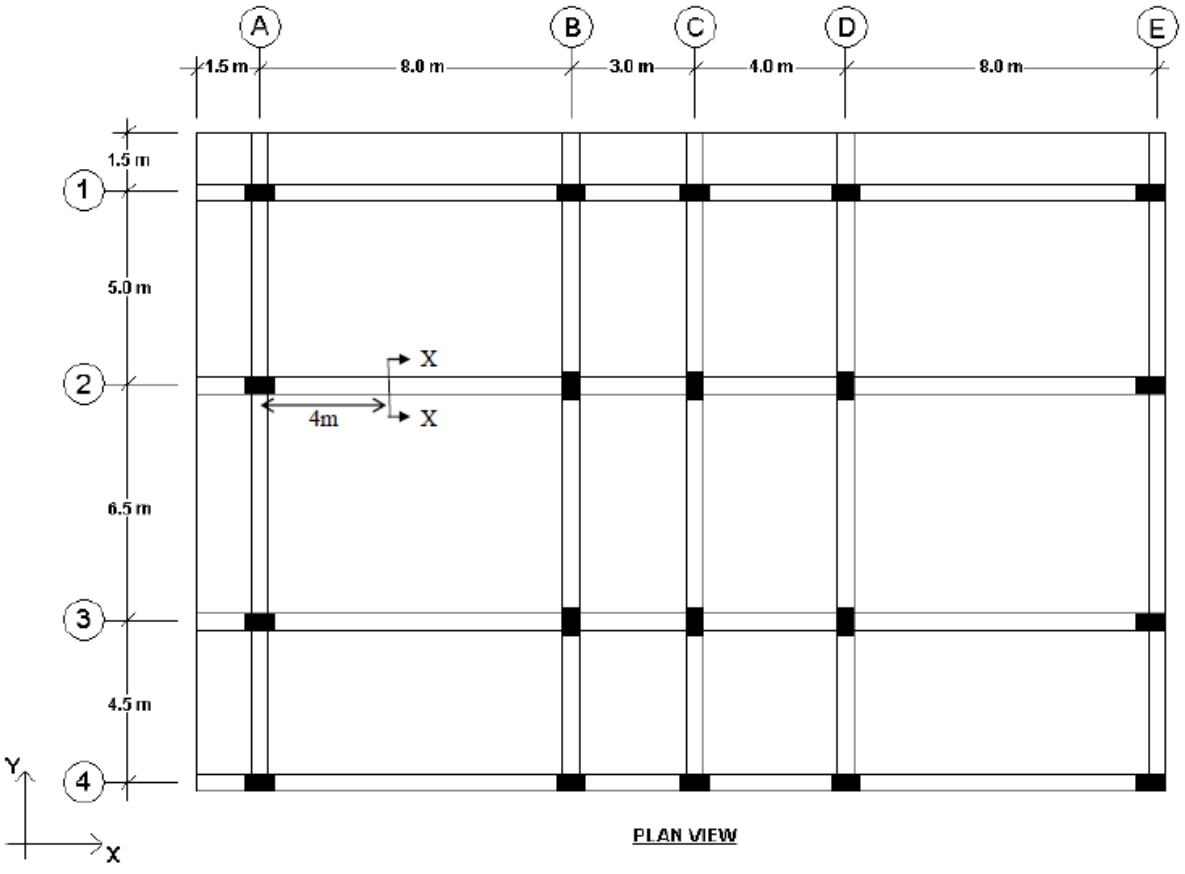
CE 486: SAP 2000 TUTORIAL

The plan of a 7-story reinforced concrete residential building is shown below. The floor-to-floor height is 3.5 m. C30 class concrete will be used in the structural elements. The dead load including the self-weight on beams on grid lines A, C and E is 15 kN/m and on grid lines B and D is 30 kN/m. Likewise, the dead load on beams on grid lines 1 and 4 is 15 kN/m and on grid line 2 and 3 is 30 kN/m. Assume that the live load on all beams is equal to 12 kN/m. The beam and columns are rectangular and the dimensions are 50 cm x 60 cm and 50 cm x 70 cm, respectively.

Create a 3D model of the given building and do the gravity and dynamic analyses.

- Set the unit system
- Form a grid.
- Define the material properties
- Define the section properties (cracked section)
- Draw the geometry (for one floor)
- Define Rigid End Zones
- Define the loads (load patterns → load cases → load combinations)
- Replicate
- Define the boundary conditions
- Define rigid diaphragms at floor levels
- Run the analysis
- Define the mass source (tie it to the diaphragm)
- Define the response spectrum
- Define the dynamic load case
- Run the dynamic analysis



PLAN VIEW