

Upcoming AISC 2003 Fall Seminars

AISC will be offering a series of new educational seminars this fall. Visit www.aisc.org/seminars for dates and locations.

Seismic Design and the New 2002 AISC Seismic Provisions

This seminar provides an overview of the new 2002 AISC *Seismic Provisions for Structural Steel Buildings*. This document is the preeminent reference for seismic design of structural steel buildings and is adopted by reference by the model building codes. This edition contains substantial revisions to the design provisions and a completely rewritten commentary that builds on lessons from recent earthquakes and research. This seminar will update the experienced designer of seismic systems and introduce the provisions to those with limited experience. Upon completion of the seminar, you will know what the changes are, where to find them in the provisions, and their implications.

Basic Design for Stability—Columns and Frames

AISC and SSRC have teamed up to offer this six-hour program which focuses on the compressive strength of

columns and frames, and provides a fundamental understanding of buckling. The seminar provides background to understand the stability provisions in the AISC *Specification* and methods of stability analysis outlined in the AISC Commentary. There will be a strong emphasis on applications through the use of example problems and case studies.

Common Problems in Design, Fabrication and Erection—Solutions and Prevention

Authored by Jim Fisher and Larry Kloiber, this seminar was first presented at the 2003 NASCC in Baltimore. The purpose of the seminar is to discuss common design, fabrication, and construction problems that occur on structural steel projects. Solutions to recurring problems and suggestions to prevent problems from occurring will be presented. Included will be a discussion of the necessary procedures and documentation to verify that revisions comply with design requirements, and have been properly made and inspected. The attendee will leave the seminar better equipped to solve and prevent errors in his or her structural design. ★

ASCE Announces New Contracting Publication

ASCE's new *Ten Commandments of Better Contracting*, by Francis T. Hartman, Ph.D., provides a fresh look at management of supply chains with a particular focus on contracting for construction and related goods and services. With the object of getting more out of contracts, this book draws on recent research, extensive professional and practical experience, and trial and error in testing contracting innovations.

The book begins by outlining the ten basic rules ("commandments") for improving contract performance. The

author, illustrates these different points with cartoons, icons and case studies. Each of the first 10 chapters addresses one of these commandments. The closing chapter presents a successful contracting strategy that applies these commandments in a cohesive approach. This proven strategy has yielded better results than industry norms when intelligently applied.

Ten Commandments of Better Contracting costs \$79. To order, call 800.548.ASCE or visit the ASCE web site at www.pubs.asce.org. ★

GreenBuild: USGBC 2nd Annual Conference and Expo

November 12-14, Pittsburgh

AISC and AISI are supporting the message of the Steel Recycling Institute at GreenBuild—the US Green Building Council's 2nd Annual International Conference and Expo, to be held in Pittsburgh, November 12-14. The conference will focus on green practices in building design, construction, project

financing, and building management. The program highlights benchmarks of sustainability across a broad array of issues, including site location and development, water use, energy, materials, indoor environmental quality, biophilia, health and productivity, financing, and more. ★

Marketing for Fabricators

Are you good enough to get better? Then don't miss "Winning Projects in a Shrinking Market," a two-day fabricators' seminar designed to help you generate work for your shop. Day one features selling expert Jim Pancero, who will discuss the skills you need to be successful in today's construction market. He'll cover topics like the reality of selling today, maximizing your face-to-face selling skills, asking questions and qualifying customers, your client flexibility skills, and your strategic message of competitive uniqueness.

Day two focuses on the growing parking and multi-story residential markets. AISC Marketing has focused on these two markets, which are experiencing significant market-share growth. AISC staff will help you understand the marketplace, applicable steel systems, communicating the benefits of using steel for these projects, and how to win them for your shop. Bring at least two staff members so your company can get insight into both of these growth areas.

The seminars will be held September 15-16, 2003 in Denver or November 3-4, 2003 in Baltimore. Cost is \$75 for one day and \$100 for both. Select the location that best fits your schedule and reserve your spot by contacting Becky LeDonne, 312.670.5433. Don't delay—space is limited! ★

Correspondence

The July issue of *Modern Steel* is one of the best to date. I am using Victor Shneur's article "57 Tips for Reducing Connection Costs" in negotiations with major construction contractors to help them choose steel over concrete and to pick their team early on. I am using the "Real-Life Adventures in Staggered Truss Framing" and "Coordinated Construction" to promote these types [of structural systems] with potential customers and with our own people.

Eddie Williams, President
C.P. Buckner Steel Erection Inc.
Graham, NC



Celebrating Steel

Randy Parker is a steel detailer and owner of the SDI Stair Connection in Fayetteville, GA. For more than a decade, he's been capturing the spirit of steel design, fabrication and construction on canvas. MSC editors first took note of Parker's work at the 2003 NASCC in Baltimore, where he displayed it next to his detailing booth. We caught up with him to find out more about how he got started—and why steel has inspired his artwork.

You're a steel detailer—but how did you get started in painting?

My grandfather was a painter who painted houses and buildings for the state of Alabama. I was always fascinated with his paint: his equipment, his painting guns, his turpentine. When I was five, my grandmother bought me a beginning paint-by-number set, and when I had paint left over, I began painting on anything I could—ceiling tiles, sheetrock, paper—it became an obsession. As I grew older, my parents gave me the entire back of the house and porch for an art studio. Anything was inspiration at that time.

But you didn't pursue art as a career.

I took art in high school, and a couple of courses in college, but I never majored in art. I never considered a career in art, even though I loved to paint. It never seemed practical to me. In high school, I got involved in drafting. I started working for a fabricator, Alabama Engineering Services Company—AESCO—in Montgomery, AL. My older brother was working there as a draftsman, and they had a training program and a spot open. The technical drawing was fascinating to me. Once I was in college, I planned to be a structural engineer, but after calculus, I realized I couldn't do it. The structural engineers at AESCO influenced me a great deal, but I didn't have the gift of math. I switched to a business major, and later got my degree in personnel management. About 16 years ago I started my

own company with my brothers: Southland Detailing Inc., in Millbrook, AL. My wife and I later moved to Georgia and opened a sister company, the SDI Stair Connection.

What inspired you to paint ironworkers?

I work with fabricators, and I have to go to job sites, particularly while they [ironworkers] are putting steel up. I visit shops, and see the welding. But I don't know how to weld, and the one time I walked on an I-beam I was scared to death. What makes what I paint so interesting to me is that I can't do what they do. I memorialize them in the painting. It's been my main subject for the last 10 years. Almost all of my paintings have some type of structure to them, with stairs, beams, or something being fabricated.

What about the paintings that feature drafting equipment?

Ten to fifteen years ago, we used pencils, parallel bars, triangles, and other tools—now we don't because everything is computerized. We have to put all that stuff in boxes and put it away. You lose a lot of personality because of the computer. Drawing with a pencil on paper was an activity that connected with me. Detailers used to have their own individual style, with their own handwriting and technique in drafting. We've lost that today because of computers.

Some of your paintings are inspired by Lewis Hine's 1930s photographs of ironworkers in New York. Why did you choose these?

In New York, there is an abundance of material, with ironworkers and structures. In some paintings, I changed the connections from rivets to the way AISC would like it, with [modern] standard bolts and connections. Also, as I got involved in the paintings and read the history, I learned about how many of the first ironworkers were Iroquois and Mohawks. They helped build



"Sitting High" © Randy Parker 2003

the Empire State Building and Rockefeller Center, and I painted them as a tribute.

You've also included many of your family members in your paintings.

There's one with a likeness of me with my oldest son, modeled off of when I was teaching him AutoCAD on the computer. There's tons of drafting equipment on the table. I collect antique drafting equipment, and my collection is from the late 1700s until today. The desk shows this old equipment—the old brown AISC manual, the green and blue manuals, and a calendar opened to "March 1978," when I began drafting. The timepiece represents project scheduling and time frame. The painting is like looking through the past, and looking into the future.

What are you planning to paint in the future?

I've got pages and pages of ideas—ideas from fab shops, from welders and more. Painting is an addiction. But it's a good addiction—it gives you a fountain of youth.

Prints of Randy's work are available for purchase. For more information, visit <http://rpgallery.com> or call 770.461.4885.
—Beth S. Pollak



"Looking to the Future" © Randy Parker 2003



"52nd Floor" © Randy Parker 2003

Engineering Journal Abstracts for Third Quarter 2003

Update on the AISC Seismic Provisions

James O. Malley

The 1994 Northridge earthquake resulted in an unprecedented level of interest in the seismic performance of steel frame structures. This interest led to major research and development programs including the FEMA/SAC Steel Program. As a result of these efforts, significant modifications to the U.S. seismic design provisions for steel structures have taken place.

The AISC *Seismic Provisions* were almost completely re-written in 1997, with additional major modifications in 1999 and late in 2000. In addition to updating the requirements for systems used in current practice to be consistent with recent research results and current thinking, these provisions also have incorporated a number of new systems that can be used for various applications. The contents of the 1997 *Seismic Provisions* and the two supplements will be briefly summarized in this paper.

This paper will focus on the 2002 AISC *Seismic Provisions* that were recently completed and will be the basis for the steel seismic design provisions in the 2002 NFPA 5000 and the 2003 International Building Code. The 2002 *Seismic Provisions* incorporate information from the final FEMA/SAC recommendations presented in FEMA 350 through 355.

Work on two new systems that are also presently under development (steel plate shear wall and buckling restrained braced frames) will also be discussed. **Topic: Seismic Design.**

A Comparison of Australian and American Design of Double Angle Connections

Peter J. Carrato

A case study of a project is presented to demonstrate how two different approaches to the same design problem can result in significantly different results. A large boiler support structure for a coal-fired power plant in Australia was designed by a structural engineer in the United States. A steel fabricator in China, using shop drawings prepared by an American detailing firm, supplied the structural steel for the project. Member sizes were selected from ASTM shapes, using the provisions of the Australian Standard for steel structures AS4100. However, to expedite steel delivery, it was decided to allow the detailing firm to prepare connection designs using the American Institute for Steel Construction's (AISC), *Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design (ASD)*. This situation presented two unique challenges for the project engineers: 1) the structure is designed using an

ultimate strength code while the connection designs use the allowable stress methods and 2) it was necessary to demonstrate that U.S. connection designs are comparable to those produced using Australian standards. Demonstrating the compatibility of connection designs prepared using these two methods highlighted the difference between simple code compliance, and the art of connection design. **Topic: Connections – Framing Angles.**

Design Optimization Study of a Three-Span Continuous Bridge Using HPS70W

Beth F. Clingenpeel and Karl E. Barth

Recent efforts by a collaboration of the American Iron and Steel Institute, the US Navy, and the Federal Highway Administration have resulted in the development of High Performance Steels (HPS), specifically HPS70W. These steels offer higher strength than traditional bridge steels (e.g. Grade 50 steels) and also offer improved ductility, toughness characteristics, and weldability compared to conventional high strength steels (e.g. ASTM A709). While the use of this steel has become more popular with state transportation departments, there is still a fundamental need to better understand the design economy associated with the use of HPS material.

This paper investigates the use of HPS70W in the design of a fixed three-span continuous slab-on-stringer bridge. A parametric study is conducted by varying significant parameters over which the design engineer has control; span length, girder spacing, span-to-depth ratio, and girder material configurations. These girders are optimized using commercial bridge design software. Lastly, a cost comparison is made, and trends in economical use of HPS70W on superstructure economy are summarized. **Topic: Bridges.**

Design of Single Angles Bent About the Major Principal Axis

Christopher J. Earls

This paper outlines the results of a detailed study focusing on the flexural response of equal-leg, hot-rolled steel, single angles bent about the major principal centroidal axis. The nature of the bending associated with this study is such that a constant moment loading is imposed along the entire length of the angle members studied.

Nonlinear finite element modeling techniques are the vehicle by which the research, summarized in this paper, is carried out. Both geometric and material nonlinearity are considered in this work. The results from the numerical modeling of the angle beams is translated into

equations for the prediction of nominal moment capacity in equal leg single-angle members bent about the major principal axis. **Topic: Single Angles.**

Proposed Equal Leg Single Angle Flexural Design Provisions for Consideration in the Development of Future AISC Specification Editions

Christopher J. Earls

Currently, the design of single-angle members is governed by the *Load and Resistance Factor Design Specification for Single-Angle Members*. The provisions in this document are meant to augment the more general design provisions contained in the *Load and Resistance Factor Design Specification for Structural Steel Buildings* for use with single-angle members. Since the introduction of the *Load and Resistance Factor Design Specification for Single-Angle Members*, new information about single-angle flexural response has accumulated from experimental and analytical research efforts aimed at more accurately quantifying the behavior of single-angle beams. This new information is summarized in this paper and recommendations are made for rational single-angle design provisions for consideration and possible inclusion in Chapter F of future AISC specification editions. An appendix of proposed specification language is provided. **Topic: Single Angles.**