

EDUCATION

Workshop on Preserving Historic Iron and Steel in Bridges

Lansing Community College, Lansing, Mich., is offering a three-day workshop March 8-10, 2010, to introduce a wide variety of interested personnel to restoration processes of historic metals using electric arc welding, heat straightening, and hot riveting processes.

The first day consists of presentations while the second and third days are shop lectures followed by demonstrations on various processes and their applications for restoration of historic metals.

The intended audience includes state historic preservation officers, DOT offi-

cial, engineers, engineering students, general contractors, and historic bridge preservationists.

More information as well as fees, scholarship opportunities and registration materials are available at <http://tinyurl.com/y9xh3k7>. The website also includes short video demonstrations of several of the processes.

The program is funded in part by a grant from the National Center for Preservation Technology and Training.

EDUCATION

Structural Fire Engineering Conference

The Sixth International Conference on Structures in Fire (SiF'10) will be held June 2-4, 2010, at Michigan State University in East Lansing, Mich. Bringing together academicians, researchers and practitioners from around the world to discuss the latest international developments in structural fire engineering, SiF'10 will focus on the behavior of structures under fire exposure, including the "art, science and practice of structural fire engineering."

This is the first time this conference is being held in the United States. The three-day event will be held at Kellogg Hotel and Conference Center located on the MSU campus.

Early registration rates are offered until March 15, 2010.

For the latest information on the conference visit www.egr.msu.edu/sif10 or contact the conference secretariat at sif10@egr.msu.edu.

EDUCATION

Welding Seminar Spring Schedule

The Steel Structures Technology Center's spring 2010 seminar covers the design and specification of welding for steel-framed structures using the AWS D1.1 *Structural Welding Code – Steel*, the AISC *Specification for Structural Steel Buildings*, and the AISC *Seismic Provisions for Structural Steel Buildings*. The seminar includes both the current versions and the new 2010 versions of each code, as well as related areas of research and development in structural welding. The seminar is conducted in cooperation with the International Code Council (ICC), and is oriented for structural and civil engineers, designers, steel detailers and steel fabricators.

The "Structural Welding: Design and Specification" seminar is scheduled for the following dates and places:

→ March 30 – Chicago

→ April 13 – Secaucus, N.J.

→ April 20 – Los Angeles

Seminar instructor Robert Shaw is a consulting engineer with 35 years experience in steel construction and the president of the SSTC.

For more information and for specific locations and times, visit the Steel Structures Technology Center website at <http://www.steelstructures.com>.

People and Firms

- **Reidar Bjorhovde, Ph.D.**, president of the Bjorhovde Group, Tucson, Ariz., is the winner of the Lynn S. Beedle Award for 2010. Named for long-time prominent American structural engineering researcher and educator Lynn S. Beedle, the award is presented by the Structural Stability Research Council to a leading researcher and engineer who has made significant contributions to the state-of-the-art of stability knowledge and to national and international design code development. Among other things, Bjorhovde was cited for his scholarly work on column and frame stability as well as load and resistance factor design (LRFD). That includes landmark research work that led to the development of the SSRC column curves, which are the basis for the column stability criteria in current American, Canadian and South African codes for the design of steel.



- In January, **Robert Jönsson** took the office of president of the Society of Fire Protection Engineers (SFPE) for 2010. The first SFPE president to reside outside North America, Jönsson is the chairman of the Department of Fire Safety Engineering and Systems Safety at Lund University in Sweden. He is an SFPE Fellow and has served on the society's board of directors since 2002.



- **Wolfgang Werner, AIA, LEED AP**, has been named director of Thornton Tomasetti's newly created sustainability department. In addition to providing clients with a broad range of sustainability services, the department also is charged with ensuring that the company's internal offices and business operations are guided by sustainability principles. According to the firm, Thornton Tomasetti today employs 183 LEED Accredited Professionals, which constitute approximately 10% of the world's LEED-accredited structural engineers.

ENERGY EFFICIENCY

Steelmakers Turn Waste Into Energy

Air Products and Chemicals Inc., Allentown, Pa., and project partner AK Steel Corporation, Butler, Pa., are in the design and engineering phase of an energy cogeneration project that will turn blast furnace waste gas into usable steam and electricity, and save trillions of British thermal units (Btu) of gas a year.

The company is not alone in its endeavor to find a long-term, cost-effective alternative to high energy costs while reducing waste gas emissions. ArcelorMittal USA Inc., East Chicago, Ind., a subsidiary of global steel giant ArcelorMittal, Luxembourg, has a similar project on the table that is expected to save trillions more of Btu annually.

In a blast furnace, fuel and ore are fed into the top of the furnace, while air and sometimes extra oxygen is blown into the bottom of the chamber. The end products are most often molten metal that is then turned into a multitude of end products. The excess flue gases exiting from the top of the furnace are waste gas (carbon dioxide

and carbon monoxide) from the process, which are habitually flared off. Using these gases to produce steam to drive turbines and to create electricity are the end results sought by the steel mills.

Seed money to be used in funding these projects is coming, along with millions of dollars supplied by the steel mills themselves, through the U.S. government's Industrial Technologies Program (ITP). The primary goal of the ITP is to invest money in projects that will reduce the energy requirements of the manufacturing plant while stimulating economic growth and production. The program has set aside \$156 million for combined heat and power, district energy systems, waste energy recovery systems, and more efficient industrial equipment.

Air Products has been awarded \$31 million in stimulus funding. That may seem like a large amount, but this 100-MW project for the Middletown, Ohio, steel works plant is expected to cost more than \$300 million. AK Steel is expected to supply most

of the cost. The project will consist of a combined-cycle power generation plant, using the waste gas as a fuel supply to drive multiple steam turbine generator sets.

ArcelorMittal USA's Indiana Harbor East steel works stimulus funding is slightly more than \$31 million, and while the final figures are not yet available, this project is expected to cost upward of the current additional \$20 million budgeted for the company's 30-MW cogeneration addition. The project will see the installation of a highly efficient recovery boiler that will use the waste blast furnace gas from its No. 7 blast furnace.

These projects are both win-win situations. AK Steel's Middletown, Ohio, works and ArcelorMittal's Indiana Harbor East plant will be putting waste gas to good use. Both plants soon will be able to provide onsite electricity and steam for in-house use.

Source: Industrial Info Resources, Sugar Land, Texas. Reprinted with permission.

CERTIFICATION

Draft Bridge Fabrication Standard Offered for Public Review

A draft of a new AISC *Certification Standard for Steel Bridges* will be available for public review during a 45-day period beginning March 15, 2010. This is the initial public review of a new standard under development by an AISC Certification Committee Task Group. A copy of the draft standard and instructions for submitting comments will be available on the AISC website, www.aisc.org, under the News tab.

The *Certification Standard for Steel Bridges* is expected to be completed in mid-2011. Once that occurs, the standard will be implemented as the criteria for the AISC Certification Program for Steel Bridge Fabricators, replacing the current checklist-based criteria.

Current and new facilities participating in the program will be evaluated to the base requirements of the standard. Supplemental requirements will be provided for facilities to certify for fracture critical work and for two elevated achievement levels for steel bridge fabrication.

The standard-based Steel Bridge

Fabricator Certification will strengthen confirmation to owners, the design community, the construction industry, and the public that a certified steel bridge fabrication facility has the personnel, organization, experience, procedures, knowledge, equipment, and commitment to produce fabricated steel of the quality required for steel bridge construction. The program is expected to continue to provide a valuable means for qualifying firms, and to serve as a more effective way for steel bridge fabricators and manufacturers participating in the program to communicate their commitment and capability with respect to quality.

This initial review period provides individuals and organizations that may be affected by implementation of the standard an opportunity to share concerns and offer value enhancing suggestions. Comments submitted during this public review period, which concludes April 29, 2010, will be given full consideration by the AISC Certification Committee Task Group.

BUSINESS PRACTICES

Survey: Owners Are Outsourcing More

The FMI/CMAA Tenth Annual Survey of Owners portrays a construction owner community responding to changing economic conditions by looking to service providers for more comprehensive support across the entire building lifecycle.

The 2009 survey sought to measure current owner attitudes against those of 2006, and to project changes in owner needs and expectations between now and 2014. Survey results were presented at the CURT 2009 National Conference in Orlando, Fla., in November 2009.

Among the key findings is an increasing reliance on outsourcing across all project phases but particularly in later stages, namely program activation/commissioning and operations and maintenance. FMI views the increasing use of tools such as Lean Practices, BIM and IPD as ways to facilitate the outsourcing of construction and O&M activity.

The complete survey report, entitled "Inflection Point: Defining the Future of the Worldwide Construction Industry," is available as a free download at www.fmi-net.com/article/721.

PUBLICATION

New Free Guide Explains How Buildings Are Designed to Resist Earthquakes

Why was destruction so widespread in Haiti and would a similar earthquake be as devastating in the U.S.? A new publication from the American Institute of Steel Construction (AISC), which writes the specification for the seismic design of steel buildings in the U.S., provides a broad understanding of earthquakes and how they affect buildings. While *Facts for Steel Buildings Number 3: Earthquakes and Seismic Design* was written prior to and does not directly address the situation in Haiti, the reader gains a basic understanding of earthquake engineering and the U.S. building codes that are designed to prevent this level of catastrophe. The publication is available as a free download at www.aisc.org/facts.

Written by Ronald O. Hamburger of Simpson Gumpertz & Heger, Inc., this publication presents an overview of the causes of earthquakes, the earthquake effects that damage structures, the struc-

tural properties that are effective in minimizing damage, and the organization and intent of seismic design requirements for steel structures in the U.S. today and also looks at the future of seismic design. Hamburger is one of the world's leading experts on seismic design and chairs the AISC committee responsible for prequalifying moment connections for use in high-seismic applications. He's a past president of the National Council of Structural Engineers Associations and played a key leadership role in the post-Northridge earthquake research that helped to create our current seismic design standards. For his work on performance-based seismic design, he received the AISC T.R. Higgins Lectureship Award in 2007.

AISC's Facts series provides a look at the background and philosophy on various topics without delving into heavy technical details. They are written so as to be understandable by both engineers and

laypeople. The previous two installments are *Facts for Steel Buildings Number 1: Fire* and *Facts for Steel Buildings Number 2: Blast and Progressive Collapse*. All three documents are available as free downloads on the AISC website at www.aisc.org/facts.



What's In the Facts Series

Facts No. 1: Fire, by Richard G. Gewain and Nestor R. Iwankiw of Hughes Associates and Farid Alfawakhiri of the American Iron and Steel Institute (AISI). It presents an overview of fire science, fire resistance strategies, code criteria, fire damage assessment, and commonly asked questions about building fires, fire safety, and fire resistance. This compilation is organized as follows:

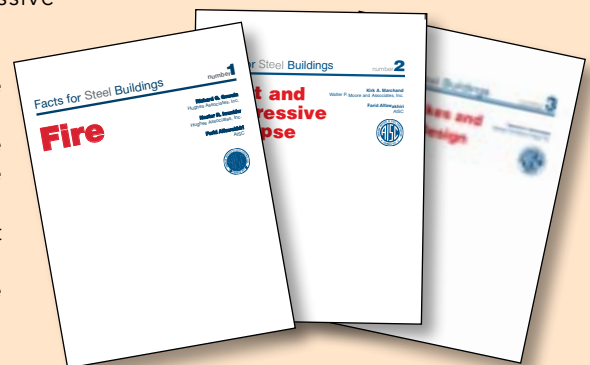
- Section 1 General Fire Science
- Section 2 Fire Resistance of Steel Systems
- Section 3 U.S. Building Code Criteria and Use of Prescriptive Fire Resistance Ratings
- Section 4 The ASTM E119 Standard Fire Test
- Section 5 Application of ASTM E119 Fire Ratings
- Section 6 Strength and Reparability of Steel After a Fire
- Section 7 Past Building Fire Incidents and Casualties
- Section 8 Special Steel Fire Resistance Issues and Future Needs

Facts No. 2: Blast and Progressive Collapse, by Kirk A. Marchand of Protection Engineering Consultants and Farid Alfawakhiri of AISI. It presents background and definitions for explosive loads and progressive collapse, general principles of blast loads and response prediction, recommendations for structures designed to resist blast and mitigate progressive collapse, recent guidelines and federal and DoD requirements, some observations from historical events, and some information on ongoing research.

- Section 1 General Science of Blast Effects
- Section 2 Determining Threats and Acceptable Risk
- Section 3 Resistance of Steel Structural Systems to Blast and Locally Extreme Loads
- Section 4 Mitigation of Progressive Collapse in Steel Structures
- Section 5 Best Practices to Mitigate Blast Effects
- Section 6 Best Practices to Mitigate Progressive Collapse Effects
- Section 7 A Recent History of Blast and Collapse Events
- Section 8 Research and Future Needs

Facts No. 3: Earthquakes and Seismic Design

- Section 1 Basic Seismology
- Section 2 Basic Earthquake Engineering
- Section 3 U.S. Building Code Criteria for Earthquake-Resistant Design of Steel Structures
- Section 4 Seismic System Requirements
- Section 5 Steel Braced Frames and Shear Walls
- Section 6 Steel Moment Frames
- Section 7 Dual Systems
- Section 8 Cantilevered Column Systems
- Section 9 Composite Systems
- Section 10 Important Earthquakes and Building Performance
- Section 11 Future Trends and Research
- Section 12 References and Further Reading



STANDARDS

AISC 358-10 Prequalified Moment Connection Standard Available for Public Review

The 2010 AISC standard *Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications* (AISC 358-10) will be available for public review beginning on March 19. A consolidation of the existing *Prequalified Connections* standard (ANSI/AISC 358-05) and its supplement (ANSI/AISC 358-05s1-09), the 2010 standard includes all five prequalified moment connections, as well as minor revisions for consistency with the upcoming 2010 AISC *Seismic Provisions for Structural Steel Buildings* (AISC 341-10).

The draft standard is available for downloading at www.aisc.org/AISC358pr. A

paper copy can be requested for a fee of \$15 by contacting Janet Cummins at 312.670.5411 or cummins@aisc.org.

The existing standard and supplement can be downloaded at www.aisc.org/AISC358 and www.aisc.org/AISC358s1.

All comments are due by May 3, 2010. Please use the comment form available at www.aisc.org/AISC358prcomment. Submit your comments electronically to grubb@aisc.org or mail to:

Keith A. Grubb, P.E., S.E.
American Institute of Steel Construction
1 E. Wacker Drive, Suite 700
Chicago, IL 60601

FINANCIAL AID

AISC Expands Scholarship Program

Even as economic cutbacks continue, AISC and members of the structural steel construction community are increasing their assistance to university students.

University juniors, seniors and graduate students in civil, architectural and construction engineering are invited to apply for AISC scholarships/fellowships for the

EDUCATION

Summer Internship Opening

The American Institute of Steel Construction is now accepting applications from students enrolled in structural, architectural, or civil engineering programs for an internship position at AISC headquarters in downtown Chicago for the summer of 2010. Qualified applicants will be in, at least, the third year of their curriculum and will have completed at least one course in structural steel design. AISC interns support the AISC engineering and research department in developing technical resources for structural steel design.

Interested students should submit resumes, including a list of related coursework, to Cindi Duncan, AISC director of engineering, at duncan@aisc.org. Please contact her at 312.670.5410 with questions.

2010-2011 academic year. For information on AISC scholarships/fellowships and a link to the new, online application go to www.aisc.org/universityprograms.