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CCFSS News February 2002

Wei-Wen Yu Center for Cold-Formed Steel Structures

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CCFSS NEWS

Wei-Wen Yu Center for Cold-Formed Steel Structures at the University of Missouri-Rolla

Email: ccfss@umr.edu; <http://www.umr.edu/~ccfss>

Director: Roger A. LaBoube, Ph.D, P.E.

Founding Director: Wei-Wen Yu, Ph.D., P.E.

Butler-Carlton Civil Engineering Hall

1870 Miner Circle

Rolla, MO 65409-0030

Telephone: 573-341-4471

Fax: 573-341-4476

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AISI Committee on Specification Meets

The Committee on Specifications for the Design of Cold-Formed Steel Structural Members and its subcommittees met for their semi-annual meeting on February 21 and 22, 2002 in Baltimore, MD. The busy two-day meeting consisted of updates on ongoing research as well as discussion on proposed changes to the Specification.

Research reports were presented on several AISI sponsored research projects. Dr. T.B. Pekoz updated the Committee on the progress of a study of cold-formed steel beam-columns. Test verification of webs with stress gradients is the focus of a study reported on by Dr. Ben Schafer. Dr. Schafer also updated the Committee on the status of his efforts to develop a specification for the Direct Strength Method. For more information regarding the Direct Strength Method refer to www.ce.jhu.edu/bschafer. Dr. T.M. Murray briefed the Committee on the progress of a study to better define the

anchorage forces for a purlin roof system. A proposed study pertaining to lateral torsional bracing requirements for C-sections subject to bending or axial load was summarized by Dr. Tom Sputo. Dr. R.M. Schuster provided status reports on a study of multi-web deck sections subjected to web crippling and a project to redefine the interaction of bending and web crippling in web elements. Dr. Roger LaBoube presented the findings of a study that focused on the web crippling capacity of webs subjected to an end-one-flange loading with an overhang.

A major focus of the meetings was the development of the 2001 edition of the North American Specification. Public review comments were reviewed for this edition of the Specification. The Specification will be historically significant because the document will reflect a major harmonizing of the design provisions in North America. The 2001 edition of the North American Specification

will be applicable to cold-formed steel design in the United States, Canada, and Mexico.

Several enhancements and/or additions to the Specification were adopted at the February 21 and 22 meetings. These enhancements or additions pertained to the following: fracture in the net section for bolted connections, bearing strength of bolted connections, strength for combined bending and web crippling strength of web elements, shear strength of web elements, web crippling strength of web elements, and strength increase from cold-work of forming.

The next edition of the Specification is expected to be available in June of 2002. For information pertaining to purchase of the Specification contact Dr. Helen Chen at AISI, 202-452-7100.

AISI Committee on Framing Standards Update

By Jay Larson, Bethlehem Steel

The AISI Committee on Framing Standards (COFS) and its Prescriptive Methods subcommittee met in Atlanta, GA on November 8, 2001. Significant progress was made at these meetings resolving the final issues needed to complete the *Prescriptive Method for One and Two Family Dwellings*, including areas subject to high wind and high seismic. Behind the scenes, work continued towards the publishing of approved updates to three existing COFS standards on *General Provisions*, *Header Design* and *Truss Design*, which apply to both engineered and

prescriptive designs. These documents should be available to the public in the 1st quarter of 2002.

Work of the COFS has now shifted to the development of a *Steel Frame Construction Manual*, which will include the above standards as well as detailed commentaries, design examples and test methods. This document should be available to the public in the 2nd quarter of 2002. The committee is also pursuing the development of a standard on shear wall design and plans to

assume responsibility for the Army Corps of Engineers' *Technical Instructions for the Design of Cold-Formed Load Bearing Steel Systems*.

The next full round of meetings of the COFS will be in San Antonio, TX on March 11 and 12, 2002. For more information about these meetings or the COFS in general, please contact the AISI Secretariat, Kevin Bielat, at 202-452-7215 or check the AISI website at <http://www.steel.org/construction/framing/>.

Continuing Education



Sixteenth International Specialty Conference

The Wei-Wen Yu Center for Cold-Formed Steel Structures will present the Sixteenth International Specialty Conference on Cold-Formed Steel Structures on October 17 & 18, 2002. The conference is scheduled to be held at the Orlando Wyndham Resort in Orlando, FL.

Recent research discoveries, as well as industry applications and developments, will be discussed. It is anticipated that approximately 40 technical papers will be selected for presentation during the two-day conference.

For more information regarding the conference and accommodations, visit the Center's website at www.umn.edu/~ccfss. To be added to the mailing list for conference brochures, please email your name and mailing address to the Center at ccfss@umn.edu.

First International Seminar on Steel Structures

The First International Seminar on Steel Structures will be conducted by the Instituto Argentino de la Construcción en Acero (IACA) in August of 2002. The seminar will be held in Buenos Aires, Argentina.

Basic topics for the seminar include: Structural Stability, Structural Members Design, Connections Design and Calculation, Design Specifications, Industrial Buildings, Crane Girders, Civil Buildings, Architecture, Fire Engineering, Composite Structures, Manufacture and Erection of Structures, Special Cases, Bridges, Energy Transmission Structural Systems, and Structural Safety.

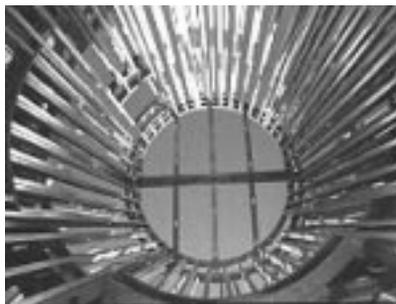
The deadline for submission of summaries was March 4, 2002. For more information please email IACA at iaca@arnet.com.ar or visit their website at www.iaca-ac.com.

2002 Structures Congress and Exposition

ASCE will hold its 2002 Structures Congress and Exposition on April 4-6, 2002 at the Denver City Center Hotel in Denver, CO.

Highlights of the event include: use of high-performance steel in buildings and bridges, super tall buildings, research and design in wood frame structures, AISC Steel Bridge Forum, Innovative structural systems, static pushover analysis for earthquake resistant structures, ASCE's 150th Anniversary Celebration.

For more information and an on-line registration form visit the ASCE website at www.asce.org/conferences/structures2002.



Eurosteel 2002 - Third European Conference on Steel Structures

Eurosteel 2002 - Third European Conference on Steel Structures, is scheduled for September 19-20, 2002 in Coimbra, Portugal.

The major themes of the conference will be: architecture and steel, cold-formed members and thin-walled sections, connections, composite structures, fire design, mixed building technology, plated structures seismic design, steel and composite bridges, steel members and systems, sustainable steel construction.

For more information visit the Eurosteel 2002 website at www.dec.uc.pt/eurosteel.

Seminar on Practical Design of Cold-Formed Steel Structures

The Light Gauge Steel Engineers Association (LGSEA) presents a continuing education program specifically developed for engineers and architects who want to learn practical and efficient design of cold-formed steel structures. This seminar goes beyond theoretical concepts to show the actual application of techniques that every designer can use.

The day-long seminar will discuss the AISI Specification, New Design Standards, Design of Mid-Rise Load Bearing Structures, Software/Design Tools, Connection Design, and Applied Design. Handouts include LGSEA Technical Notes and Newsletters, seminar notes and design examples, and manufacturer literature. Participants will be awarded six Learning Units for attending this seminar.

In addition, a seminar on Design in Cold-Formed Steel Using the AISI Specification will be offered in conjunction with the Practical Design Seminar scheduled for Los Angeles, CA. Six Learning Units will be awarded for this seminar as well.

Seminars are scheduled for the following dates and locations:

Houston, TX	May 6, 2002
Dallas, TX	May 7, 2002
Phoenix, AZ	Aug. 1, 2002
Los Angeles, CA	Aug. 2, 2002
<i>Also presenting a day-long seminar on the AISI Specification on August 3, 2002.</i>	
San Francisco Bay Area	Aug. 5, 2002
Seattle, WA	Aug. 6, 2002
Chicago, IL	Sept. 30, 2002
Atlanta, GA	Dec. 4, 2002
Charlotte, NC	Dec. 5, 2002
Orlando, FL	Dec. 6, 2002

For more information, or to obtain a registration form, visit the LGSEA website at www.lgsea.com, or email LGSEA at lgsea@aol.com.

In Memorium

Mr. Calvin Robert Clauer passed away on December 2, 2001 at the age of 91. Mr. Clauer was for many years an active member of AISI Advisory Group of Specification for the Design of Cold-Formed Steel Structural Members.

Included in Mr. Clauer's outstanding engineering accomplishments, was the design of three Pittsburgh skyscrapers for Equitable Life, two at twenty stories, and two at twenty-four stories. The exterior wall panel was concrete, faced with twenty gauge stainless steel. The project was so large it took five steel producers to furnish the five hundred tons of stainless steel. Mr. Clauer also held a patent on a sheet metal box beam.

Mr. Clauer is survived by his son, Calvin Robert, Jr., and his wife Susan, a stepdaughter, Virginia Hahn, a stepson, Arthur Hahn, and two stepgranddaughters.

Calendar

March 11-12, 2002
Meeting of the AISI Committee on Framing Standards
San Antonio, TX
Contact: madeboyeku@steel.org

March 13, 2002
LGSEA Meetings
San Antonio, TX
Contact: (202) 279-9251 or lgsea@aol.com

April 24-27, 2002
SSRC Annual Technical Session and Meeting
Seattle, WA
Contact:ssrc@ce.ufl.edu

April 24-27, 2002
AISC North American Steel Construction Conference
Seattle, WA
Contact: (312) 670-2400

June 23-25, 2003
ASSCCA '03
Advances in Structures
Sydney, Australia
Contact: www.civil.usyd.edu.au/asscca031

June 29, 2002
LGSEA Meetings
Las Vegas, NV
Contact: (202) 279-9251 or lgsea@aol.com

July 25-26, 2002
Meeting of the AISI Committee on Specifications
Baltimore, MD
Contact: madeboyeku@steel.org

October 1-3, 2002
LGSEA Meetings
Chicago, IL
Contact: (202) 279-9251 or lgsea@aol.com

October 1-3, 2002
METALCON International
Chicago, IL
Contact: (800) 537-7765

October 17-18, 2002
16th International Specialty Conference on Cold-Formed Steel Structures
Orlando, FL
Contact: (573) 341-4471 or ccfss@umr.edu

December 9-11, 2002
3rd International Conference on Advances in Steel Structures
ICASS 2002
Hong Kong, China
Contact: ceslchan@polyu.edu.hk

Wei-Wen Yu Civil Engineering Graduate Fellowship Awarded

The Wei-Wen Yu Graduate Fellowship is offered annually in the UMR Civil Engineering Department. The recipients are selected based upon the following criteria:

The recipient shall be a graduate student majoring in Civil Engineering and pursuing a degree with an emphasis in cold-formed steel structures with a minimum GPA of 3.75.

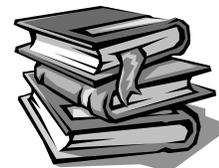
- Recipients shall be selected on the basis of academic success at UMR or other accredited institutions of higher education, leadership capability and extra curricular activities.
- Financial need is not a consideration; however, it may be a contributing factor for selection.
- Screening and selection of candidates is done by the Wei-Wen Yu Center for Cold-Formed Steel Structures and the UMR Civil Engineering Committee for Graduate Affairs with approval of the Civil Engineering Department Chairman.

One fellowship, with a stipend of \$1500 was awarded this year to William Bolte. William is pursuing a Master of Science in Civil Engineering and his research topic is Study of Stud to Track Connections for Increased Load Performance. The research is funded by the US Army Corps of Engineers.

Wei-Wen Yu Updates Textbook

The Third Edition of *Cold-Formed Steel Design* by Wei-Wen Yu is available from the Center at the discounted price of \$100. The order form can be accessed at the Center's website (<http://www.umd.edu/~ccfss>).

New Publications



MBMA to Release *Metal Building Systems Manual*

CLEVELAND (February, 2002) – The Metal Building Manufacturers Association (MBMA) will publish the *Metal Building Systems Manual*, a one-of-a-kind design manual for architects, engineers, specifiers, builders and others involved in the metal building systems industry.

The Metal Building Systems Manual, previously known as the Low Rise Building Systems Manual, is a completely updated edition, and will include sections covering:

- Load Application (IBC 2000 Loads)
- Crane Loads
- Serviceability
- Common Industry Practices
- Guide Specifications
- AISC-MB Certification
- Wind Load Commentary
- Fire Protection
- Wind, Snow, and Rain Data By U.S. County
- Glossary
- Appendix
- Bibliography

“This manual is the eagerly awaited successor to the 1996 Low Rise Building Systems

Manual”, said MBMA Director of Research and Engineering W. Lee Shoemaker, Ph.D., P.E. “The new edition represents a major overhaul, and includes comprehensive sections with recommendations for applying IBC 2000 loads to metal building systems. The new manual will also contain MBMA’s unique Climatological table, which lists the updated IBC loads for wind, snow, seismic and rainfall data for each U.S. County.”

The manual comes in a 3-ring binder, which also contains an interactive CD-ROM version, which is hyper-linked and searchable. “This manual is a must-have for designers working in the metal building arena”, said MBMA Chairman Joel Voelkert. The manual is due for publication in April 2002, and will cost \$95.00.

Organized in 1956, MBMA serves metal building systems manufacturers, metal roofing systems manufacturers and associate member suppliers. Its membership represents more than \$2.6 billion in annual steel shipments and accounts for 46 percent of the total non-residential low-rise construction marketplace. For more information about MBMA visit www.mbma.com.

TSN Announces *The Light Steel Framing Manual*

A comprehensive new cold-formed steel design aid is now available to designers. *The Light Steel Framing Manual* is a joint effort of many manufacturers in the industry, including The Steel Network, Hilti Fasteners, Clark Steel Framing, and ENR Solutions. The manual is an invaluable resource for cold-formed steel design which provides organized reference material for selecting members, connections, and fasteners. Also included are written specifications, inspection reports, and design software. Designers may obtain this free manual online by filling out a form at www.enrsolutions.com/lfmanual.

SteelSmartSystem™ 2.1

SteelSmartSystem™ (SSS) is a user-friendly analysis and design software for cold-formed steel framing systems. The program has five main sections: Details, Project, Specifications, Products, and Utilities. Details features over 400 light steel framing (LSF) detailed connection solutions. With Project, you may design a complete building consisting of several LSF systems such as roof trusses, roof beams, walls, floors, and openings. Specifications include section 05400 and inspection reports. The Products section provides details of gross and effective properties for industry standard cold-formed steel and track cross sections. Design and safety checks for isolated cold-formed steel members, design of screw and bolt fasteners, and calculation of wind, snow, and earthquake loads on buildings of different heights and roof shapes are available in the Utilities section. SSS has a simple interface to input building data, and a fast analysis solver to obtain design forces. The output of SSS is produced in the form of professional engineering reports and CAD drawings. SSS is developed by ENR Solutions. For further information, visit www.enrsolutions.com.

MCA Primer on Diaphragm Design to be Available in 2003

Dr. Larry Luttrell, Professor Emeritus at West Virginia State University, conducted a seminar sponsored by the Metal Construction Association at Metalcon 2001. His presentation, “Optimum Design for Optimum Performance: Wall and Roof Diaphragms,” addressed diaphragm design of metal panels commonly used in wall and roof assemblies. Dr. Luttrell also introduced connection patterns and strength and behavior formulas applicable to a wide variety of panel types.

Anchoring this seminar was the First Edition Manuscript of *A Primer on Diaphragm Design* co-written by Dr. Luttrell and John A. Mattingly, P.E., Director of Engineering at Nicholas J. Bouras, Inc. The *Primer on Diaphragm Design* is now in its final stages of editing. The MCA intends to publish this manual in its final form by the first quarter of 2003.



AISI Introduces *Cold Formed Steel Framing Design Guide*

The American Iron and Steel Institute announces the release of the 2002 Cold-Formed Steel Framing Design (CFSF) Guide. This guide has been prepared to assist practicing structural engineers in designing cold-formed steel framing systems.

In this publication you will find a review of the basic structural principles along with a number of detailed design examples covering wind-bearing and axial-load bearing stud walls and joists. The Examples are based on the 1996 edition of the AISI Specification for the Design of Cold-Formed Steel Structural Members, and show how to translate the information available in CFSF manufacturers' literature into complete structural systems, including screwed and welded connection details.

Guide Examples

A universal designator system for CFSF members has been used throughout the Guide. Guide examples include: Wind-Bearing Infill Wall with Screwed Connections and a Sheathed Design Approach; Wind-Bearing Infill Wall with Welded Connections and an Unsheathed Design Approach; Wind-

Bearing Wall with Strip Windows; CFSF Floor and Axial Load-Bearing Stud Wall.

Guide Appendices

Appendix A: Design Values for Self-Drilling Screws and Welds; Appendix B: Design Values for Concrete Anchors; Appendix C: Simplified Approximate Method for the Calculation of Warping Torsional Stresses; Appendix D: Outer Top Track Flexibility Formula; Appendix E: Inner Top Track as a Beam on an Elastic Foundation; Appendix F: Bearing Stress Distribution Between Track and Concrete for Axial Load Bearing Studs; Appendix G: General Method for Determining Stresses in Welded Connections; Appendix H: Simplified Conservative Design Approach for Equal Leg Angles Without Lips; Appendix I: Product Identification.

Guide Author



Thomas W.J. Trestain, Professional Engineer of T.W.J. Trestain Structural Engineering, Toronto, Canada is experienced in

the design and erection of CFSF products and is an active member on the AISI Committee on Specifications for the Design of Cold-Formed Steel Structural Members, as well as other voluntary industry committees.

Throughout his career, he has specialized in cold-formed steel structural design for the building industry including product research and development, building design and failure investigations. His clients manufacture a broad spectrum of cold-formed products including: cold-formed steel framing products (wall studs, floor and roof joists, steel stud/masonry veneer systems), steel storage racks, suspended ceiling systems, roof and floor deck, wall panels including complete curtain wall systems, porcelain-enameled steel products, steel deck reinforced concrete slabs, corrugated steel culverts for shallow fill applications, farm buildings, greenhouses and Quonset huts.

To order the new CFSF Design Guide (publication no. CF02-1) by phone, contact AISI at 1-800-277-3850. To order online, direct your browser to <http://www.steel.org/fly/eflyfinal.html>.

The *CCFSS News* and *CCFSS Technical Bulletin* are published bi-annually to the Center's website. Current and past volumes of each publication may be viewed in PDF format by directing your browser to <http://www.umar.edu/~ccfss/newsletters&bulletins.html>.

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