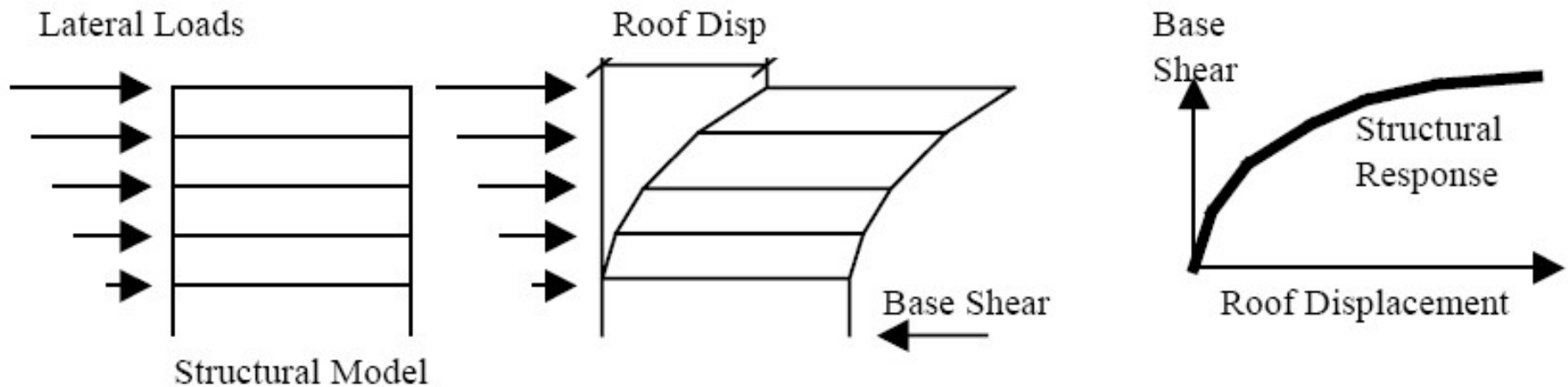
(d)



Introduction...

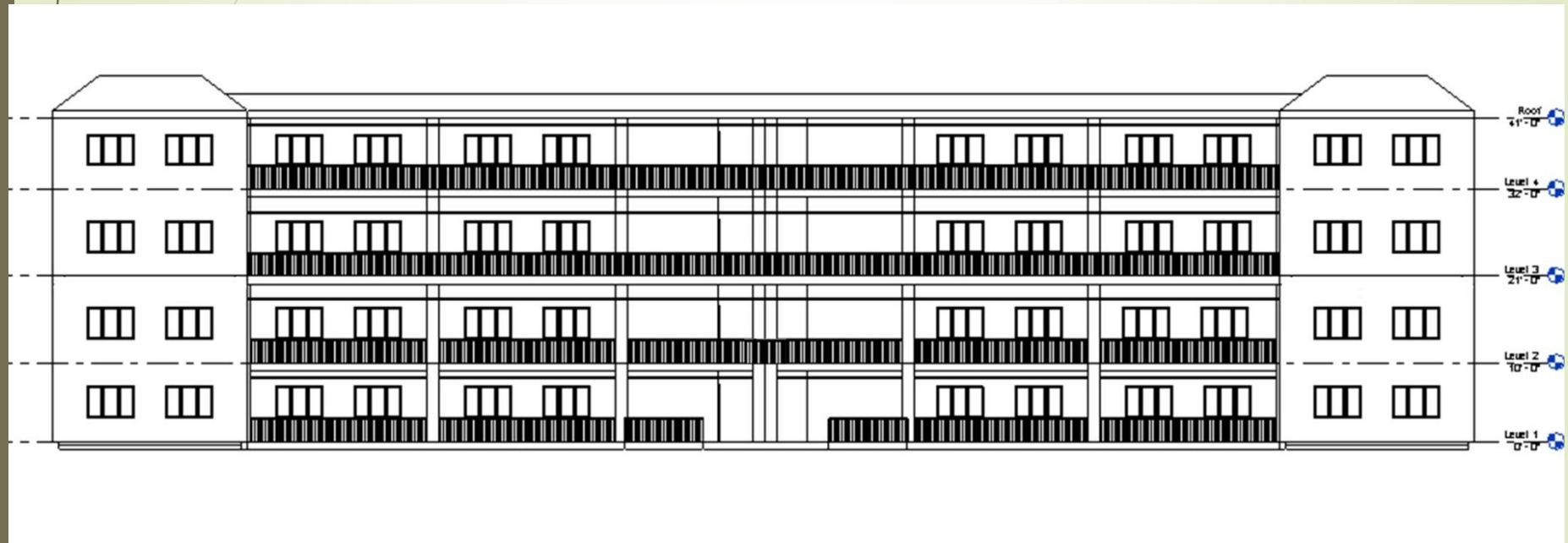
Analysis Procedures

- Linear Static Analysis
- Non Linear Static Analysis (Pushover Analysis)
- Linear Dynamic Analysis
- Non Linear Dynamic Analysis



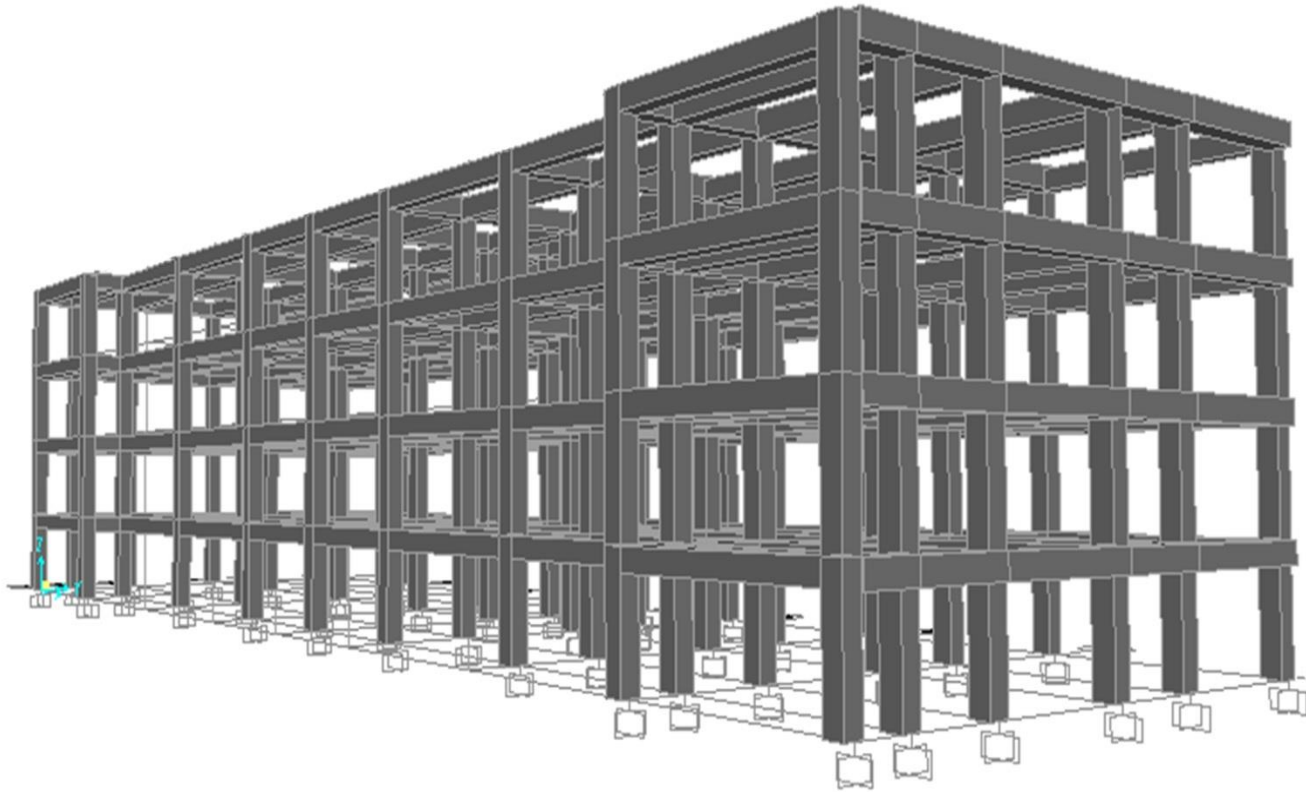
Architectural layout

Elevation



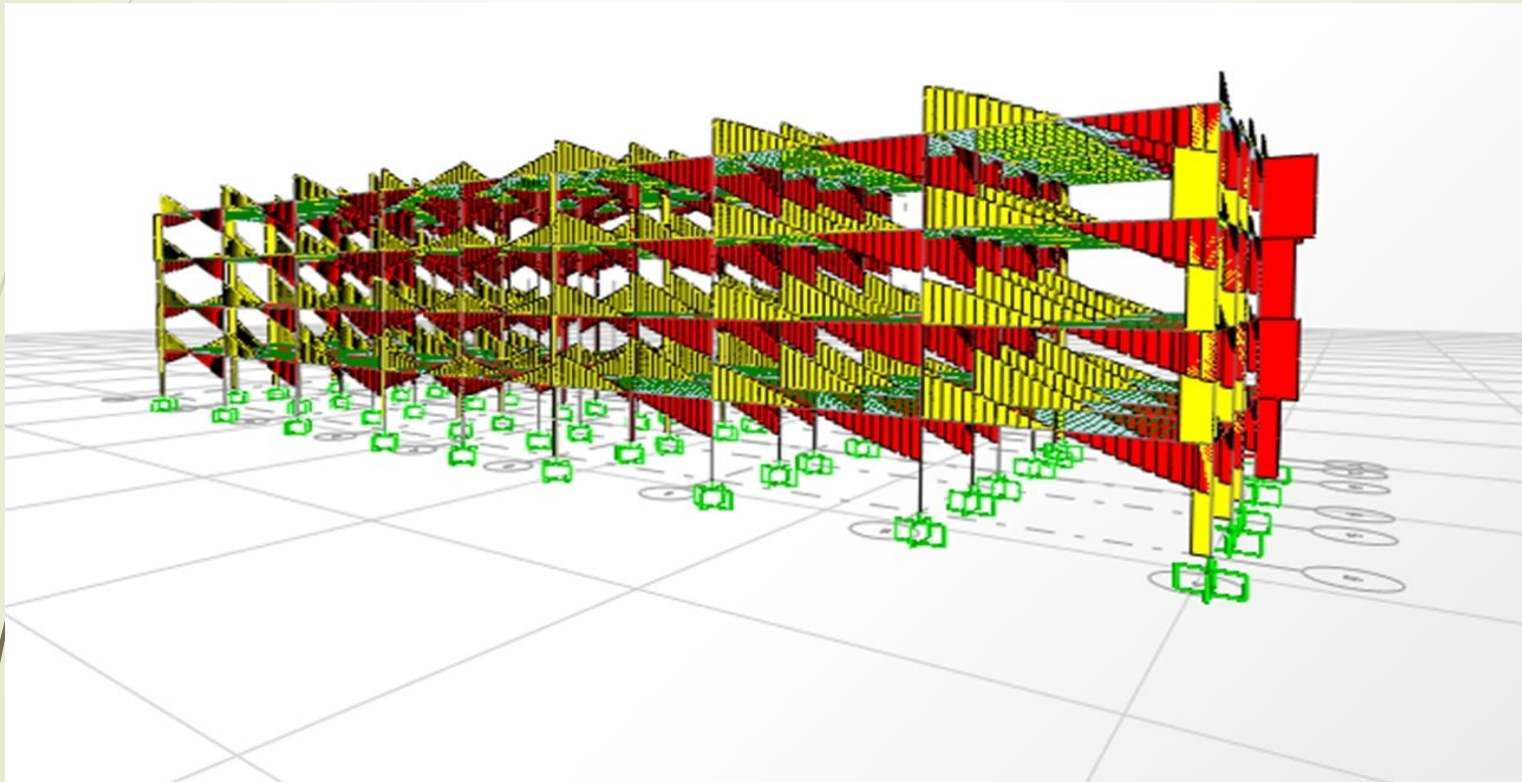
Structural layout

3d Model



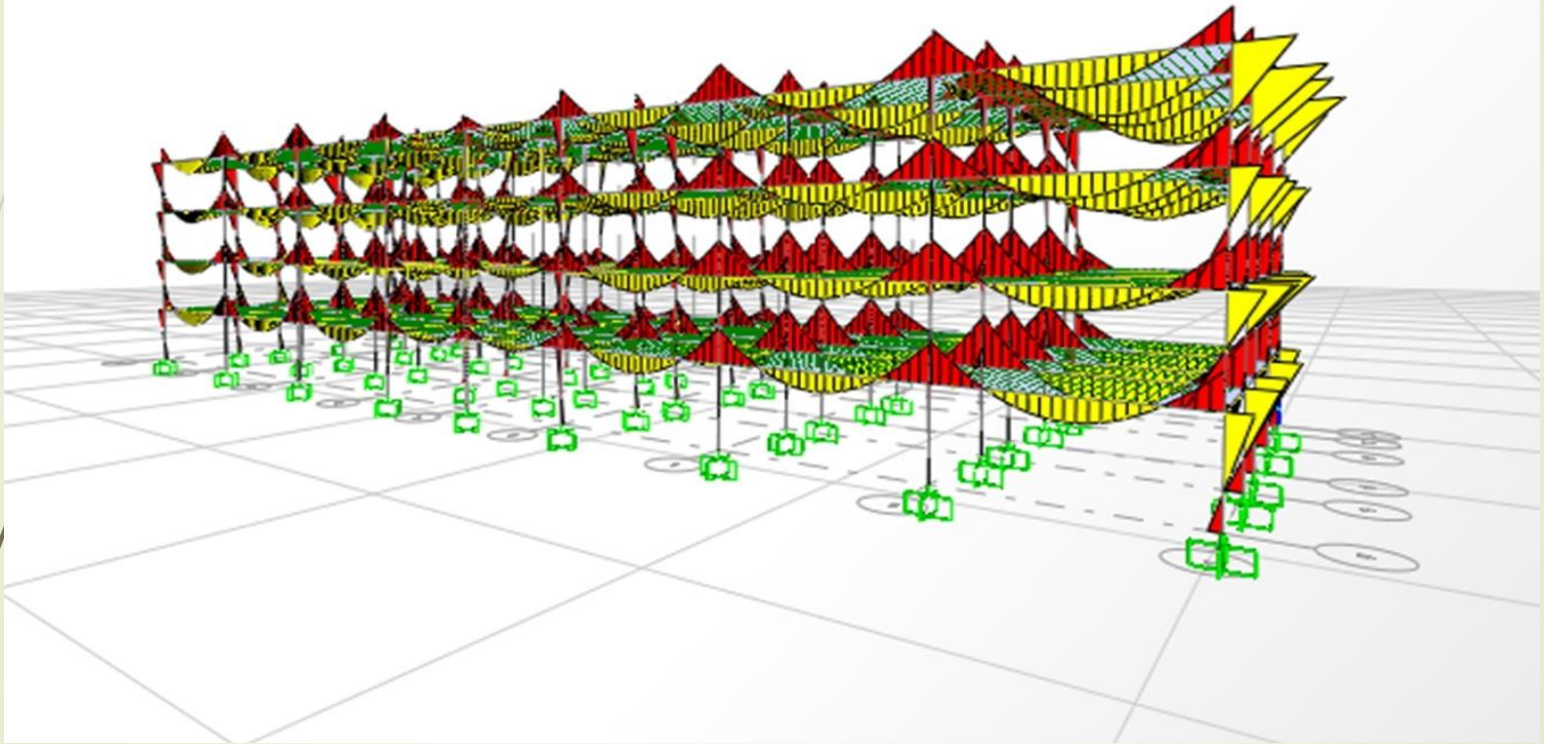
Analysis

➔ Shear 2-2



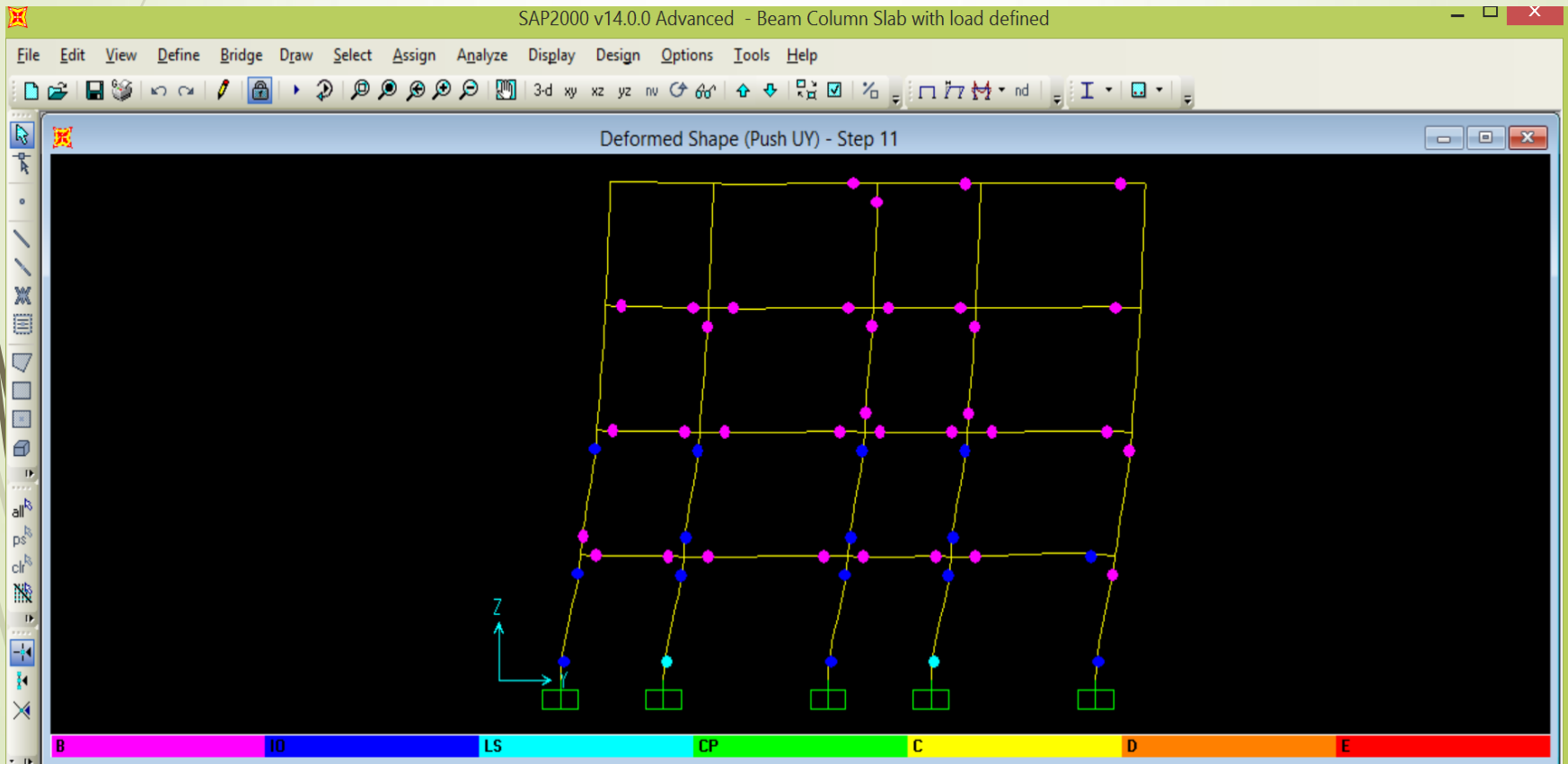
Analysis

➤ Moment 3-3



Pushover Results

- The maximum number of hinges formed in Level 2 or in immediate occupancy level. Hence, it indicates that there is no need of retrofitting for members and the structure is within the safe zone



CONCLUSION

- Pushover Analysis is the best and easy tool for analysis of a structure
- The structure we analyzed lies in level 2 or in immediate occupancy and is safe in case of schools and hospitals
- We had an idea of the importance and usage of SAP2000
- Pushover Analysis is suitable for finding the seismic capacity of a structure