12½ Minutes

with AISC's Engineering & Research Department

New Engineer & Department Promotions

Welcome to Heath Mitchell who started as Staff Engineer on June 21st upon completion of his MS studies at Clarkson University and relocation to Chicago. Heath's undergraduate 1997 BS degree is from Lehigh University. His academic research was experimentally oriented on the evaluation of bolted seismic connections for buildings and alternative shear connectors for composite bridge decks. In addition, Heath's summer work experience included structural investigations with Wiss, Janney, Elstner and service as an ironworker for American Steel Erectors.

Heath Mitchell's primary AISC duties will be to provide assistance with development of the 3rd Edition Manual of Steel Construction and other technical information services.

Effective June 1, 1999, Cynthia J. Lanz has been promoted to Director of Specifications and Keith A. Grubb to Senior Engineer. These new titles reflect the higher level of responsibilities that both engineers have been assigned in acknowledgement of their successful work efforts and individual capabilities.

Cindi is the lead staff for the Secretarial operations of the AISC Committee on Specifications as well as the Editor of the AISC Engineering Journal. Keith continues as the primary technical information contact for outside inquiries and as Technical Editor of Modern Steel Construction.

Congratulations to Cindi and Keith!

-Nestor Iwankiw

FEMA – SAC Phase 2 Nearing Completion

This is the fourth and final year of the SAC Joint Venture's work on special steel moment frames for seismic loads. Funded by FEMA after the 1994 Northridge earthquake, SAC has been evaluating and developing new technical information on welded and other steel moment connections that would minimize premature seismic damage. FEMA 267b, "Interim Guidelines Advisory No. 2, Supplement to FEMA-267" is under review with expected release during the fall. By the spring of 2000, an entire new set of SAC Guideline Reports will also be published to document the latest data and recommendations for new construction, as well as for existing buildings and post-earthquake inspections. The 90% draft of these guidelines is scheduled for publication in October, 1999. Following this, a workshop will be held to obtain and discuss review comments. Individuals interested in reviewing these SAC documents should contact the SAC Technical Office at (510) 231-9477, **sacsteel@eerc.berkeley.edu**.

A broad range of engineers and researchers have been an integral part of this SAC project, including AISC and other industry representatives. This extensive work over several years has substantially improved the understanding of steel moment frame response to high seismic demands, thereby leading to substantial changes for increased ductility that are already reflected in the 1997 AISC Seismic Provisions and Supplement 1. Also, one of the major innovations of the SAC project is development of a framework for new performance-based steel design explicitly based on ground motion probabilities, LRFD and particular building performance levels. Additional emerging information for new steel designs will be reviewed for inclusion in future editions of the AISC Seismic Provisions.

-Nestor Iwankiw

International Building Code (IBC) Status

The integration of the current three national model building codes in the US into one is proceeding on course, with the anticipated release of the first 2000 IBC. Various committee meetings and public hearings are continuing under the International Code Council (ICC) until the final 2000 IBC document is completed and approved. One of its significant features will be a unified and revamped design methodology for seismic risk across the country based on the 1997 NEHRP and AISC Seismic Provisions.

The IBC will be maintained through the usual yearly code development process with new editions published every three years. For additional information on ICC and the IBC, visit their Web site at: **http://www.intlcode.org**.

-Nestor Iwankiw

Did You Know?

The following thought-provoking quotes from two famous individuals occurred during the first half of this century. One is by President Herbert Hoover, predominantly associated by historians with the 1930's Depression, but whose earlier civil engineering experience provided a very compelling perspective on the noble role and meaning of the engineering profession. The second is by the eminent structural engineer of that same era, Hardy Cross, whose moment distribution method, and other analysis techniques, were fundamental engineering tools until the computer. Both of these messages are as timely today as before, and give pause to look at the "bigger picture".

1. The following passage is taken from President Herbert Hoover's inaugural address (who began his career designing civil engineering projects). The quote was originally published in the ASCE NEWS and is reprinted here verbatim.

   "Ours is a great profession. There is a fascination of watching a figment of the imagination emerge through the aid of science to a plan on paper. Then it moves to realization in stone or metal or energy. Then it brings jobs and homes to men. Then it elevates the standards of living and adds to the comforts of life. That is the engineer's high privilege.

   "The great liability of the engineer compared to...other professions is that his works are out in the open where all can see them. His acts step by step, are in hard substance. He cannot bury his mistakes in the grave like doctors. He cannot argue them into thin air or blame the judge like the lawyers. He cannot, like the politicians, screen his shortcomings by blaming his opponents and hoping that the people will forget.

   "On the other hand unlike the doctor, his is not a life among the weak. Unlike the soldier, destruction is not his purpose. Unlike the lawyer, quarrels are not his daily bread. To the engineer falls the job of clothing the bare bones of science with life, comfort and hope. No doubt, as years go by, people forget which engineer did it, even if they ever knew... But the engineer himself looks back at the unending stream of goodness which flows from his successes with satisfactions that few professionals may know."

2. "Strength is essential, but otherwise not important." These surprising words attributed to Hardy Cross cryptically but emphatically state that serviceability considerations are the real barometer of a structure's overall success in practice. Adequate strength for safety is a must per code and design standards, but with stronger and lighter-weight steel framing, serviceability often tends to control the design. Cross' phrase serves as a great reminder of this fact.

-Nestor Iwankiw

Seismic Provisions Supplement No. 1

Seismic Provisions for Structural Steel Buildings (1997) Supplement No. 1, dated February 15, 1999, is now available (AISC Pub. Order No. S341s, free). It includes several revisions and clarifications that have been made to the April 15, 1997 AISC Seismic Provisions for Structural Steel Buildings (AISC Pub Order No. S341, $10). A few of the notable revisions and clarifications made include the inclusion of ASTM A992 material for wide-flange shapes, an expansion of the applicability of filler metal Charpy V-notch toughness requirements to include all welds in the seismic force resisting system, clarification of the applicable width-thickness ratio limitations for braces, inclusion of the SAC loading protocol as an alternative loading sequence for test specimens, and a clarification of the applicability of the "2t rule" for gusset-plates in special concentrically braced frames.

-Charlie Carter

New AISC Technical Publications

Three new publications are now available:

Metric Conversion of the 2nd Edition LRFD Manual of Steel Construction, Volumes I and II (AISC Pub. Order No. M024, $99 members, $132 non-members). AISC's new Metric Manual provides a consistent metric conversion that allows for analysis and design of steel completely in metric units. The new Manual includes information from metric ASTM, AWS and ANSI standards when available, complete metric design aids for members and connections, section properties corresponding to ASTM A6M in metric, including revised HSS properties, and connection design aids that use hard metric fastener sizes.

AISC Design Guide #12 Modification of Existing Welded Steel Moment Frames for Seismic Resistance (AISC Pub Order No. D812, $22.50 members, $30 non-members). Co-authored by John L. Gross, Michael D. Engelhardt, Chia-Ming Uang, Kazuhiko Kasai and Nestor R. Iwankiw, this Design Guide provides information on upgrading pre-Northridge moment connections in high-seismic areas. Three retrofit approaches are covered: reduced beam section retrofit, welded haunch retrofit, and bolted bracket retrofit. The Design Guide includes important information on achieving improved seismic performance and provides a design basis for connection modification. Also included is a discussion of several non-structural implementation issues, such as minimizing tenant disruption and health and safety concerns.

AISC Design Guide #13 Wide-Flange Column Stiffening at Moment Connections (AISC Pub Order No. D813, $22.50 members, $30 non-members). Authored by Charles J. Carter, this design guide provides a straightforward approach toward reducing the cost of moment-frame construction with consideration of today's economics. It provides clear and concise information that answers several important questions, such as: When is it more economical to eliminate transverse stiffeners and web doubler plates? How do you design columns without transverse stiffeners and web doubler plates? If transverse stiffeners and web doubler plates are absolutely needed, how are they designed? The Design Guide also includes three design aids and more than a dozen design examples.

-Charlie Carter

1999 NASCC

"Standing Room Only" is not a phrase typically used for engineering lectures, yet that expression describes several of the sessions at this year's highly successful North American Steel Construction Conference in Toronto, Ontario. In particular, the session featuring AISC's latest publication, Design Guide No. 13, "Stiffening of Wide-Flange Columns at Moment Connections: Wind and Seismic Applications" was a big hit. Nearly 250 attendees squeezed into a room set for 160 to hear Lou Geschwindner, Bill Minchin, and Charlie Carter explain the finer points of column stiffening.

-Keith Grubb