



1. The first session focused on the effect of connection design as it relates to member stability because
 - a. only stability needs to be considered relative to HOW forces are transmitted by connections.
 - b. stability-related issues are among the more common issues that the presenter sees in practice.
 - c. Jim Fisher has said, "I'd rather be in an over-braced and under-designed building, than in an over-designed, under-braced building."
 - d. All of the above

2. The Engineer of Record is the final authority regarding the design of connections to be incorporated into the overall structural steel frame and can impose any requirement he or she deems necessary at any point in the project...
 - a. for FREE!!!
 - b. However, if new requirements are imposed after a bid is accepted, this likely represents a revision to the contract.
 - c. as long as it does not increase the cost or schedule of the project.
 - d. as long as the pieces have not been shipped.

3. Engineers
 - a. only need to do what is explicitly required in the codes.
 - b. bring value through the application of engineering judgment to a wide range of applications to determine where the common design methods are sufficient or insufficient for the task.
 - c. receive little feedback that could be used to evaluate or improve their abilities.
 - d. Items b and c

4. Transfer forces:
 - a. Must be provided by the Engineer of Record.



- b. Are not generally reported in the output from analysis programs.
 - c. Depend on connection configuration.
 - d. All of the above
5. When the Engineer of Record fails to provide complete and accurate information:
- a. The Engineer of Record reduces his or her risk because the Engineer of Record cannot be held responsible for the effect of information that was not provided by the Engineer of Record.
 - b. This makes the delegated connection engineer's work more difficult.
 - c. This increases the Engineer of Record's risk.
 - d. Both b and c.
6. The *Code of Standard Practice* requires the Engineer of Record to provide:
- a. ALL loads.
 - b. Loading information that is sufficient.
 - c. Loads that satisfy statics.
 - d. The actual loads that will exist in service.
7. Decisions about force distributions:
- a. can affect safety.
 - b. can affect the complexity involved in the design process.
 - c. can affect economy.
 - d. can be made arbitrarily because steel is inherently ductile.
 - e. a, b, and c
 - f. All of the above
8. True or False: The Uniform Force Method produces the only acceptable set of forces for vertical brace connection design.
- a. True
 - b. False
9. Ductility
- a. is necessary for the redistribution of the forces.



- b. is characterized by plastic deformation under tensile stress before failure.
- c. in steel structures is characterized by a loss of stiffness.
- d. All of the above.

10. Slip critical connections resist shear through:

- a. shear on the shaft of the bolt.
- b. bearing on the connected plies.
- c. friction.
- d. the magnetic field generated when bolts are pretensioned.

11. Open holes:

- a. should be left open whenever possible.
- b. should filled with plug welds.
- c. should be repaired by filling one-half the depth or less with steel backing of the same material specification as the base metal, gouging an elongated boat-shaped cavity down to the backing, then filling the cavity by welding using the stringer bead technique. After the first side is welded, gouge another elongated boat-shaped cavity completely removing the temporary backing on the second side, and complete by welding using the stringer bead technique – since this is a fun and easy pastime.
- d. should be filled to correct metallurgical changes associated with drilling the hole.

12. Utilizing different bolt grades with the same diameters on a single project:

- a. is a good way to reduce the number of tools required on the project.
- b. is a method commonly used to optimize connection designs.
- c. is a good means of keeping the erector “on his toes”.
- d. should be avoided.

13. The strength of a PJP groove weld reinforced with a fillet weld:

- a. is always the strength of the PJP groove weld alone.
- b. is always the strength of the fillet weld alone.
- c. is always the sum of the strengths of the PJP groove weld and fillet weld.
- d. is always based on the throat that results for the combination.



14. True or False: Reinforcing fillets at CJP groove welds increase the strength of the CJP weld.
 - a. True
 - b. False

15. True or False: Welds are generally required to develop the strength of the parts they join.
 - a. True
 - b. False

16. According to what documents are engineers absolved of all responsibility when connection design is delegated?
 - a. The *AISC Code of Standard Practice*
 - b. The *National Practice Guidelines for the Structural Engineer of Record* issued by the Council of American Structural Engineers.
 - c. The Rules and Regulations of the State of New York
 - d. None of the above.

17. Connection design engineers:
 - a. are contractually obligated to provide peer review of the contract documents in accordance with Section 3.1.1 of the *Code of Standard Practice*.
 - b. are contractually obligated to conform to connection design criteria provided in accordance with Section 3.1.1 of the *Code of Standard Practice*.
 - c. have an ethical duty to notify their employer or client and such other authority as may be appropriate if their engineering judgment is overruled under circumstances that endanger life or property.
 - d. a and c.
 - e. b and c.



18. The AISC Design Examples companion to the *Manual*:
- is reviewed and approved by the AISC Committee on Manuals.
 - Is prepared following recognized principles of design and construction.
 - is believed to be accurate.
 - is produced, reviewed, and approved by a group of well-intentioned, yet fallible experts.
 - All of the above.
19. For many conditions, stiffness can (should) be modelled as a series of springs. In such cases:
- the total stiffness will be less than the stiffness of the least stiff element.
 - it is not conservative to neglect the participation of any element.
 - All of the above.
 - None of the above.
20. The compressive strength of I-shaped columns can:
- be governed by torsional buckling if a connection is strong and stiff enough to brace the column laterally, but not torsionally.
 - be governed by torsional buckling if the strength and stiffness requirements for column torsional bracing in Appendix 6 are not satisfied.
 - never be governed by torsional buckling.
 - only be governed by torsional buckling if the column is a built-up shape.
21. The design procedure for extended single-plate shear connections published in Engineering Journal upon which the *Manual* procedure is based:
- requires the use of stability plates.
 - prohibits the use of stability plates.
 - recommends the use of stability plates when stability of the plate is the governing limit state.
 - addresses only the design of unstiffened extended single-plate shear connections.

Night School 26: Developing Eye for Connection Design

Final Exam

Due: September 28, 2021, 8:00 am EDT – Submit through the online form



22. Which of the following is a source of free information about structural steel:

- a. AISC Continuing Education Archives
- b. AISC Research
- c. AISC Engineering FAQs
- d. AISC Steel Solutions Center
- e. All of the above.

23. True or False: AISC defines “standard connections” as connections found in Part 10 of the Manual.

- a. True
- b. False

24. True or False: An extended single-plate shear connection will usually provide more torsional restraint than a double coped section.

- a. True
- b. False