IN MEMORIAM

Fred R. Beckmann Dies at 82

Fred R. Beckmann, former AISC director of bridges, passed away last Friday, May 31, at the age of 82.

He was known as one of the nation's most-recognized experts on steel bridge fabrication. In addition to his love of bridges, he especially enjoyed sharing his advice and wisdom.

"Fred's passion was in the building of steel bridges and he developed an understanding of how steel girders behave as loading changes during construction," said Bill McEleney, director of the National Steel Bridge Alliance. "His desire to share this knowledge will have a lasting effect on steel bridge design and construction in the future."

Beckmann was born in Pekin, Ill., on July 25, 1930. He graduated from the University of Illinois in 1953 with a degree in civil engineering and in 1953 married Joanne Drake, also of Pekin; they spent most their life together in Chicago Heights, Ill. He was also an avid tennis player.

Beckmann started his career in Pennsylvania at Pittsburgh-Des Moines Steel and later moved back to Illinois to work in Springfield. The majority of his career was spent at Chicago Heights Steel. He joined AISC in 1980 as its director of bridges and retired 14 years later in 1994.

In 2002, he received an AISC Lifetime Achievement Award in special recognition of his many years of exceptional service to AISC and the structural steel design, construction and academic communities.

He is survived by his wife, Joanne, their three children and their families.

In lieu of flowers, Beckmann's family requests donations to either Trinity Lutheran Church (2901 Western Avenue, Park Forest, IL 60466) or to AISC's general scholarship fund (in Fred Beckmann's name). Checks should be made payable to AISC Education Foundation, Inc., and mailed to: AISC, Attn: Danielle Bronkema, One E. Wacker Drive, Suite 700, Chicago, IL 60601. Please note Fred Beckmann in the memo portion of the check.

AWARDS

Milek Fellowship Award—Call for Proposals

University faculty are invited to apply for AISC's 2014 Milek Fellowship, a four-year, $30,000-per-year award for promising faculty members. The program is designed to contribute to the research careers of untenured, beginning faculty who teach and conduct research investigations related to structural steel while producing research results beneficial to designers, fabricators and erectors. The award is named after William A. Milek, former AISC vice president of engineering and research, in recognition of his invaluable contributions to AISC and the structural steel industry as a whole.

Applications are due September 15. AISC requests advanced notification of the intent to submit an application, which should be emailed to **schlafly@aisc.org** and **zuo@aisc.org**. The notice of intent should include the name of the candidate, the name of the institution and the subject of the proposed research.

For the Fellowship program description and requirements, visit **www.aisc.org/facultyfellowship**.

People and Firms

- Three **Modjeski and Masters** engineers have been appointed as Fellows to the **Structural Engineering Institute of the American Society of Civil Engineers** (ASCE). **Barney Martin**, president at Modjeski and Masters, **Bruce Peterson**, senior associate and **R. A. P. Sweeney**, adjunct consultant, all received the appointment.
- **Michael Calvert**, president of AISC member fabricator **Brown-Strauss Steel**, retired last month after more than 35 years of service with the company and its parent company, **Blue Tee Corp.** Calvert assumed the president role in 1992 and over the following 21 years built Brown-Strauss into a leading distributor of wide-flange beams and structural tubing to the western U.S.
- **Nucor Fastener**, a division of **Nucor Corporation**, announced the appointment of **Christopher Gasser** as sales manager. Gasser began his career with Nucor in 2010 as the marketing manager at **Nucor Steel Berkeley**.
- A new service, **TRUCONNECT** Remote Monitoring and Reporting from **Konecranes**, employs continuous crane data collection, allowing steel industry customers to plan crane maintenance based on actual crane usage. Usage data is collected from the crane through a remote connection and compiled into web views and customer reports that are available through a secure online customer portal.

MEMBER NEWS

Buckner Chairman Wins Prestigious N.C. Award

Eddie Williams, chairman of Buckner Companies, Inc. (an AISC member and advanced certified steel erector), has received North Carolina's Order of the Long Leaf Pine Award for his accomplishments, service and contributions with the steel industry.

Former N.C. Senator Bob Atwater presented the award on behalf of former N.C. Governor Beverly Perdue, stating, "One would be pressed to find any individual that has devoted more time, resources or effort working for the betterment of the steel construction industry."

The Long Leaf Pine Award, one of the most prestigious that a North Carolina governor can bestow, recognizes a citizen's contributions to his or her community and dedication to his or her profession. Williams joins a notable rank of more than 7,000 recipients, including Billy Graham, Michael Jordan, Charles Kuralt and political cartoonist Doug Marlette.

Williams started working with C.P. Buckner Steel Erection, Inc., in 1952 where he began his career as a rebar laborer, eventually achieving the position of Chairman of the Board. Williams made his way to the top by working in most every trade and management position within his company as well as holding leadership positions at virtually every major trade organization in the steel construction industry, including AISC.

He is one of six founding members of the Steel Erectors Association of the Carolinas that evolved into the Steel Erectors Association of America (SEAA), and even secured SEAA a voice on the SENRAC Committee, providing the organization the opportunity to influence the writing of OSHA law that would govern how the entire construction industry would conduct business for the foreseeable future. He has served as SEAA president three separate times, including as founding president in 1972.

Williams has served in many positions throughout his community as well as industry organizations, including: past member of the Board of Directors for Alamance County's Chamber of Commerce; president of the American Subcontractor Association of the Carolinas (ASAC); member of AISC's Roundtable and Certification Committee; and member of AISC's NASCC: The Steel Conference Planning and Awards Committee.

He was recognized with the William Davis Service Award by SEAA for his numerous contributions to the association, and in 2005 was awarded an AISC Lifetime Achievement Award.

At age 79 he still serves on the Board of Directors for the American Subcontractors Association of the Carolinas and SEAA.

He has been married for 60 years to Pat Williams. They have one daughter, Teri Atkins; one son, Douglas E. Williams; and five grandchildren. Following his father's example, Doug is the current CEO of Buckner Companies.

Courtesy of SEAA

Former N.C. Senator Bob Atwater (left) with Williams.

NASCC

2013 NASCC Recorded Sessions Now Available

While there's no substitute for attending NASCC: The Steel Conference in person, AISC offers the next best thing: recordings of the sessions. These proceedings document much of the material presented at the conference, including a synchronization of the speakers' voices along with their visual presentations.

The recorded sessions from this year's conference in St. Louis are now posted online at **www.aisc.org/2013nascconline** (you can find previous conference seminars by visiting **www.aisc.org/freepubs** and clicking on "NASCC: The Steel Conference") and all are available in MP4 format.

Why does AISC do this? The Steel Conference is a bit different from other conferences. While most conferences issue a call for papers, consider abstracts and then select those who will present a paper, The Steel Conference takes a different approach. The planning committee selects topics and then seeks out the top experts on those topics. As a result, we don't require our presenters to produce papers. Instead, our proceedings are an actual documentation of the material presented at the conference. AISC then makes much of this material available at no charge as part of its mission to disseminate information that makes it easier to design and build with structural steel.

This year's Steel Conference boasted a record-breaking attendance of 3,748 people. You can find photos from the conference on AISC's Facebook page at **www.facebook.com/AISCdotORG** in the "NASCC 2013" photo album, as well as videos on AISC's YouTube channel (**www.youtube.com/AISCSteelTV**) showing highlights from the opening day of the conference.

SAFETY

Arc Flash Webinar

The AISC Safety Committee is kicking off its new webinar series with a free webinar on arc flash safety, July 25 at 11:30 a.m. (CDT).

Steel fabricators and erectors will benefit from this webinar by learning about arc flash and other electrical safety hazards. Attendees will be informed of the requirements in NFPA 70E as well as suggested safe working practices around electrical hazards. Electrical safety professional Scott Mitchell from Cianbro will present the webinar and answer questions. Anybody can tune in; all you need is a computer and an internet connection. Registration for the webinar is required to reserve a spot. Register now at **www.aisc.org/webinars**!

ENGINEERING JOURNAL

Engineering Journal Q2 Now Online

The Second Quarter 2013 issue of *Engineering Journal* is now available online by going to **www.aisc.org/ej** and clicking the Digital Edition icon. (Did you ever wonder how *EJ* got its name when it started 50 years ago? You can find out in this issue.)

Papers in *Engineering Journal* Q2 include:

➤ **Flange Bending in Single Curvature**

Bo Dowswell

Local bending of beam and column flanges is a common design consideration in steel structures. In most cases, the flange bends in double curvature due to the restraining effect of the connecting element. When a restraining force is not present, the flange will deform in single curvature. Common cases of single-curvature bending occur at the bottom flange of monorail beams and at hanger rod connections. In this paper, the equivalent width method was explored in an effort to determine design procedures for elastic and plastic strength of flanges in single-curvature bending.

This paper compares the available procedures for designing flanges bent in single curvature. New finite element models and yield line analyses are used to verify, expand and improve the existing design methods. Design recommendations are made for both elastic and ultimate strength approaches. Recommendations are also made for interaction of the local bending strength with longitudinal stresses in the flange. The effects of closely spaced loads and loads acting near the ends of members are also addressed.

Keywords: flange bending, design recommendations.

➤ **Buckling Restrained Braced Frame with All-Bolted Gusset Connections**

Patrick S. Mcmanus, Addison Macmahon and Jay A. Puckett

A braced-frame, lateral-load-resisting system was developed in which inelastic deformations due to seismic loading were intended to be isolated to easily replaceable buckling restrained braces (BRBs). Bolted brace-to-gusset and gusset-to-beam and column connections were utilized to facilitate simple brace and gusset plate installation and replacement. Full-scale testing using two BRBs was executed to assess performance. Analytical frame models were developed using the nonlinear load-deformation characteristics of the braces. The experimental and analytical results were compared to validate reasonable nonlinear parameters for industry use.

All-bolted brace connections designed per AISC requirements provided adequate capacity to develop the BRBs. With proper detailing, inelastic deformations can be isolated substantially to the BRBs such that a repairable system is achieved. Load-deformation data for individual braces as provided by the supplier can be used to create reasonable analytical models for frames designed with all-bolted connections.

Keywords: buckling restrained braced frames, bolted brace connections, nonlinear analysis, performance-based seismic design

➤ **Uncertainty in Life-Cycle Assessment Induced by Life-Cycle Inventory Data: The Case of Structural Steel**

Iordanis Zygomalas and Charalambos Baniotopoulos

Life-cycle assessment (LCA) is currently widely used to quantify environmental impacts and thus support decision making within business sectors such as steel construction, which utilizes vast amounts of materials to deliver large-scale projects globally. Because the validity of LCA results greatly depends on the quality and appropriateness of the life cycle inventory (LCI) data referring to the environmental inputs and outputs associated with the examined subject, it is necessary to estimate the degree of uncertainty embedded in these data, which will inevitably be incorporated into the final LCA results. The purpose of this research is to examine the extent and the characteristics of uncertainty due to LCI data, based on findings for the case of commonly used structural steel components. Impact assessment results are calculated according to four relevant LCI databases and two assessment methods. The results are compared based on a detailed analysis of the impact caused for the production of the steel members. Major conclusions include the observation that data quality characteristics do not ensure the accuracy of the final LCA results because datasets referring to the same steel member type were found to lead to noticeable divergence. An overall lack of uniformity was observed within each of the mainly burdened impact indicators, while the influence of system boundaries was also examined. Issues concerning the collection of primary LCI data were raised, and it was also shown that different impact assessment methods provide different perspectives, which results in a more complete and factual approach.

Keywords: life-cycle assessment (LCA), life-cycle inventory (LCI), uncertainty, structural steel, steel structures

➤ **Current Steel Structures Research No. 33**

Reidar Bjorhovde

Article searches for the complete collection of *EJ* remain available at **www.aisc.org/ej**. Downloads of current and past articles in PDF format are free to AISC members and ePubs subscribers. Non-AISC members may subscribe to *Engineering Journal* at AISC's website.

Is there a steel design topic that you would like to see addressed in more detail? *EJ* is always looking for ideas. Email them to Keith Grubb, editor, at **grubb@aisc.org**.