Seismic Design in Steel
Quiz for Session 3: Seismic Design Concepts – Braced Frames – March 05, 2018
Due: March 26, 8:00 a.m. EDT – Submit through the online form

Pick the best answer.

1. Which is most correct?
   a. In capacity design, gravity forces are always added to the capacity-design forces caused by member yielding.
   b. In capacity design, gravity forces are not added to the capacity-design forces caused by member yielding in certain cases in which those gravity forces represent a portion of the force causing yielding of the fuse member.

2. Which is most correct?
   a. In a braced frame, increasing the brace size will always lead to a better performing system.
   b. In a braced frame, increasing the brace size is likely to lead to a better performing system if connections, beam, and column sizes are adequate to resist the resulting increased forces.

3. Which is most correct?
   a. In SCBF, gussets are configured to accommodate brace buckling.
   b. In SCBF, gussets are configured to preclude brace buckling.

4. Which of the following describes design of SCBF?
   a. Special compactness requirements apply to braces for increased brace ductility.
   b. Special detailing is required at gusset connections to preclude connection failure due to brace buckling.
   c. Special strength requirements apply to gusset connections to preclude connection failure.
   d. Special analysis requirements apply to the frame to aid proportioning of the frame such that the braces act as fuses.
   e. All of the above
   f. None of the above

5. Which of the following describes design of BRBF?
   a. Special testing requirements apply to braces to ensure ductility.
   b. Special detailing is required at gusset connections to preclude connection failure due to brace buckling.
   c. Special strength requirements apply to gusset connections to preclude connection failure.
   d. Special analysis requirements apply to the frame to aid proportioning of the frame such that the braces act as fuses.
   e. All of the above
   f. a, c, and d
   g. None of the above

6. Which is most correct?
   a. In SCBF, inelastic drift capacity is achieved through brace buckling.
   b. In SCBF, inelastic drift capacity is achieved through brace tension yielding.
   c. All of the above
   d. None of the above

7. Which methods are permitted for gusseted beam-to-column connections in SCBF and BRBF?
   a. Design of the connection for moment corresponding to the amplified (overstrength) seismic load ($\Omega_o E$).
   b. Design of the connection for moment corresponding to the beam expected flexural strength.
   c. Design of the connection as an Ordinary Moment Frame beam-to-column connection with the addition of the gusset.
   d. Design of the connection to provide 2.5% rotation capacity.
   e. All of the above
   f. None of the above
   g. b, c, and d

8. In SCBF, single-diagonal braced frames are
   a. prohibited.
   b. allowed, but subject to slenderness restrictions.
   c. allowed, but subject to higher required strength.

9. In SCBF, fixed-end brace connections are
   a. prohibited.
   b. allowed, but subject to slenderness restrictions.
   c. allowed, but subject to flexural strength requirements.

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10. Buckling restrained braces are
    a. designed to not undergo global buckling before core compression yielding.
    b. designed to provide similar yielding behavior in tension and compression.
    c. designed similar to tested braces to ensure adequate ductility.
    d. All of the above
    e. None of the above