

SPECIFICATIONS

Latest AISC Nuclear Spec Available for Free Download

The 2012 version of AISC's *Specification for Safety-Related Steel Structures for Nuclear Facilities* (ANSI/AISC N690-12) is now available for free download at AISC's website. The specification includes updated provisions for the design of safety-related steel structures and steel elements in nuclear facilities.

The specification is written as a supplement to the AISC 2010 *Specification for Structural Steel Buildings* (ANSI/AISC 360-10) and replaces ANSI/AISC N690-06. It has been approved by the AISC Committee on Specifications and is ANSI-accredited.

"As a supplement to ANSI/AISC 360-10, the new 2012 *Specification for Safety-Related Steel Structures for Nuclear*

Facilities has adopted many of the same revisions as those incorporated in ANSI/AISC 360-10," commented Cynthia Duncan, AISC's director of engineering. "One major addition and departure from that standard is the new Chapter NN on Quality Control and Quality Assurance. This chapter has some different terminology due to the regulatory nature of nuclear facilities design."

The specification can be downloaded at no charge by visiting AISC's Specifications, Codes and Standards page at www.aisc.org/freepubs or www.aisc.org/epubs. The 2006 version and other related documents are also available for free for AISC members on AISC's Historical Standards page.

CERTIFICATION

Bridge Certification Update

AISC will post the rules and regulations for its new Bridge Quality Management System (QMS) Certification Program on October 1, and is currently working with certified bridge fabricators to educate them on these changes. The new program will provide a means for qualified firms to communicate their commitment and capabilities, with respect to quality, to the construction industry. The program will be based on the new bridge standard, *AISC Certification Program for Steel Bridge Fabricators—Standard for Steel Bridges—2011* (AISC 205-11). The new *Standard*, which will supersede the current "Simple and Major Bridge Checklists," is part of an ongoing transition effort by AISC to a system-based approach to quality management. This program change will better communicate to owners and specifiers what the Bridge QMS Certification Program provides in terms of quality and expectation. Additional items of note:

- As of this past June, already-certified participants are informed and educated about the transition between the current checklist and the new *Standard*, and this will continue for a full-year, ending next June. During this time, participants will only be

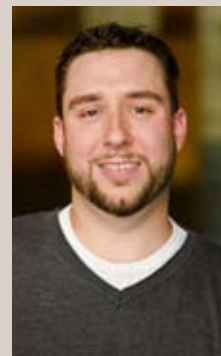
responsible for the criteria of the current checklists. Then they will be responsible for the criteria of the new *Standard*.

- Starting November 1, all new applicants must adhere to the *Standard for Steel Bridges – 2011* (AISC 205-11), and all existing participants must adhere to it starting July 1, 2013.
- By July 1, 2014, all current participants will have been certified to the new *Standard* and will hold one of the designations listed below. After this time, Simple Bridge and Major Bridge will no longer be valid AISC Certification categories.
- With the new program, there will be three AISC QMS Certified Fabricator options under the Bridge QMS Certification category:
 - Simple Bridges
 - Intermediate Bridges
 - Advanced Bridges

For the latest program updates, please visit www.aisc.org/bridgecertification, which includes additional information and resources. If you have additional questions or comments, please feel free to contact us at certification@aisc.org.

People and Firms

- **Descours and Cabaud, Inc.**, a French industrial and steel distributor, announced recently that it has purchased a controlling interest in **BMG Metals, Inc.**, a Richmond, Va.-based steel service center. Descours and Cabaud currently has more than 560 locations throughout Europe and North America, including steel distributor **Dillon Supply Company**, an AISC member based in Raleigh, N.C.
- **Alamo Iron Works**, a San Antonio-based steel fabrication company and an AISC member, recently announced that it has bought the assets of **SGS Industrial Supplies, Inc.**, a distributor of steel and industrial products in the Rio Grande Valley area of South Texas.
- **Tekla** has updated its **BIMsight** software for BIM-based collaboration. The new Version, 1.5.1, includes the option to change the degree of transparency in x-ray mode and features more intuitive color labeling for objects. You can download BIMsight for free at teklabimsight.com/downloads.jsp. Tekla also recently launched **BIMsight Note**, a new BIM communication application for use on an iPad or iPhone, available for free download at the Apple Store.



• **Timothy Koppenhaver, P.E.**, has joined **Carney Engineering Group**, a multi-discipline structural engineering firm serving the Mid-Atlantic region, as a structural project manager. Koppenhaver brings several

years of industry experience, in addition to multiple professional certifications and industry-related organizations.

STEELDAY

SteelDay Student Photo Contest

Know a college student who's looking for a fun challenge? Have them grab their camera and start snapping! In conjunction with this year's SteelDay, AISC is again sponsoring a Student Photo Contest as a way to involve students in the structural steel industry's largest educational and networking event.

The photo contest is designed for students to capture photos that best pictorially celebrate the steel experience, and is open to any student currently enrolled in a graduate or undergraduate program at an accredited U.S. college or university.

To enter, students must submit a photograph and a completed application form, including a brief description of the photograph. The descrip-

tion can include information such as details regarding the photo subject, interesting elements in the photo and/or how the photo celebrates the visual experience of steel. There is no fee to enter and the number of complete submissions per student is unlimited.

Entries are due by Saturday, September 22, and the winners will be announced on SteelDay (Friday, September 28; check modernsteel.com for a news post after SteelDay). One grand prize winner will receive a digital photo frame and be published in an upcoming issue of *MSC*. All winning submissions will be featured on modernsteel.com as our weekly "Steel Shots," which are published each Friday.

To download the full rules and application form, visit www.aisc.org/photocontest, where you can also view all of last year's winning photos (such as the one below).

And remember, students (and everyone else!) are encouraged to attend a free event on SteelDay! For more information and to find an event near you, visit www.SteelDay.org.



PROJECT NEWS

Steel Tops Out at 4 WTC

The rebuilding of the World Trade Center has reached another significant milestone: The final steel beam was lifted atop 4 World Trade Center earlier this summer, ceremonially signifying the completion of its structural steel framework.

During the topping out ceremony, ironworkers and public officials signed

the beam before it was lifted 977 ft via crane and installed on top of the building. The 72-story tower is scheduled to open late next year and is expected to be the first tower completed on the 16-acre site since the 9/11 attacks.

Last December, DCM Erectors provided AISC Regional Engineer Jacinda Collins with a tour of 4 WTC. You can

read her observations in the 2.17.2012 Steel in the News Post at modernsteel.com.

For more information about the World Trade Center's rebuilding progress, including construction images and videos, visit www.panynj.gov/wtcprogress.

STEEL SCULPTURE

New Steel Sculpture in New Jersey



Students and faculty in the engineering program at The College of New Jersey, along with ASCE's local chapter, this past spring celebrated the installation and dedication of an AISC sculpture on the school's campus in Ewing Township, N.J.

The sculpture helps distinguish Armstrong Hall as the campus' engineering building to students and visitors.

And, beyond its enhancements to the program and school, the sculpture ultimately serves as a learning tool for civil engineering students, as it provides examples of beams and connections studied in class.

"We are very excited to have one of these sculptures because it is a tremendous highlight to our program and to the hard work of all the students," said Catherine Brabston, student chapter president of ASCE at The College of New Jersey. "In addition, our professors look forward to the opportunity to use it as an educational tool in structural and steel design courses."

The students involved in the installation experienced the complete process behind it, from testing the soil to the design and fabrication of the steel sculpture, to the foundation design and final assembly. And the sculpture can help all students gain an appreciation for structures and the engineering behind them.

The fabrication, galvanizing and delivery of the sculpture was donated by Capital Steel Service in Trenton, N.J., an AISC member and AISC certified fabricator. General contractor Waters and Bugbee, also based in Trenton, donated the foundation, including material and installation costs, as well as the final installation of the sculpture.

Originally created by Duane Ellifritt, professor emeritus from the University of Florida, the AISC Steel Sculpture was designed to be a visual teaching aid that shows a variety of members and connections. It consists of 25 steel members, 43 connection elements, more than 26 weld groups and more than 144 individual bolts.

These sculptures are located on more than 100 campuses across the U.S., and most have been donated by local fabricators.

To see if a school near you has a steel sculpture, see the list in the Faculty and Students section of the AISC website (www.aisc.org).

To find out how to get a Steel Sculpture on your campus, email Maria Mnookin at universityprograms@aisc.org. Fabricators interested in building and donating a sculpture to a university should also contact Maria.

To see more of the sculptures at various schools, visit the AISC Education Flickr page or the AISC Facebook album.



PROJECT NEWS

Steelwork Wraps Up at Rose Bowl Renovation

About a year-and-a-half away from the 100th Rose Bowl game at “America’s Stadium,” the \$152 million Rose Bowl Stadium renovation project in Pasadena, Calif., has reached another milestone: the installation of the last major piece of structural steel.

Hundreds of construction workers signed their names to the beam before a 300-ton crane lifted it 103 ft into its place within the bowl. According to the Rose Bowl Operating Co., crews have worked on the project for 60,000 hours so far, with a perfect safety record, and have installed about 2,000 tons of steel.

W&W Steel, an AISC member, performed the steel fabrication, and Long Beach, Calif.-based Bragg Crane and Rigging, also an AISC member, was the steel erector for the project.

The largest investment in the history of the 88-year-old iconic structure, the renovation will improve public safety, enhance the fan experience and maintain the national historic landmark status of the Rose Bowl Stadium, while developing revenue sources to fund the project and other long-term improvements to the stadium’s facili-

ties. The financing plan includes lease extensions that will ensure that UCLA will play its home football games at the Rose Bowl through 2042 and that the stadium will host the Rose Bowl Game through at least 2043.

The goals of the three-phase project are to expedite tunnel ingress/egress, improve concourse circulation, increase the number of conces-

sion stands and restrooms, provide state-of-the-art premium seating in a rebuilt press box and install a new scoreboard and cutting-edge video board. The renovation will also address key stadium infrastructure needs that will allow the facility to continue to operate for decades to come. The project will be completed in late 2013.



SEMINARS

AISC Launches Fall 2012 Seminar Series

AISC’s Louis F. Geschwindner Seminar Series provides an opportunity for structural engineers and other designers to enhance their professional knowledge while learning from sought-after industry experts. The Fall 2012 Seminar Series will be offered in 29 cities around the U.S. from September through December. Receive an early registration discount until September 7 at www.aisc.org/seminars.

Seminar events include:

Leverage Your Knowledge with the 2010 AISC *Specification* and the 14th Edition *Steel Construction Manual*

The AISC *Steel Construction Manual* is a vital resource for building with

steel, and this one-day seminar discusses important updates featured in the new 14 Edition *Steel Construction Manual* (available in hard cover or as a digital download at www.aisc.org/manual) and 2010 AISC *Specification* (available as a free digital download at www.aisc.org/2010spec). In addition, other key portions of the *Manual* and *Specification* will be reviewed. The *Manual* is available for purchase with this seminar for \$100 (a \$350 value). Earn 0.8 CEUs/8.0 PDHs.

Listen to the Steel: Duane Miller on Welding

This seminar covers everything the attendee needs to know about welding applications for buildings and become a more effective engineer. Each

module gives a concise resolution to steel welding issues, and combined they cover the full spectrum of welding topics. The topics covered include special welding applications, cost-reduction ideas, seismic welding issues, heavy welding, details of welded connections and fatigue failures from a variety of industries. Earn 0.8 CEUs/8.0 PDHs.

Visit www.aisc.org/seminarmap to search AISC’s fall seminars by state. For more information on each seminar, registration details and pricing, visit www.aisc.org/seminars.

WELDING COMPETITION

Innovation Contest for Welding Students

Global manufacturer Victor Technologies, based in St. Louis, recently announced its 2012 “Innovation to Shape the World” contest. The competition is intended for students in welding and cutting programs at secondary and post-secondary schools, as well as technical and vocational schools.

Three beginning (first or second year) students will win \$250 by submitting a 500-word essay supporting the contest theme, and student members on three intermediate/advanced teams will each win \$500 for completing a welding and cutting project. In addition, six schools associated

with the winners will receive a cutting, welding and gas control package valued at \$4,000.

“The contest, along with our regular 35% discount to educational institutions, demonstrates our commitment to giving students and schools the inspiration and tools they need to shape their future,” said Martin Quinn, Victor Technologies’ CEO.

Entries will be accepted until October 30, and the winners will be announced at the 2012 FABTECH show in Las Vegas, November 12-14. The contest rules, entry forms and submission guidelines are available at www.victortechnologies.com/innovationcontest.

PUBLICATIONS

Q3 EJ Abstracts Now Available

The Third Quarter 2012 issue of *Engineering Journal* is available to AISC members online in digital edition format. Members can view, print and share the current issue online at www.aisg.org/ej. Papers in *Engineering Journal* Q3 2012 include:

► **Prying Action for Slip-Critical Connections with Bolt Tension and Shear Interaction**

William A. Thornton and Larry S. Muir

When bolted connections subjected to both shear and tension must be checked for prying action, the interaction between tension and shear must be considered. The 2010 AISC *Specification for Structural Steel Buildings* (AISC 360-10) presents interaction equations both for bearing connections and for slip-critical connections. This paper demonstrates how these interaction equations may be used when applying the prying action analysis presented in the 14th edition *Steel Construction Manual*.

Keywords: bolt tension, bolt shear, prying action, slip-critical connections

► **Satisfying Inelastic Rotation Requirements for In-Plane Critical Axis Brace Buckling For High Seismic Design**

William A. Thornton and Patrick J. Fortney

When a vertical brace buckles during a seismic event, its connections must be able to resist the available flexure strength of the brace about its critical buckling axis without fracture. This is achieved in most current practices by orienting the brace to buckle out-of-plane and introducing a hinge line in the gusset to permit large inelastic rotations with small out-of-plane flexure demand on the connections and the supporting members. In this paper, the authors introduce a connection configuration that allows the development of a hinge line, which will permit large inelastic rotations for in-plane brace buckling with

small flexural demand on the connection and supporting members.

Keywords: bracing connections, gusset plate, buckling, seismic design, inelastic rotation

► **AASHTO LRFD Provisions for the Seismic Design of Steel Plate Girder Bridges**

Abmad M. Itani, Eric V. Monzon, and Michael A. Grubb

Recent earthquakes have exposed the vulnerability of steel plate girder superstructures to seismic forces. Damage has occurred in cross frames and their connections, shear connectors and steel plate girders. These earthquakes have revealed the shortcomings of U.S. bridge design specifications for these types of bridges. Section 6 of the AASHTO LRFD specifications does not have any seismic design provisions for steel plate girder bridges. Recently these specifications have adopted seismic design provisions that are proposed by the authors for steel superstructures to overcome this shortcoming. The adopted specifications are the result of analytical and experimental investigations by various researchers and work published by many seismic provisions and guide specifications. This paper summarizes the new seismic design provisions and outlines the background behind them.

Keywords: bridges, seismic design, AASHTO provisions, plate girders, cross frames, shear connectors

► **Technical Note**

Effective Length Factors for Gusset Plates in Chevron Braced Frames

Bo Dowsell

► **Current Steel Structures Research No. 31**

Reidar Bjorhovde

CORRECTION

Thanks to Paul Kavsak, P.E., of Westinghouse for pointing out a typo in our answer to Question 10 in last month’s Steel Quiz. We asked about bolt dimensions and said that RCSC refers to ASME B18.2.1, when it actually refers to ASME B18.2.6.

Bringing Back the Trades

Reading your August Editor's Note, I couldn't agree more! Many educators truly believe that public education should be K through 10, with the last two years in a community college setting for college-bound students or vocational studies for tradespersons. Our educational system needs to change to meet our new economic times, because the present system is a huge disservice to our kids and businesses.

—**Larry W. Jeffords, President,
Jeffords Steel and Engineering Co.**

As I listened to Dan DiMicco's speech at NASCC, my initial reaction was, "Of course he wants more manufacturing, but I am purely a service provider, and what is wrong with that?" After reading your Editor's Note, I realized I was fortunate to have a mentor, my father, who made me learn the vocation of steel fabrication before thinking that I was qualified to service the industry.

As a high school senior, he started me on the drawing board, where I practiced my lettering and rolled my pencil to improve my line-work. While in college, he put me in the shop to qualify as a welder and work with experienced ironworkers. You are absolutely correct, these vocations were looked at as an option for the less academically inclined, and that mentality is certainly not motivational or inspiring to those that choose a trade. Early in my career I thought my education was the advantage, but I have come to learn that my hands-on experience is what distinguishes me.

In the last 10 years I have seen drafting for our steel projects move almost entirely overseas. Engineers in other countries with college degrees are providing the drafting that was a skilled trade here in the U.S. for generations. Their career choice is looked at with respect and honor, and they are compensated well. As this trend continues, we may find that foreign firms will provide the fabrication and other services for our steel industry as well.

—**Doug Ferrell, Ferrell Engineering, Inc.**

I agree completely with your note. Current education policy is weighted toward college prep when it should be more balanced toward vocational training. I spoke recently with the president of a local manufacturing firm who was similarly concerned with current education policy. He pointed out that in our economically depressed community, the local banks can't find enough tellers, local manufacturers can't fill jobs for machinists and other skilled trades and even trucking firms can't find enough drivers. In local high schools, both private and public, success is judged by how many graduates go on to college, not vocational training.

There are way too many college graduates who are unemployed or underemployed who could have had vocational training and have good-paying manufacturing jobs. There's a manufacturing firm in Mt. Vernon, Ohio, who has had billboards all over central Ohio advertising job openings that have gone unfilled. Other companies will train workers in basic skills just to get someone in the pipeline to gain the higher-end skills needed in today's advanced manufacturing businesses. I've also heard that many U.S.-based manufacturing businesses would like to return much of their manufacturing to the United States, but cannot find enough qualified workers.

Please keep making the case about the need for encouragement of and funding for vocational training. As Americans, we need to perform work that adds value or capital to our products, not just pass around the same capital in our current service economy. As America used to demonstrate and as China currently does, a country has to make things of value in order to have a growing economy.

—**Jeffrey S. Kennedy, P.E.,
President, Shaffer, Johnston,
Lichtenwalter & Associates, Inc.**

I could not agree more with your August Editor's Note. Interestingly, McHenry County College in Crystal Lake, Ill.,

has an approach, in consultation with local firms, in which they try to develop programs to prepare individuals with the skills that are needed by local industry in McHenry County. I am not sure how successful their efforts have been, but at least they are trying to address the issues that you raise in your article.

—**Steven Roebrig, Managing Director,
Steel Deck Institute**

You hit the nail on the head in your August Editor's Note about the lack of vocational training in U.S. public schools. I discussed the very same thing with the Portland superintendent of public schools. Less than 10% of that program's graduates (only about half that start high school graduate) go on to higher education. A local metal fab shop operator went to the school administration saying he would help set up a welder program in the high schools. He was told that the schools are prepping the students for college only. I guess we'll have a bunch of highly educated people with no skilled workers in this country. Well done on your note.

—**Pat Hynes, Knife River Prestress**

Congratulations on your fine article concerning college education vs. technical education.

You have expressed what many of us in the technical vocations have been realizing for many years; a lack of qualified crafts persons is hampering our abilities to compete and innovate in our respective trades. Be it welders, detailers, plumbers, fitters, carpenters, layout folks or others, the ever-growing shortage of capable workers is detrimental to all of us who would see this great nation once again become productive and prosper. Keep flying that banner.

—**Jack Metcalfe, John Metcalfe Co.**