

CERTIFICATION

Updated Fee Schedule for AISC Certification Programs

AISC has introduced a new fee schedule for its Certification programs. “This new fee schedule reflects changes and continuing improvements to the program and is the first time we’ve increased fees in more than five years,” said Roger Ferch, president of AISC.

In the past, fees were based on program type (such as steel building structures or steel bridges). The new fee schedule allows participants to pay for a base certificate with a supplementary fee for additional certificates/program certifications. “This is a more equitable solution that better reflects the actual costs for all program participants,” Ferch ex-

plained. For an AISC Member certified to the building fabrication program, the increase will range from 2% to 7% over the three-year certification cycle.

“Recognizing the higher cost of auditing a larger company, the fee schedule includes higher fees for larger companies,” stated Jacques Cattan, the AISC vice president responsible for Certification. “And reflecting the contributions of AISC members, the fee schedule includes a 35% discount for them.”

The new fee schedule can be found at www.aisc.org/certification. For questions, please contact Jacques Cattan at cattan@aisc.org or 312.670.5436.

SUSTAINABILITY

AISC and Steel Organizations Represent the Material of Choice at Greenbuild

AISC, the Steel Recycling Institute (SRI) and the Steel Market Development Institute (SMDI) teamed up to showcase the sustainable benefits of steel at this year’s Greenbuild. The premier event for sustainable building, the show took place in Washington, D.C., in November and drew close to 20,000 attendees—and many of them visited the steel booth to discuss how they design and build with steel as well as to learn about its sustainable attributes.

“Roughly a third of the steel in North America—and half of the steel produced worldwide—is used in construction,” said SMDI’s vice president of sustainability, Mark Thimons. “Steel is so ubiquitous that even people who spend their days immersed in green building topics rarely stop to consider how well it demonstrates meaningful sustainability throughout its life cycle. That’s one of the things we’re trying to emphasize here.”

AISC vice president John Cross commented that while attendees are clearly focused on the environmental performance of buildings, they were still wary of how upcoming elections may affect the green building movement. “Many attendees seemed to have an unsettled attitude toward the twin concerns of the level of traction that will be gained by LEED V4

in the marketplace and the impact that the changing administration will have on government policy related to environmental and sustainable concerns—particularly if a candidate is elected that rejects the relationship between CO₂ emissions and global climate change,” he said.

One prominent topic at the show was the continuing trend of millennials moving into cities—a clear opportunity for new multistory construction as well as structural rehabilitation and expansion of existing buildings. Another was that of resiliency/environmentalism as a societal issue. Academy Award-winning director James Cameron, a keynote speaker, stressed the idea that climate change could further destabilize the parts of the world where it will cause the most damage, but noted that business can lead the way in addressing the problem and that the bottom line can’t be a company’s only consideration.

USGBC and GBCI CEO Rick Fedrizzi, who will be succeeded by current COO Mahesh Ramanujam at the end of 2016, echoed that sentiment at the show’s opening plenary session, pointing out that business/manufacturing and green are not mutually exclusive. “The environment and the economy are tied together,” he stated. “They share a common enemy: waste.”

People and Firms



Sanford H. High (1907-1983) has been posthumously recognized by the **American Road and Transportation Builders (ARTBA) Foundation** with an induction into the organization’s Transportation Development Hall of Fame; he was inducted in the Innovators category. The posthumous honor was one of three bestowed at the ARTBA annual meeting.

High was the founder of **High Welding Company** in Lancaster, Pa. (the forerunner to **High Steel Structures**) and pioneered the concept of welded, rather than riveted, bridges. ARTBA recognized High for “pioneering the welded bridge concept, saving time and money for cash-strapped highway departments during the Great Depression.” High convinced skeptical engineers that highway bridges presented a new frontier for welding instead of riveting.

Founded in 1931, High Welding Company grew with regard to the number of workers and job complexity. In the late 1950s automated welding equipment was adopted, revolutionizing heavy girder construction and leading the movement to faster, lower-cost submerged arc welding, the predominant process used by High Steel today. (High Steel is an AISC/NSBA Member, Certified fabricator and Advanced Certified steel erector.)

PUBLICATIONS

New Nuclear Spec Now Available

A new Supplement No.1 (ANSI/AISC N690s1-15) to the AISC *Specification for Safety-Related Steel Structures for Nuclear Facilities* (ANSI/AISC N690-12) is now available. ANSI/AISC N690, a companion standard to the AISC 2010 *Specification for Structural Steel Buildings*, applies to the design of safety-related steel structures and steel elements in nuclear facilities.

“The new AISC N690 supplement adds specifications for the design of steel-plate composite (SC) walls, which is one of the most important developments

for the nuclear industry in several years,” said Amit Varma, professor in the School of Civil Engineering at Purdue University and vice chair of the AISC Task Committee 12 Ad Hoc Subcommittee, which developed the new supplement. “Several new nuclear plant designs are using SC walls for their safety-related structures. The publication of this industry consensus code/standard, developed based on international research, will facilitate the design, regulatory review and eventual licensing of new nuclear plants in the U.S. and abroad.”

The 2015 supplement has been seamlessly integrated into the 2012 standard for ease of use. The complete document is available as a free download at AISC’s website (please visit www.aisc.org/specifications). A limited number of printed copies are also available for purchase in the AISC bookstore for \$12.50 (AISC members) and \$25.00 (nonmembers), plus shipping and handling.

For more on the new specification, see “Nuclear Design Development” on page 48.

NASCC

NASCC Registration Now Open

Registration is now open for the 2016 NASCC: The Steel Conference, which will take place April 13-15 in Orlando at the Gaylord Palms Convention Center.

The Steel Conference is the ideal place for structural engineers, steel fabricators, detailers and erectors to learn about structural steel design and construction, to interact with their peers and to see the latest products for steel buildings and bridges. It offers more than 100 technical sessions and

is the premier educational event for structural engineers, fabricators, erectors and detailers.

In addition to practical seminars on the latest design concepts and construction techniques, the conference features an extensive trade show (displaying products ranging from structural software to machinery for cutting steel beams) and plentiful networking opportunities. It’s a once-a-year opportunity to learn the latest techniques, see

the most innovative products and network with your peers and clients. And one low registration fee gains you admittance to technical sessions, the keynote address, the T.R. Higgins Lecture and the exhibition hall.

The March issue of *Modern Steel* will feature a handful of session preview papers, and the April issue will feature the full exhibitors list. To view the complete schedule, review travel information, register and more, visit www.aisc.org/nascc.

STUDENT COMPETITIONS

Registration Open for Global Steelmaking Competition

Registration is open for the 10th annual steelChallenge, hosted by the World Steel Association. The competition challenges students and young industry professionals from around the globe to test their skills in steelmaking to win various prizes and recognition in the steel industry.

Participants will first compete in four regions: North and South America; Europe, CIS, Middle East and Africa; Asia and Oceania; and China. This regional round of the competition will take place online at www.steeluniversity.org over a 24-hour period on January 20, where competitors will be tasked to use an electric arc furnace steelmaking simulation to produce a grade of steel that

meets technical requirements at the lowest total cost.

The regional champions and best performing runners-up from the “Student” and “Industry” categories will be invited to compete in the World Championship, scheduled for April 11 in London, where they’ll use a designated simulation during a two-hour period to produce the single best result for the simulation. At the end of the competition, the awards ceremony will take place in the presence of leaders from steelmaking companies worldwide.

Competitors must register for the steelChallenge by January 19. More information about the competition is available at www.steeluniversity.org.

CORRECTION

A photo in the December 2015 article “Up-Tempo Bridge Construction” (lower-right photo on page 45) was incorrectly identified as the Massachusetts 93Fast14 project and credited to CME Associates. The photo is actually of the Milton-Madison Bridge over the Ohio River between Kentucky and Indiana and should be credited to Walsh Construction.

ENGINEERING JOURNAL

First Quarter 2016 EJ Now Available

The first quarter 2016 issue of AISC's *Engineering Journal* is now available at www.aisc.org/ej, where you can view, download and print the current digital edition. Articles in this issue include:

► **Analysis and Design of Stabilizer Plates in Single-Plate Shear Connections**

By Patrick J. Fortney and William A. Thornton

Single-plate shear connections experience some magnitude of torsional moment, either due to the lateral torsional buckling phenomena or due to the effects of lap eccentricity. When the required torsional strength of the connection exceeds the available torsional strength of the connection, the designer has two options: alter the geometry of the connection to increase the torsional resistance of the connecting plate or provide stabilizer plates. This paper presents recommendations for the analysis with regard to appropriate stabilizer plate cross-sectional dimensions and the attachment of the stabilizer plate to the connecting material and support. Three different types of stabilizer plates are presented along with recommendations for the design and detailing of the stabilizer plates; the impact that each type has on the design of the single-plate shear connection and the supporting column is presented as well.

Keywords: nodal bracing, single-plate shear connections, stabilizer plates, stiffener plates

► **Connection Design Recommendations for Improved BRBF Performance**

By Keith D. Palmer, Charles W. Roeder and Dawn E. Leberman

Numerous component tests on buck-

ling-restrained braces (BRBs) have demonstrated their approximately symmetric tension and compressive capacities, stable cyclic behavior and large (component) ductility prior to core fracture. These properties make them suitable ductile fuses for seismic design. Experiments on buckling-restrained braced frame (BRBF) systems show that the inelastic axial deformation capacity of BRBs may be compromised by system performance demands. Prior test results are reviewed, and an analytical study using high-resolution models, which were validated with prior test results, is used to develop mitigation strategies for the damage. Design recommendations to mitigate damage and improve system performance are developed.

Keywords: buckling-restrained braced frames, ductile fuse, gusset-plate connection, core fracture

► **Finite Element Modeling of Steel Moment Connections with Fracture for Structural Fire Analyses**

By Mina Seif, Therese Mcallister, Joseph Main and William Luecke

Performance-based methodologies to evaluate the fire performance of structures are needed to move beyond the prescriptive procedures currently in use, which cannot be used to determine actual structural performance in fire. Analytical methods are needed for simulating the performance of structural systems, including connections, subject to realistic fire effects. Framing connections may be subject to large, unanticipated deformations and loads during fire events, and connection failure may lead to other failures or local collapse. This paper presents the development of detailed fi-

nite element models of typical moment connections for steel-framed structures. These detailed models incorporate temperature-dependent material models that have been calibrated against available test data from tensile coupons, including the modeling of necking behavior and fracture. Connection performance at ambient and elevated temperatures is evaluated, and dominant failure modes are identified.

Keywords: plastic strain, fracture, erosion strain, finite element analysis, material modeling, structural fire effects

► **Fatigue Testing and Retrofit Details of High-Mast Lighting Towers**

By Ryan J. Sherman, Matthew H. Hebdon and Robert J. Connor

Fatigue cracking has been the cause of a number of high-mast lighting tower (HMLT) failures throughout the United States. In almost every case, forensic evaluations have shown cracking initiates and propagates due to wind-induced fatigue at mainly the base plate-to-tube wall connection detail or the hand-hole weld detail. Simply replacing the towers is not an economically feasible alternative because thousands of HMLTs are in use along major highways across the United States. As a result, strategies to retrofit existing HMLTs are needed. Results from laboratory testing performed on two HMLT retrofit configurations are presented. The retrofit strategies are employed without removing the pole from the foundation using simple bolting techniques and moderately skilled labor, providing cost savings for owners and increasing safety for the motoring public.

Keywords: high-mast lighting tower (HMLT), fatigue, retrofit, sign structure

PUBLICATIONS

Spec and Seismic Provisions Available for Public Review

The drafts of the 2016 AISC *Specification for Structural Steel Buildings* and the 2016 AISC *Seismic Provisions for Structural Steel Buildings* will be available for public review until February

1. Both specifications, along with the review forms, are available for download at AISC's website; visit www.aisc.org/publicreview. (You can also order a hard copy—for a \$35 charge—by call-

ing Janet Cummins at 312.670.5411.)

Please submit comments to Cynthia J. Duncan, director of engineering, at duncan@aisc.org by February 1 for consideration.