

MEMBER NEWS

AISC Member COO to Host Weekly Radio Show



An interview about last year's SteelDay led a Kansas radio station to create a new weekly show hosted by Mark Hamade, chief operating officer of PKM Steel Service, Inc., an AISC Member/AISC Certified Fabricator in Salina, Kan.

Called "On the Mark with Mark Hamade," the show will air at 5:30 p.m. (CST) on Wednesdays beginning February 6 on 95.5 FM The Rock, reported a recent article in the *Salina Journal*.

According to the article, the show will include business segments with local and regional professionals and address topics in management and leadership. In addition, the program will provide opportunities for listeners to use online social media to send in questions, as well as time for Hamade to discuss his own approaches to business and life.

"Whether you're the CEO of a major organization, a small business

owner, a foreman on a job site or a third-shift lineman, this program will speak to you and help move you closer to both your personal and professional goals," said Morgan Lillich, lead business development executive for 95.5 FM.

Added Hamade, "This can help just about anybody. The show is about business, but what makes you successful in business can also make you successful in life."

In addition to broadcasting the show, the radio station will stream the program online through its website, www.salina-radio.com, and offer previous shows online as podcasts.

Last year's SteelDay event at PKM Steel drew in about 2,500 people and included tours of PKM's facilities and more than 100 vendor booths on site. In addition, it featured several entrepreneurial speakers including Nolan Bushnell, founder of the Atari Corporation.

You can find AISC's interview with Bushnell in our previous news post, at www.modernsteel.com/SteelInTheNews/?p=1929. And mark your calendars! SteelDay 2013 is scheduled for October 4.

CORRECTIONS

In "The Long Way Home" (12/2012), Industrial Steel Construction (AISC Member/AISC Certified Fabricator/NSBA Member) was accurately listed as the project's fabricator. However, American Bridge Manufacturing in Coraopolis, Pa. (AISC Member/AISC Certified Fabricator/NSBA Member), also performed some fabrication services on the project.

In the second to last line of the left column of page 9 of Steel Interchange (1/2013), we mistakenly omitted the square on the cosine term. The corrected equation is:

$$K_x = \frac{F}{\Delta_x} = \frac{2P}{\delta} \cos^2 \theta$$

The remainder and conclusion of the calculation illustrated was correct as printed.

People and Firms

• **Thornton Tomasetti** has acquired **Simon & Associates, Inc. (S&A)**, a nationally recognized sustainability consulting firm located in San Francisco. Simon & Associates' team will become part of Thornton Tomasetti's Building Sustainability practice. S&A founder, **Lynn N. Simon**, becomes a senior vice president at Thornton Tomasetti and will lead the West Coast efforts of the practice. She will collaborate with the firm's leadership in California as well as with principal **Gunnar Hubbard**, who leads the Building Sustainability practice.



• **Schock**, an international developer of innovative construction products for thermal insulation, impact sound insulation and reinforcement technology, recently announced the U.S. introduction of **Isokorb**, a load-bearing and thermal-insulating element for building exteriors. The technology reduces heat transfer through the building envelope, providing a higher interior temperature. This innovative approach to thermal break technology saves energy consumption, prevents the formation of condensation and mold, and improves living comfort from warmer surface temperatures.

• **SidePlate Systems, Inc.**, a steel connection technology company and AISC Associate Member, has hired **Ryan E. Smith, P.E.**, as a regional engineer. His territory will be the area west of the Rockies.

MEMORIAM

James Walker, Jr., GLFEA CEO, Dies Suddenly at 58

The Great Lakes Fabricators & Erectors Association (GLFEA) Board of Directors announced that D. James (Jim) Walker, Jr., their CEO, passed away suddenly on December 5 at the age of 58.

Walker began his 42-year-career in the construction industry during high school, when he worked for his family's company, Goss Mechanical. He attended Michigan State University, where he was a member of Phi Delta Theta and president of the Michigan State Scuba Diving Club, and received a bachelor's degree in business in 1976. He subsequently studied law and received his Juris Doctorate from the Detroit College of Law.

After law school, he and his wife Emily both went to work for Bechtel Power in hopes of traveling the globe, but only made it as far as Midland, Mich. He later worked for the Association of Underground Contractors before joining GLFEA in 1994.

A lifelong resident of Michigan, Jim was a strong advocate for the state and the city of Detroit; he recently filmed videos for the structural steel industry, showing highlights from around the city. He remained deeply committed to the success of industry in Michigan through the many roles he fulfilled with numerous organizations. He was in Washington, D.C., when he passed away, working on pension issues for

The Association of Union Constructors (TAUC). He served on the TAUC Board of Directors, chaired the LEO Group and was the representative for TAUC on the Pension Reform Commission.

Walker is survived by his wife, Emily, a son and a brother.



INDUSTRY NEWS

Manufacturing May Be Comeback Player of the Year

The most recent FABTECH show, which took place late last year in Las Vegas, boasted a record attendance, an array of new technologies and products and an unprecedented number of manufacturing sessions—all signs that manufacturing in the U.S. may have a bright future.

Show organizers reported that nearly 26,000 people attended, and exhibitors reported that sales activity was brisk and leads were plentiful.

The conference also featured several special events, including a State of the Industry roundtable with manufacturing CEOs concurring that growth in manufacturing should continue for the next year. However, the panelists acknowledged that a stumbling block to growth is the lack of skilled workers in manufacturing, and emphasized that manufacturers need to be more aggressive in

influencing parents and students and in giving schools a more active voice in recruiting potential manufacturing workers.

FABTECH also featured a "Post-Election Analysis" panel featuring Washington insiders with long track records in representing manufacturing interests. The panelists discussed the (at that time) looming fiscal cliff and other issues that will impact manufacturers. All agreed that the manufacturing sector has gained influence in Washington over the past two years and encouraged manufacturers to get involved in advocacy efforts for the industry via their trade associations.

"If you can take the pulse of the economy by what's happening in manufacturing, then you have to be optimistic that we are headed for economic growth," said Mark

Hoper, FABTECH show co-manager. "A constant theme I heard both on the show floor and at the seminars was that, while challenges and uncertainties remain, most manufacturers believe that their businesses are headed for continued growth in 2013."

FABTECH is co-sponsored by five industry-leading associations: the American Welding Society (AWS), the Fabricators & Manufacturers Association, International (FMA), the Society of Manufacturing Engineers (SME), the Precision Metalforming Association (PMA) and the Chemical Coaters Association International (CCAI).

Next year's show will be held November 18-21 at McCormick Place in Chicago. More information on this year's FABTECH can be found at www.fabtechexpo.com.

ENGINEERING JOURNAL

Engineering Journal 2013 Q1, 2012 Q4 Now Online

The First Quarter 2013 issue of *Engineering Journal* is now available online in digital edition format. View the current issue online by going to www.aisc.org/ej and clicking the Digital Edition icon.

Papers in *Engineering Journal* 2013 Q1 include:

➤ **Calculation of Stress Trajectories Using Fracture Mechanics**

Bo Dowswell

In structures composed of plates and plate-like elements subjected to in-plane stresses, the stress flow around discontinuities is an important design consideration. Stress dispersion angles are used extensively in gusset plate design and calculations for web local yielding of wide flange members. The current design values are empirical, and the variables affecting the dispersion angles are not well understood. Due to the wide range of angles published in the literature, an analytical model that accounts for all variables is necessary for full understanding of the behavior of these elements. Using fracture mechanics principles, this paper shows that the dispersion angle is dependent on geometry, constraint and inelastic deformation capacity. A versatile design procedure, which explicitly accounts for all variables affecting the stress dispersion angle, is presented.

Keywords: gusset plates, stress flow, discontinuities, fracture mechanics

➤ **Overview of the Development of Design Recommendations for Eccentrically Braced Frame Links with Built-Up Box Sections**

Jeffrey W. Berman and Michel Bruneau

Among the new additions to the 2010 AISC *Seismic Provisions* are design requirements for eccentrically braced frame links with built-up box sections. Such links do not require lateral bracing in many cases because built-up box shapes have superior lateral torsional stability relative to wide-flange sections. The 2010 *Seismic Provisions* include requirements for built-up box link flange width-to-thickness ratio and other important design considerations. However, the limits on web width-to-thickness ratio default to those used for built-up box beams or columns and are inadequate for links with large inelastic shear and compression strains. Such limits are important for preventing web buckling under shear and/or flexural compression. This paper presents an overview of research on the design and behavior of links with built-up box sections, including the development of recommendations for web width-to-thickness limits and corresponding

web stiffener spacing requirements and flange width-to-thickness limits for these link sections. The highlighted research program included derivation of design requirements based on plate buckling considerations; a full-scale, single-story eccentrically braced frame test; a parametric study on the impact of link cross-sectional parameters on link inelastic rotation capacity; and a series of large-scale tests on isolated links.

Keywords: eccentrically braced frames, built-up box sections, links, width-to-thickness limits

➤ **A Comparison between the 2005 and 2010 AISC Specification**

Eric J. Bolin, Thomas J. Deblin and Louis F. Geschwindner

In 2010, AISC published a revised version of its *Specification for Structural Steel Buildings* that replaces the 2005 edition. Changes to the *Specification* were minimal and improved the usability and accuracy of the document. A detailed summary of these changes are contained in this article, providing an extension to the historical reviews of previous AISC specifications presented in Appendix A1 of *AISC Design Guide 15*.

Keywords: design specifications

➤ *Continued*

NASCC

New Bridge Track at NASCC: The Steel Conference

In addition to the dozens of specialized sessions on buildings that will take place at NASCC: The Steel Conference in St. Louis, April 17-19, this year's educational offerings also include a comprehensive track of 10 sessions focused on bridges.

The first day of the conference offers two afternoon bridge sessions, "The Bridges of St. Louis" and "The Eggners Ferry Bridge Emergency Replacement." The latter discusses the strategies and tactics used to design, fabricate and erect the replacement span in just four months.

Thursday's bridge-related sessions include: "The New Steel Bridge Handbook," "Design for Construction of

Curved and/or Skewed I-Girder Bridges," "Future Fabrication for Bridges—and All Structures," "The New Bridge QMS Certification Program," "Short-Span Steel Bridges—Today and in the Future," and "Using NSBA's LRFD SIMON Software for Cost-Effective Steel I-Girder Design."

The bridge track concludes the last day of the conference with two morning sessions: "Innovative Bridge Design" and "100-Year-Old Steel Bridge—Protecting Tomorrow's Centurions."

To register for NASCC or to view an advance program, go to www.aisc.org/nascc. Be sure to register early! The rate increases \$10 every week until the conference opens, when the price becomes \$480.

The single registration fee includes admittance to all technical sessions, the exhibition hall, the keynote address and the T.R. Higgins Lecture. It also includes admission to all Structural Stability Research Council sessions, all of the Technology in Steel Construction Conference sessions and the full Bridge Track.

The Bridge Track is offered every other year at The Steel Conference when the World Steel Bridge Symposium (WSBS) is not held. You can find proceedings from last year's WSBS, which coincided with the 2012 Steel Conference in Dallas, at www.steelbridges.org/wsbs.

► *Continued from previous page*

And in case you missed it, here is the list of papers in *Engineering Journal* 2012 Q4:

► **Axial Capacities of Eccentrically Loaded Equal-Leg Single Angles: Comparisons of Various Design Methods**

Yuwen Li

For most structural engineers, the design of an eccentrically loaded single angle without lateral restraint along its length was considered to be a formidable task prior to the publication of the 2005 AISC *Specification for Structural Steel Buildings*. According to Section E5 of the 2005 *Specification*, the effects of eccentricity on single-angle members are permitted to be neglected by using the effective slenderness ratio as specified, provided that members are loaded at the ends in compression through the same leg; members are attached by welding or by a minimum of two-bolt connections; there are no intermediate transverse loads; the leg length ratio is less than 1.7, if angles are connected through the shorter leg; and the modified KL/r is less than or equal to 200.

The 13th edition AISC *Steel Construction Manual* provided a design table (Table 4-12) of the available strengths in axial compression of eccentrically loaded single angles, with the assumption that the compressive force is applied at the geometric y - y axis at a distance of $0.75t$ from the back of the connected leg, where t is the angle thickness. Table 4-12 has been revised in the 14th edition AISC *Steel Construction Manual*. The new table corrects some numerical errors in the calculations and moves the compressive force to the midpoint of the connected leg. The values of the axial compressive design strength in Table 4-12 are developed on the basis of bending about the principal axes w - w and z - z .

Keywords: eccentrically loaded single angles, design tables.

► **Bond Behavior of Concrete-Filled Steel Tube (CFT) Structures**

Jie Zhang, Mark D. Denavit, Jerome F. Hajjar and Xilin Lu

To achieve internal force transfer while avoiding the use of steel stud anchors or a bearing mechanism within concrete-filled steel tubes (CFTs), an accurate assessment of the bond strength of CFTs is required. However, calculation of the bond within CFTs remains a challenging problem due to lack of a general procedure that can account for the range of connection configurations seen within composite construction. A new approach for assessing the nominal bond strength for both rectangular and circular CFTs is proposed. Based on the results of push-out experiments of CFTs, the nominal bond stress is shown to vary with tube shape and dimensions, and formulas are proposed to capture this behavior. The longitudinal bond transfer length is derived by examining the distribution of bond stress along the height of the column as well as experimental data from CFT connection tests. The circumferential bond transfer width is identified as the entire perimeter of the interface, accounting for the contribution to the bond strength from the interface on the sides that do not have girders or braces framing in. The resulting nominal bond strength is then shown to have a resistance factor of 0.45 for load and resistance factor design (LRFD) and safety factor of 3.33 for allowable strength design (ASD).

Keywords: concrete-filled steel tubes, composite action, connections, bond strength, critical bond stress, slip.

► **Beam Deflections and Stresses During Lifting**

R.H. Plaut, C.D. Moen and R. Cojocaru

The behavior of horizontally curved beams during lifting is analyzed. The beams are circularly curved, doubly symmetric, prismatic and linearly elastic, and they are suspended at two symmetric locations. The two cables lifting the beams may be vertical or inclined symmetrically. Numerical results are presented for steel I-beams. Weak-axis and strong-axis deflections, roll angle and cross-sectional twist, internal forces, bending and twisting moments, and longitudinal stresses are calculated using newly derived analytical solutions implemented as a freely available spreadsheet at www.moen.cce.vt.edu. Lifting locations along the beam that minimize displacements and stresses are identified.

Keywords: lifting beams, twisting, deflections.

► **Current Steel Structures Research No. 32**

Reidar Bjorhovde

Each quarterly current issue of *EJ* is available in digital format and free to the public until the next issue is published.

The complete collection of *Engineering Journal* articles is searchable at www.aisc.org/ej. Current and past articles can be downloaded as PDFs and are free to AISC members and ePubs subscribers; just make sure you are logged into the AISC website (www.aisc.org) before searching. Non-members will be directed to the AISC Bookstore at www.aisc.org/store to purchase articles.

letter to the editor

Applause for the Stage

Great article on the Levitt Pavilion in the October issue (“All the World’s a Stage”)! An interesting side note to that article is the fact that the lead LVTA detailing checker for the project is Leonard Gentilcore, who has been involved in steel detailing for over 60 years and he also worked on

some of the towering structures in the background during his 36-year career at Bethlehem Steel! I truly appreciate all the knowledge I’ve gained from many of the experienced detailers from Bethlehem, including Leonard. It would be a great article to interview these men and the experiences they

have to share with us—similar to the WWII project of recording the veterans’ experiences before they are lost forever.

—Denton Johnson,
D. L. Johnson Drafting, LLC
(AISC Member) Manheim, Pa.