

steel quiz

This month's quiz is all about bridges. Most of the answers can be found in the *AISC Specification*, *Steel Construction Manual* and Design Guides, as well as at www.aisc.org, www.modernsteel.com and www.steelbridges.org.

- 1 Match each NSBA Prize Bridge Award winner with the appropriate picture below:
 - 1) Tempe Town Lake Pedestrian Bridge (Tempe, Ariz.)
 - 2) Bronx Whitestone Bridge (East River, N.Y.)
 - 3) Sixth Street Bridge (Pittsburgh, Pa.)
 - 4) Blennerhassett Island Bridge (Ohio River, W. Va.)
 - 5) I-94 Modified Tied Arch Bridge (Taylor, Mich.)
- 2 _____ is a program that allows users to analyze and design bolted field splices for steel bridges.
- 3 True or False: The World Steel Bridge Symposium is held every year in conjunction with NASCC: The Steel Conference.
- 4 True or False: AISC has established a Political Action Committee—AISC PAC—to support candidates for federal offices who share our appreciation for the vital role of structural steel in our national economy.
- 5 Steel bridge construction in the United States is generally performed in accordance with the _____ *Specification*, but much of the actual design, fabrication and construction are governed by specifications, codes, standards and practices that are prepared at the state level.
- 6 The NSBA Steel Bridge Suite is a suite of steel bridge-related design software and references that include which of the following item(s)?
 - a) LRFD SIMON
 - b) NSBA Splice
 - c) Steel Bridge Design Handbook
 - d) AASHTO/NSBA Collaboration Standards
 - e) All of the above
- 7 True or False: There are standard rules when designing steel bridge girders to determine the most economical system for design.
- 8 True or False: The Prize Bridge Competition has been awarding outstanding steel bridge projects since 1928.
- 9 True or False: AWS D1.5 Section 12.2.2.1 states that when any dimension of attachment that is welded to a tension component of a fracture-critical member exceeds 100 mm (4 in.) in the direction parallel to the tensile stress, then that member shall be considered a fracture critical member.
- 10 The SIMON application was relaunched in 2012 with an updated analysis engine, a new user-friendly interface and support for the _____ AASHTO LRFD Design Specifications.
 - a) 4th Edition
 - b) 5th Edition
 - c) 3rd Edition
 - d) None of the Above



TURN PAGE FOR ANSWERS

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ANSWERS

- 1) 1) d; 2) c; 3) b; 4) e; 5) a
The NSBA Prize Bridge Awards (www.steelbridges.org/PrizeBridge) honor significant and innovative steel bridges constructed within the U.S. NSBA presents these awards at its World Steel Bridge Symposium.
- 2) NSBA Splice. The design mode sizes and optimizes splice plates and bolts based on loads input by the user while the analysis mode determines the adequacy of user input splice plate and bolt sizes. This is a free download part of the NSBA Steel Bridge Suite at www.steelbridges.org/SteelBridgeSuite.
- 3) False. The World Steel Bridge Symposium is held every two years (even-numbered years). The next event will be colocated with NASCC in Toronto, March 26-29, 2014.
- 4) True. There are many tools online at www.aisc.org/Action to help you stay informed and get involved with your elected officials or sign up for newsletters and alerts.
- 5) AASHTO. For this reason, the AASHTO/NSBA Steel Bridge Collaboration (www.steelbridges.org/Collaboration) undertakes an effort to unify the existing diverse requirements and to allow steel bridge professionals to share resources to achieve quality and value in steel bridges by standardization of design, fabrication and erection, as well as by the sharing of resources.
- 6) e) All four items are available for free online as part of the NSBA Steel Bridge Suite. You can find this and more on the NSBA website at www.steelbridges.org/SteelBridgeSuite.
- 7) False. There are many variables to consider in order to determine the most economical solution for a specific project at a specific point in time. The AASHTO/NSBA Steel Bridge Collaboration discusses this topic in *G12.1, Guidelines for Constructability*, paragraph 1.1—see www.aisc.org/WorkArea/showcontent.aspx?id=20112.
- 8) True. The Prize Bridge Competition, a prestigious awards program started by AISC and currently organized by AISC's National Steel Bridge Alliance, honors significant and innovative steel bridges constructed in the United States, and has been doing so since 1928.
- 9) True. The critical dimension is the length of the attachment in the direction of the tensile stress. Many attachments do not invoke this requirement. For example if we have shear studs, then that dimension would be equal to the diameter of the shear stud plus two times the size of the shear stud weld. For a typical $\frac{3}{4}$ -in. or $\frac{7}{8}$ -in. shear stud, the length would not exceed 4 in. Plus, shear studs usually are on the compression flange, which does not require fracture critical designation.
- 10) b) SIMON has a long history of serving as a key tool in helping bridge engineers efficiently design and analyze steel bridges. It has now been updated and should be used to realize efficiencies and demonstrate the practicality of a steel bridge for a specific application. Register for a complimentary license of SIMON at www.steelbridges.org/SoftwareRegistration.



Anyone is welcome to submit questions and answers for Steel Quiz. If you are interested in submitting one question or an entire quiz, contact AISC's Steel Solutions Center at 866.ASK.AISC or at solutions@aisc.org.