The 2005 Steel Conference – Montreal, Quebec

The 2005 North American Steel Construction Conference (NASCC) is set for April 6–9, 2005 in Montreal, Quebec. The Steel Conference will feature the newest innovations in structural steel engineering, fabrication, detailing, and erection.

This once-a-year event is an opportunity for design and construction professionals to learn how to apply the latest technology and techniques to everyday work; to discover new product offerings from leading industry vendors; and to network with peers, customers, and future employees. This year's Steel Conference will once again incorporate the Structural Stability Research Council (SSRC) Annual Stability Conference.

More than 40 technical sessions offer a variety of educational opportunities. Learn about topics ranging from improving detailing business practices to innovative steel design systems to practical information on serviceability design considerations. Some sessions focus on technical engineering issues (Designing to Prevent Progressive Collapse in Steel Structures), while others focus on fabrication (Castellated Beams: Fabrication, Applied Research, and Innovative Applications), erection (OSHA Subpart R Revisited), or detailing (What Detailers Need to Know about Welding and Weld Symbols). The conference offers pre- and post-conference Short Courses on steel design, seismic design in Canada, and managing the impact of delays. A tutorial on the fire resistance of structural steel framing is also offered. The advance program in the December 2004 *MSC* and online at **www.aisc.org/nascc** has more detailed information.

NASCC speakers are selected both for their expertise on the subject matter and the quality of their presentations. The Steel Conference features such industry notables as Jim Malley, Pete Carrato, Sam Easterling, Larry Griffis, Mark Holland, Rafael Sabelli, and Eddie Williams.

The NASCC is also the ideal place to view the tools you use everyday. This year's exhibit hall expects to feature more than 120 exhibits. Displays will include software (engineering, detailing, and fabrication), fabrication equipment, bolts, safety equipment, coatings, and more.

Join 2,500 of your peers for the steel industry's biggest event! Register online at **www.aisc.org/nascc**. ★

AISC Announces 2005 Seminar Schedule

For 2005, AISC will continue to offer the popular seminars *Fire, Blast, and Progressive Collapse*, *Field Fixes*, and *Bolting and Welding*, and will introduce two new seminars: *Steel Design After College* and *Seismic Braced Frames—Design Concepts and Connections*. As always, leading industry experts will serve as featured speakers for each of the seminars and ech program includes extensive seminar notes.

Continuing a long tradition of providing cutting-edge continuing education courses at reasonable prices, registration for the seminars is only $225 (AISC, CASE and SEI members; non-members pay $325). And AISC is once again offering its successful "Bring a Buddy" program. Each paid registrant can bring one colleague for only $100 more! New in 2005 is the ability to register online and save $5 off the registration fee.

Detailed information on the seminars, including information on dates and locations, is available at **www.aisc.org/seminars**. ★

Correction

In the Steel Products section of the December 2004 issue of *Modern Steel Construction*, the photo supplied by Verco Manufacturing Co. inadvertently appeared in the product listing for Pneutek, Inc. We regret the confusion caused by the error. A corrected version of the listing has been posted on our web site, **www.modernsteel.com**. ★

The following articles will appear in the First Quarter 2005 issue of AISC's *Engineering Journal*.

Preliminary Assessment for Walking-Induced Vibrations in Office Environments

Linda M. Hanagan and Taehoo Kim

This paper presents the development and application of a preliminary walking vibration assessment procedure for steel-framed office floors. Using a database of over 70,000 floor system evaluations, multivariate statistical methods were employed in the formulation. The research was undertaken to provide building design professionals with an "easier" means of checking floor system properties early in the design process, thus resulting in an economical system while maintaining serviceability. The primary use of this evaluation is to determine whether a floor system that has been designed to meet strength and live load deflection requirements should be altered to meet walking vibration serviceability requirements.

EJ Topics: vibration, serviceability

Recommended Effective Throat Sizes for Flare Groove Welds to HSS

Jeffrey A. Packer and George S. Frater

An experimental research project has been undertaken to investigate the geometric properties, and in particular the effective throat size, of flare bevel and flare-V partial joint penetration groove welds at the corners of Hollow Structural Sections (HSS). HSS-to-plate (flare bevel) and HSS-to-HSS (flare-V) single-pass welds were carefully performed to Welding Procedure Specifications agreed within a project oversight committee, using ASTM A500 tubing, cross-sectioned after inspection to produce 180 test welds. Parameters included three HSS sizes (with wall thicknesses ranging from 3/16" to 3/8"), four welding processes (FCAW-G, FCAW-S, GMAW, and SMAW) and four welding positions (flat, horizontal, vertical, and overhead). All weld cross-sections were polished and etched, then had their profiles digitally recorded and measured. An analysis of the resulting data has shown that the current pre-qualified effective throat sizes for these two weld types, in AWS D1.1/D1.1M:2004, can be made more liberal for most weld processes.

EJ Topics: connections, hollow structural sections, welding

Plate Girders with Corrugated Steel Webs

Ezzeldin Yazeed Sayed-Ahmed

Girders with corrugated steel webs represent an innovative system that has emerged in the past decade, especially for short span bridges. The new system combines the usage of corrugated steel plates as webs and either steel or reinforced/prestressed concrete slabs as flanges. The flanges are assumed to provide the flexural strength of the girder with no contribution from the corrugated web, which is assumed to provide the entire shear capacity of the girder. The corrugated web is thus subjected to an "almost" pure shear stress state. Failure of a corrugated steel web plate may occur by the classical steel yielding of the web under a pure shear stress state. It may also occur by web buckling due to either local instability of any "panel" between two folds or overall instability of the web over two or more panels. An interactive failure mode between these different failure criteria represents another possibility of failure. In this paper, the shear behavior of corrugated steel webs is explicitly investigated focusing on the different failure modes which affect the web design. A closed form solution (interaction equation) that considers local buckling, overall buckling, and steel yielding of the web is presented. Numerical analyses based on the finite element technique are performed to investigate the buckling modes of the corrugated web and to verify the validity of the proposed interaction equation. The effect of different geometric parameters on the failure mode of the corrugated web is inspected using the proposed interaction equation. A nonlinear finite element model is then used to investigate the post-buckling strength of girders with corrugated steel webs.

EJ Topics: bridges, local buckling, girders

New for 2005

Current Steel Structures Research

This new feature of the *Engineering Journal* will provide information on new and ongoing research around the world. Reidar Bjorhovde is the research editor and author of "Current Steel Structures Research," which will appear in every issue of the *Engineering Journal*.

Don't Forget

EJ is Available Online

All past *Engineering Journal* articles are available online at no cost for all AISC members and *e*Pubs subscribers.

Visit **www.aisc.org/epubs** to check it out. ★

Robert J. Dexter, University Professor and Steel Fracture Expert, Dies at Age 48

To engineers across the country, Robert J. Dexter, associate professor of structural engineering in the Department of Civil Engineering at the University of Minnesota, was a down-to-earth expert they could call with some of their most challenging steel fracture and fatigue problems.

"I would count him among the top few in the area of fracture mechanics in steel structures, in solving real-life problems on a regular basis," said John Fisher, professor emeritus at Lehigh University, where Dexter worked for six years.

Dexter, 48, died on November 16, 2004 from acute leukemia.

Dexter was known nationally and internationally for his work on fracture and fatigue in buildings, bridges, ships, and other structures, and he worked as a consultant on scores of projects nationally and internationally. His sudden death cut short a rising career in applied steel research, one that touched an unusually wide number of areas, including fracture problems in buildings, fatigue in bridges, cracking in ship panels, and collapse of overhead highway signs. His work on steel cracking in ship panels, funded by the Navy and Coast Guard, contributed to a significant change in the design of naval ship welds.

Dexter served on several national and international committees related to steel structures, including AISC Specification Task Committees 6 on Connections and 11 on Materials. He conducted a wide range of research on steel buildings, including mitigating fractures and fatigue in both bolted and welded steel connections, and assessing the strength of building structures after damage due to fire.

Dexter also served on several Transportation Research Board (TRB) and American Society of Civil Engineers (ASCE) committees, and he was an active participant in ongoing work of the Research Council on Structural Connections (RCSC) and the American Railway Engineers and Maintenance of Way Association (AREMA).

Much of Dexter's research addressed practical problems faced by structural engineers. He contributed extensively to the writing of the AISC Specification, the AASHTO steel bridge design specification, the RCSC bolt specification, and the AWS welding specification. He also co-authored several design guides, including those for fracture and fatigue in bridges, steel bolted connection design, and steel base plate design. His study regarding wind-induced vibrations of traffic signs, signals, and stadium lights was a basis for national code changes for design of the signs. Most recently, he was the co-recipient of AISC's T.R. Higgins Lectureship Award, along with Jerome Hajjar, for their work on design of column stiffeners in steel moment-resisting connections.

Some of Dexter's most significant contributions were in the field of fatigue and fracture mitigation in bridges. He worked closely with the Minnesota Department of Transportation on several projects, and did major research and consulting for other agencies around the country.

"If there was a fatigue issue, Robert was our first call," said Dan Dorgan, state bridge engineer for the Minnesota Department of Transportation. "He had a tremendous scientific knowledge, but he could translate it so that the rest of us could understand what he was saying."

Dexter took an unconventional path to academia, working in his early 20s on construction sites and as a truck driver for a steel company. Karl Frank, professor at the University of Texas-Austin, where Dexter obtained his undergraduate and graduate degrees in structural engineering, indicated that this hands-on experience made him stand out as an undergraduate at the University of Texas-Austin. After graduating with his B.S. degree in 1981, Dexter took a job at the Southwest Research Institute (SWI) in San Antonio. He also began working on his graduate degrees with Frank as his adviser.

At SWI, Dexter worked extensively in the field, visiting oil rigs in the Gulf of Mexico and consulting on other projects, such as a "hush house" built to test jet engines. In 1991, Dexter moved to Bethlehem, PA to take a job as a research engineer in the ATLSS Laboratory at Lehigh University.

Dexter joined the Department of Civil Engineering at the University of Minnesota in 1997, where he taught courses in analysis and design of steel structures. He had a large number of graduate student advisees who completed research projects with him, and he was widely regarded as an involved and caring advisor.

Dexter's depth and breadth of knowledge in the field of fracture and fatigue of metals was exceptional. He was far out in front of everyone else in his field, in terms of understanding the information required to solve fatigue and fracture problems.

Dexter was a huge presence within the structural engineering profession. "He was such a contributor in so many areas," said Fisher. "He is one of the individuals who is going to be very difficult to replace." He will be greatly missed by his family, friends, and colleagues, and his work will have a lasting impact on the civil engineering profession.

—Contributed by Jerome F. Hajjar, Ph.D., P.E., Professor of Structural Engineering, University of Minnesota