



1. Pretensioning a joint _____ the strength of a bolt relative to applied tension.
 - a. significantly reduces
 - b. significantly increases
 - c. generally has little effect on
 - d. produces

2. True or False: When connection design is delegated, the connection engineer provides a peer-review of the overall project.
 - a. True
 - b. False

3. When using Option 3 of the *Code of Standard Practice*, who performs connection design?
 - a. The fabricator
 - b. An experienced steel detailer
 - c. A licensed engineer working for the fabricator
 - d. The Engineer of Record

4. Tension members having $F_y = 50$ ksi and higher, with bolted connections having an effective area at the connections of at least 0.75 x gross area, should be sized to limit the tension yield strength ratio to:
 - a. 0.50
 - b. 0.75
 - c. 0.90
 - d. 1.00

5. The term “member reinforcement at the connections,” as used in the *Code of Standard Practice*, never includes which of the following?
 - a. Beam stiffeners
 - b. Column stiffeners
 - c. Beam web reinforcing at openings
 - d. Doubler plates

6. True or False: Using Table 3-6 in the *AISC Steel Construction Manual* to specify the required shear connection design strength will always yield conservative connection designs.
 - a. True
 - b. False



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7. The upper limit on bolt pretension for a bolt in a snug tight joint...
 - a. Can be found in Table J3.1 of the AISC *Specification*.
 - b. Is a function of the bolt diameter.
 - c. Is not prescribed in either AISC or RCSC.
 - d. Is inspected by QA/QC.

8. Which of the following is the typical punch-down on the web of a simply supported beam with a bolted connection?
 - a. 4.5 in.
 - b. A function of the thickness of the connecting plate
 - c. Varies depending on the depth of the supported beam
 - d. 3 in.

9. Using GR. 50 material, in lieu of A36 material, for the connection plate in a single plate shear connection...
 - a. can reduce the size of the connection plate-to-support weld.
 - b. leads to a thicker connection plate.
 - c. maximizes the maximum plate thickness that is required for an extended single plate shear connection.
 - d. increases the flexural demand on the connection plate.

10. When a particular type of connection is not permitted on a project...
 - a. the shop drawing review process is the time to make that first known to the fabricator.
 - b. a dispute may arise if the exclusion is not clearly identified in the construction documents.
 - c. the delegated connection designer has the authority to override that exclusion.
 - d. the fabricator may use that type of connection at joints with relatively large loads.

11. The welds used to attach unbeveled web doubler plates at the flanges of wide flange columns...
 - a. must be two-sided fillet welds.
 - b. must be one-sided fillet welds.
 - c. are CJP welds that require magnetic particle testing inspection.
 - d. are referred to as “doubler plate welds” in the 2016 AWS D1.8, and do not require magnetic particle testing inspection.

12. True or False: When construction documents tabulate where column reinforcing is required, the Engineer of Record (EOR) must note whether the tabulated values are for bidding purposes or are design values to be used by the delegated connection designer.
 - a. True
 - b. False



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13. Which of the following would be a reason that the flanges of moment frame beams, with bolted flange plate connections, may need to be reinforced?
- If shim packages are not provided.
 - When the design moment of the connection approaches the flexural strength of the beam and unity stress ratios were used during main frame design.
 - If the flange width of the moment frame beam is less than 8 in.
 - If the moment frame beam is a relatively light wide flange section.
14. For angle bracing that is bolted to gusset plates, the work line should be located...
- at the center of gravity of the angle.
 - at the center of the connected angle leg.
 - at the first bolt gage, $g1$.
 - between the bolt gages, $g1$ and $g2$.
15. Which of the following should NOT be indicated by the EOR, when delegating vertical bracing connection design?
- R value for structures
 - Which is used: ASD or LRFD
 - “Design for 100% brace strength”
 - The transfer forces
16. For $R > 3$ seismic design, fully pre-tensioned bolts with a Class A or higher faying surface shall be provided at...
- connections that primarily resist seismic load effects with shear in bolts.
 - all moment connections.
 - only connections designed as slip-critical.
17. Which of the following methods assumes brace forces to be point loads at the chevron connection work point, with no effect on the beam shear diagram (in non-seismic applications)?
- Isolated Method (IM)
 - Net Vertical Force Method (NVF)
 - Symbiotic Method (SM)
18. Which of the following methods accounts for the effect of a distributed moment, q , acting on the beam at the chevron connection?
- Isolated Method (IM)
 - Net Vertical Force Method (NVF)
 - Symbiotic Method (SM)
19. According to the speaker, which of the following methods is most often used by the EOR to size beams in chevron frames?
- Isolated Method (IM)
 - Net Vertical Force Method (NVF)
 - Symbiotic Method (SM)



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20. When designing bolted joints that connect members of a seismic force-resisting system, as given AISC 341-16, the joints must be designed...
- as slip-critical connections to ensure there is no slip at a code-level ground motion.
 - as slip-critical connections regardless of hole type.
 - as pretensioned joints with a Class A faying surface, or better, but bearing bolt shear strength values are permitted to be used with standard-sized holes.
21. True or False: The gravity load effect that acts on the portion of the beam, between the plastic hinge and the face of the column, can be neglected when determining the shear at the face of the column for a prequalified moment connection specified in AISC 358-16.
- True
 - False
22. True or False: Stability bracing must be provided at the brace-to-beam work point of beams in special concentrically braced frames utilizing the V- or inverted V- type configuration, as required by AISC 341-16, Section F2.4b.
- True
 - False
23. Which of the following communication scenarios was recommended by the speakers of this course?
- That connection designers only communicate with EORs through a rigid request-for-information process
 - That connection designers be allowed to directly communicate with EORs as a last resort
 - That connection designers be typically allowed to directly communicate with EORs, with the general contractor and fabricator participating in order to assess contractual issues
24. Which of the following was advised by the speakers of this course?
- To provide transfer forces in the contract documents
 - To always minimize the steel tonnage during design to minimize cost
 - To require connection designers to design shear connections for the beam shear capacity
 - To provide conceptual connection details, when delegating the connection design
 - To use AISC *Manual*, Table 3-6, to specify connection shear demands
 - All of the above
 - None of the above
 - Answers a, b, c, and d
 - Answers a and b
 - Answers a and c
 - Answers a and d

