Fundamentals of Earthquake Engineering for Building Structures
Session 7: Building Configuration – March 29, 2021
Due: April 26, 2021, 8:00 am EDT – Submit through the online form

Pick the best answer

1) A load path is important for seismic design because
   a) Without a load path motion of inertial mass is unrestrained
   b) Without a load path the foundations may be overstressed

2) Foundations designed for stability using reduced loads may
   a) Experience transient uplift during an earthquake
   b) Result in larger than anticipated drift
   c) Reduce system ductility demands
   d) All of the above
   e) None of the above

3) Diaphragm members
   a) Support gravity loads
   b) Deliver lateral forces to frames
   c) Brace columns for stability
   d) Transfer forces between frames
   e) Resist P-Delta thrust
   f) All of the above
   g) None of the above

4) In analyzing a building with flexible diaphragms
   a) Diaphragms are analyzed first to determine their reactions at each frame
   b) Reactions at frames are determined from a three-dimensional analysis that includes frame stiffness and locations
   c) Reactions at frames are determined from a three-dimensional analysis that includes frame stiffness and locations and diaphragm stiffness

5) In analyzing a building with semi-rigid diaphragms
   a) Diaphragms are analyzed first to determine their reactions at each frame
   b) Reactions at frames are determined from a three-dimensional analysis that includes frame stiffness and locations
   c) Reactions at frames are determined from a three-dimensional analysis that includes frame stiffness and locations and diaphragm stiffness

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6) The compression strength of a collector beam with lateral restraint at the top flange
   a) Is determined solely considering major-axis buckling
   b) Is determined considering major-axis buckling and torsional buckling
   c) Is determined considering major-axis buckling and minor-axis buckling
   d) Is determined considering major-axis buckling and constrained-axis flexural-torsional buckling
   e) C and D
   f) None of the above

7) Reinforcement in a composite deck used as a collector
   a) Must have welded splices
   b) Must transfer the collector force in diaphragm shear to the frame
   c) May have some eccentricity from the frame that should be designed for
   d) B and C
   e) None of the above

8) Collector beam connections must be evaluated
   a) For gravity shear and seismic horizontal forces not acting simultaneously
   b) For gravity shear and seismic horizontal forces acting simultaneously using a straight-line interaction diagram
   c) For gravity shear and seismic horizontal forces acting simultaneously using the square-root-of-the-sum-of-the-squares method

9) "Deformation compatibility" describes
   a) Detailing all beam-to-column connections as special moment frame connections
   b) Providing greased pins at all beam-to-column connections
   c) The necessity of providing a system that can maintain its integrity at the drift levels anticipated for the seismic system

10) Bays adjacent to tall braced frames
   a) May have greater lateral drift than other bays
   b) May have added distortion due to braced-frame column axial deformation