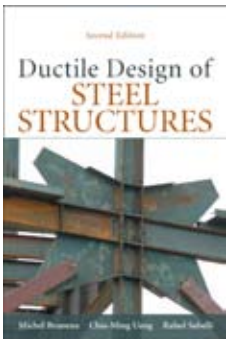
PUBLICATION

Ductile Design Text Works With New *Seismic Provisions*

The second edition of *Ductile Design of Steel Structures*, by Michel Bruneau, P.E., P. Eng., Chia-Ming Uang, Ph.D., and Rafael Sabelli, S.E., has been published by McGraw-Hill. Thoroughly revised throughout, this edition reflects the latest plastic and seismic design provisions and standards from the American Institute of Steel Construction (AISC) and the Canadian Standards Association (CSA).

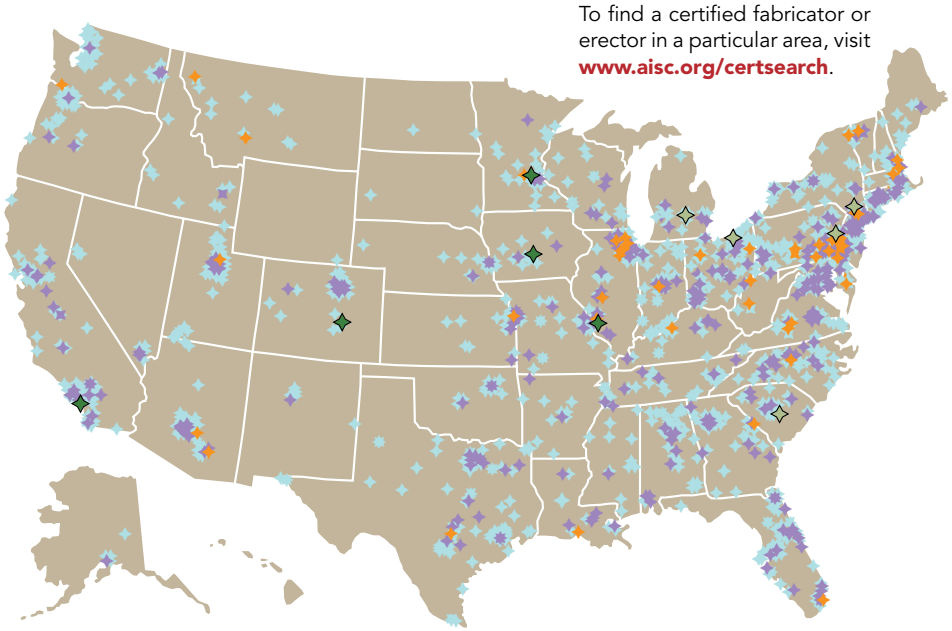
The new edition is compatible with the recently released 2010 AISC *Seismic Provisions for Structural Steel Buildings* (ANSI/AISC 341-10), which is available as a free download at **www.aisc.org/2010SP**. The book covers steel material, cross-section, component and system response for applications in plastic and seismic design, and provides practical guidance on how to incorporate these principles into structural design. Three new chapters address buckling-restrained braced frame design, steel plate shear wall design, and hysteretic energy dissipating systems and design strategies. Self-study problems are provided at the end of each chapter.



For more information, go to **www.michel-bruneau.com/DuctileDesign.htm**.

Newly Certified Facilities: November 1–30, 2011

To find a certified fabricator or erector in a particular area, visit **www.aisc.org/certsearch**.



Existing Certified Fabricator Facilities
Existing Certified Erector Facilities
Existing Certified Bridge Component Facilities
Newly Certified Fabricator Facilities
Newly Certified Erector Facilities

Newly Certified Fabricator Facilities

Affton Fabricating & Welding Co., Inc., Sauget, Ill.
CR Laurence, Inc., Los Angeles, Calif.
Hamon Deltak, Inc., Plymouth, Minn.
LeMar Industries, Des Moines, Iowa
MSSM Company, Pueblo, Colo.

Newly Certified Erector Facilities

All State Erectors, Inc., St. Matthews, S.C.
Chemsteel Construction Company, Middleburg Hts., Ohio
Douglas Steel, Lansing, Mich.
Dutchess County Ironworks, Inc., Walden, N.Y.
L.V.E., Inc., Bath, Pa.

People and Firms

- **Collin Turbert**, a graduate student at Colorado State University, has been selected to receive a $3,000 fellowship, funded by the **Rocky Mountain Steel Construction Association**, for the 2011-2012 school year. This award is administered by AISC and is in addition to the $83,000 in awards previously announced in *MSC* (November 2011, page 18, available at **www.modernsteel.com/backissues**).

- **UCC Steelworks Inc.**, Wilmington, Del., which distributes **Lindapter** products and information, has opened a new stocking warehouse in Trenton, N.J. For more information, visit **www.ucci.ca**.
- Steelmaker **Gerdau** has been recognized by the World Steel Association for its safety program, The Molten Steel Path. Launched in 2007 in its operations in Brazil, the program is being implemented in all of the company's mills worldwide. It aims to ensure safe procedures during the melting process, refining and transportation of liquid steel.
- **LumaSense Technologies**, Santa Clara, Calif., (**www.lumasenseinc.com**) has acquired the thermal imaging and services assets of Louisiana-based **Reliability Point**, which provides an array of equipment and related services to diversified industrial manufacturers in the Gulf Coast region and Southeastern U.S. The acquisition allows LumaSense to enhance sales, support and aftermarket services for its line of thermal imaging devices, such as infrared cameras used in industrial plants.

INDUSTRY EVENTS

NASCC and WSBS Join Forces for Combined 2012 Conference

The leading design and construction conferences for fabricated steel buildings and bridges are coming together for the first time ever in a massive three-day event for more than 4,000 industry professionals, April 18-20, 2012 at Gaylord Texan Convention Center in Dallas. Hosted by the American Institute of Steel Construction (AISC) and the National Steel Bridge Alliance (NSBA), NASCC: The Steel Conference/World Steel Bridge Symposium features practical seminars on the latest design and construction techniques, more than 100 technical sessions, extensive trade show exhibits highlighting products ranging from structural engineering software to the latest fabrication equipment, and plentiful networking opportunities. Register at **www.aisc.org/nascc**.

The premier educational event for structural engineers, fabricators, detailers, educators and others involved in the design and construction of fabricated steel buildings and bridges, the conference also includes the Structural Stability Research Council's Annual Stability Conference, the Sustainable Steel Conference, and two new tracks: the Technology in Steel Construction Conference (TSCC), and Ruby University focusing on constructability topics such as lateral stability and camber. Attendees can earn up to 24 Professional Development Hours (PDHs) while learning from top industry leaders.

The conference kicks off with a keynote address from Daniel Simons, professor in the Department of Psychology at the University of Illinois and creator of the famous "invisible gorilla" psychology experiment. He will share real-world stories and startling demonstrations to show how we all miss more of what goes on around us than we realize.

Another keynote session is the 2012 T.R. Higgins Lecture presented by Michel Bruneau, P.E., Ph.D., professor of civil, structural and environmental engineering at the University at Buffalo, SUNY. He is the recent recipient of AISC's T.R. Higgins Award for his paper on steel plate shear wall design published in AISC's *Engineering Journal*. Bruneau will discuss this topic along with other elements of his work, such as new design concepts for seismic design, blast-resistance, and multi-hazard resistance.

Other can't-miss sessions include: "Accelerated Bridge Construction: Lessons Learned" by Michael Culmo (CME Associates), Tim Noles (Hardesty & Hanover), and Mike Laviolette (HNTB); "Floor Vibrations" by Thomas Murray, emeritus professor at Virginia Tech and Brad Davis, professor at the University of Kentucky; "Steel Joists and Wind Uplift" by Michael Roach (New Millennium Building Systems) and Rick Jensen (Vulcraft); "Welding Metallurgy for the Structural Engineer" by Duane Miller (The Lincoln Electric Company); "Designing Green by the Book: The IGCC" by John Cross (AISC); "BIM Workflow—Lessons Learned" by Brian Cobb and Warren Goodrich (Structural Detailing, LLC).

In addition to the plentiful conference offerings, AISC member Gerdau is providing a free tour of its Midlothian, Texas, facility, one of the nation's largest and most advanced steel mills. There is no charge, however, space is limited. To register for the tour, request a ticket on the main registration form.

For more information about NASCC: The Steel Conference, including registration details and the advance program, visit **www.aisc.org/nascc**.

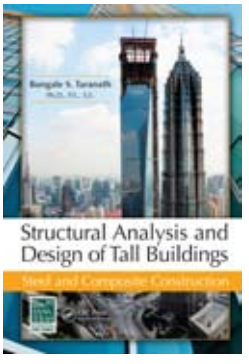
PUBLICATION

New Book on Structural Analysis and Design of Tall Buildings

Bridging the gap between conceptual approach and computer analysis, *Structural Analysis and Design of Tall Buildings: Steel and Composite Construction*, by Bungale S. Taranath, S.E., P.E., Ph.D., integrates the design aspects of steel and composite buildings in one volume. A corporate consultant to DeSimone Consulting Engineers, the author uses conceptual thinking and basic strength of material concepts as a foundation to show engineers how to use imperfect information to estimate the answer to larger and more complex design problems by breaking them down into more manageable pieces.

The book discusses the behavior and design of lateral load-resisting systems, the gravity design of steel and composite floors and columns, and methods for determining wind loads. It also examines the behavior and design of buildings subject to inelastic cyclic deformation during large earthquakes—with an emphasis on visual and descriptive analysis—as well as the anatomy of seismic provisions and the rehabilitation of seismically vulnerable steel buildings.

It is available for purchase in hardback for $159.95 on the **www.crcpress.com** website at **http://bit.ly/rDAzmx**. The site also includes a detailed description, table of contents, reviews and an author biography.



RESOURCES

New Construction Safety Documents Available

Thirty-seven new welding safety and health fact sheets for the construction industry are available as free downloads from the American Welding Society (AWS). Developed by AWS's Safety and Health Committee, the PDF documents cover guidelines for various safety topics ranging from fumes and gases to ergonomics in the welding environment.

The fact sheets most relevant to welding in the construction industry include:

- Electrical Hazards
- Fire and Explosion Prevention
- Tripping and Falling
- Falling Objects
- Confined Spaces

To download these free resources, visit **www.aws.org/technical/facts**.

ECONOMIC NEWS

Industry Forecast: Modest Yet Unpredictable Growth in 2012

The Fabricators and Manufacturers Association (FMA) unveiled its 2012 Capital Spending Forecast November 15 at FABTECH in Chicago, and the good news is that industry purchasing on machinery and equipment is expected to rise in 2012. However, that's only if natural disasters and other factors that affected 2011's downward economy don't happen again, and manufacturers remain competitive in the global marketplace.

Chris Kuehl, Ph.D., economic analyst for FMA, explained that the report—based on a survey of 1,212 executives—predicts industry spending will grow in a wide range of categories including equipment type (ranging from cutting machines to welding supplies), plant size and geographic regions. This recovery is mainly due to two positive index factors:

- An increase in credit applications and approvals; and a decrease in the number of bankruptcies
- Growth in the transportation index, with rail transportation leading the comeback

Although the spending outlook is sunny, as it was at the start of 2011—unpredictable disastrous events that occurred in the past year such as the tsunami in Japan, an increase in oil prices and the U.S. floods could again limit demand if they were repeated.

Keuhl said there also are three trends affecting manufacturing that cannot be ignored:

- Lack of appropriate workers for the industry (the current average age of an experienced, fully qualified welder is 63).
- Automated equipment increasing productivity and competitiveness.
- Expansion of global business.

It is important, more so now than ever, that manufacturers benchmark themselves against industry standards, Keuhl said. To remain competitive, firms need to provide fast and accurate services, and for those thinking about investing in equipment, it's important to know when the timing is right. Suppliers also can use new data to better focus sales efforts.

RESOURCES

My Other Home Page is *MSC*

Did you know that many web browsers allow you to select more than one home page? For example, when *MSC* senior editor Tom Klemens opens Microsoft Internet Explorer on his computer it automatically displays three web pages: Google, *MSC* and the AISC intranet. Each has its own tab, so navigating from one to the other is simple, and they're always close at hand.

Why should you make **modernsteel.com** your other home page?

- Never miss the daily post about steel in the news.
- Learn about breaking news items long before they appear in print, often including convenient links to immediately help you find additional related information.
- Find out about short lead time events, like webinars and other online opportunities.
- Keep 50 years worth of industry information at your fingertips, freely accessible in the *MSC* Back Issue Archives.
- Be among the first to know when new resources or educational opportunities become available.

It's free, unobtrusive, and allows you to easily pay attention to what's going on in the fabricated structural steel industry.

Here's how to add home pages in IE8.

1. Open your IE8 browser.
2. On the toolbar, roll your cursor over Tools.
3. From the drop-down menu, select Internet Options.
4. On the General tab, the top item is Home page. That's where you type in the full URL of each home page you would like to set up. This is where you would type in **http://www.modernsteel.com**. (Be sure to include the "http://" part.)
5. Click on the Settings button in the Tabs section (further down on that same General tab). This is the section that controls how the tabs are displayed in IE. To have multiple home pages open when you start your browser, make sure that "Open only the first home page when Internet Explorer starts" is unchecked. On many computers, that is the default.
6. Click OK to save your tabs settings, then click OK to save your Internet Options settings and close the window.

If you're using Firefox 6, the process is a little different. First open each of the pages that you want to be your home pages in a new tab. Then go to Tools, select Options, and click on the button that says "Use Current Pages."

Google Chrome limits you to one home page, but you can have multiple pages open when you start the browser. Open Chrome and click on the little wrench icon in the upper right hand corner, then select Options. In the "On startup" section select "Open the following pages" and type in the URLs of the web pages you would like to have open up. The next time you open Chrome, those pages will appear as separate tabs.

Thanks for being an *MSC* reader. We hope you'll make **modernsteel.com** your other home page, too.

RESEARCH

UN-Reno Engineers Shake Trucks on a Curved Bridge

A team of engineers, including eight graduate students, at the University of Nevada, Reno are performing first-ever earthquake tests on a bridge with truck traffic to help frame changes to current codes and lead to safer bridges during strong earthquakes. Six full-size pick-up trucks are placed on a 16-ft-high, 145-ft-long steel bridge as it moves vigorously atop four large 14-ft by 14-ft hydraulic shake tables in the university's Large-Scale Structures Earthquake Engineering Laboratory.

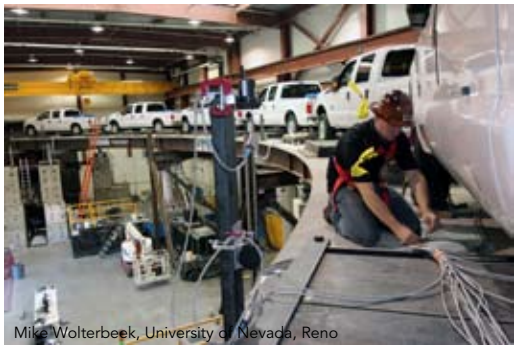
"We took the bridge to its extreme, almost double what we planned at the outset," said Ian Buckle, professor of civil engineering and director of the large-scale structures lab, who also is principal investigator of the research project. "Preliminarily we see that in low amplitude earthquakes the weight of the vehicles actually helps the seismic effects on the structure, while at higher amplitudes the trucks hinder considerably the bridge's ability to withstand an earthquake."

The 162-ton steel and concrete bridge, with 80 ft of curvature, fills the large high-bay lab. A three-minute video showing the largest motion applied to the bridge can be viewed online at **http://bit.ly/qDW1Nq**.

"Whether you saw the experiment in person or watch the video, remember that this is a ⅖ scale model, and the movement you see would be two and a half times greater on a full-scale bridge," said Buckle. "It would be scary to be driving under those conditions."

Buckle added that currently, bridges are not designed for the occurrence of heavy traffic and a large earthquake at the same time. "With increasing truck traffic and frequent congestion on city freeways, the likelihood of an earthquake occurring while a bridge is fully laden is now a possibility that should be considered in design. But there has been no agreement as to whether the presence of trucks helps or hurts the behavior of a bridge during an earthquake, and this experiment is intended to answer this question."

The complete analysis will come after months of examining the information gleaned from the 400 sensors placed on both the bridge and trucks.



Mike Wolterbeek, University of Nevada, Reno

Laboratory technician Chad Lyttle makes adjustments to sensor cables in final preparations for earthquake engineering tests at the University of Nevada, Reno's Large-Scale Structures Lab. The first-ever tests on a bridge with truck traffic will help improve design regulations and standards and assure safer bridges during large earthquakes.

CODES AND STANDARDS

First National Green Building Code Approved

The U.S. has its first national green building code. The *International Green Construction Code* (*IgCC*), approved in November 2011 after two years of development, applies to all new and renovated commercial and residential buildings more than three stories high. According to **www.sustainablebusiness.com**, the historic code sets mandatory baseline standards for all aspects of building design and construction, including energy and water efficiency, site impacts, building waste, and materials.

How does the new code differ from LEED certification? LEED certification is voluntary and designers can choose to address only certain areas of energy efficiency. The new *IgCC* has established enforceable minimum standards for every aspect of building design and construction that now must be reached where the code is adopted, thus raising the standard for all buildings. According to the website, many local and state governments already have begun to officially adopt the code even before it is available in print, which is expected to be in March 2012.

The International Code Council worked to develop the code with many stakeholders including the American Institute of Architects, U.S. Green Building Council, and the American Society of Heating, Refrigeration and Air-Conditioning Engineers, foremost among them.

For more information about the new code and an overview of its mandatory requirements, read the announcement on the **www.sustainablebusiness.com** website at **http://bit.ly/vwHIHz**.

RESOURCES

Free Companion Materials for 14th Edition *Manual*

More than 150 detailed design examples, updated dimensions and properties of structural sections, and other technical resources that complement the 14th Edition *Steel Construction Manual* are now available at your fingertips. Design Examples V14.0 and Shapes Database V14.0, as well as a clickable reference list for each chapter in the latest edition of the *Manual*, are available for free downloading on AISC's website at **www.aisc.org/manual14**. The 14th Edition *Manual* is available as a maroon-clad hardcover or as a digital download—with discounted pricing for a combination purchase—at **www.aisc.org/manuals**.

For detailed information on these new online resources, read the AISC press release at **http://bit.ly/rvyGtV**.

CODES AND STANDARDS

Historical Standards Collection Enlarged

AISC has recently expanded its online collection of historical standards as part of its ePubs member benefit. AISC members now have access to an extensive library of AISC standards dating back to the Institute's inception in 1921. The collection now includes the AISC *Specification for Structural Steel Buildings* since 1923, the AISC *Code of Standard Practice for Steel Buildings and Bridges* since 1924, and a collection of AISC seismic standards. Also included are all of the Research Council on Structural Connections (RCSC) standards for structural bolting since 1951. Items from the expanded collection are available free to members online via ePubs (**www.aisc.org/epubs**).

The historical standard collection is a useful companion to AISC *Steel Design Guide 15, Rehabilitation and Retrofit*. This publication—also available free to members online via ePubs—includes reference data for wrought iron and steel shapes that have been discontinued, beginning with shapes produced in 1873. *Design Guide 15* also includes a review of ASTM material standards beginning in 1900 and describes how existing structural systems can be enhanced for increased strength and stiffness.

To access this reference collection, visit **www.aisc.org/ePubs.** AISC members must be logged in to access ePubs files. Learn more about AISC membership and ePubs at **www.aisc.org/membership**.

To let us know what you think, contact the AISC Steel Solutions Center at **solutions@aisc.org** or email Keith Grubb at **grubb@aisc.org**.

AWARDS

Mentoring Program Receives Presidential Award

The Architecture, Construction and Engineering (ACE) Mentor Program of America was one of eight organizations and nine individuals named as a recipient of the White House's Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. The award was presented in a ceremony in Washington in December.

The program encourages industry professionals and college and university representatives to work together to attract young people to their professions. It is the brainchild of Thornton Tomasetti founding principal Charles H. Thornton, P.E., Ph.D.

Since 1995, the ACE Mentor Program has offered guidance and training in architecture, construction and engineering to more than 100,000 high school students in 40 states and 200 cities across the United States. ACE has awarded more than $12.8 million in scholarships to date. Thornton, who serves as chairman of the nonprofit organization, was profiled in Jane Pauley's "Your Life Calling" on October 24, 2011. View the six-minute segment at **http://aarp.us/mSCJb7**.

CONTEST

IDEAS² Awards Now Accepting Entries

AISC is now accepting entries for its 2012 Innovative Design in Engineering and Architecture with Structural Steel (IDEAS²) awards program. Architects, engineers, designers, constructors, fabricators, and owners are encouraged to enter noteworthy building projects that use wide-flange or hollow structural steel sections for a significant portion of the framing system.

To be eligible, projects must be located within the U.S. and completed between January 1, 2009, and December 31, 2011. There is no entry fee, and the deadline for receipt is January 31, 2012.

For more information and an online entry form, visit **www.aisc.org/ideas2**. For specific questions and concerns, contact Larry Flynn at **flynn@aisc.org** or Maria Blood at **blood@aisc.org**. View the winners of the 2011 IDEAS² Awards in the May 2011 *MSC*, available online at **www.modernsteel.com/backissues**.

CORRECTION

An incorrect date was given for the selection of the best value team in the article "A Production Line Approach to Bridge Replacement" (December 2011 *MSC*). The actual date was January 19, 2011. Also, two additional steel detailers were involved in the FAST 14 project and should have been listed at the conclusion of the article. They are Tenca Steel Detailing, Inc., Quebec City (AISC and NISD Member) and Candraft, Inc., New Westminster, British Columbia (AISC and NISD Member). The steel fabrication by Structal Bridges was done at the firm's Point of Rocks, Md., facility.