REGISTRATION

Complete the details below and return to HERA
Fax: 09 262 2856, Email: admin@hera.org.nz
Telephone: 09 262 2885, Web: www.hera.org.nz

VENUE/EVENT – PLEASE TICK

□ Auckland 1 February 2012 *(HERA House)*

□ Wellington* 2 February

□ Christchurch* 9 February

*) Venue to be advised

Surname :_____
(PLEASE PRINT)

First Name :_____
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☐ Please invoice (HERA members only)
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SEISMIC PERFORMANCE OF STEEL CONNECTIONS

Very good performance of steel framed buildings in the recent Canterbury earthquake highlighted advantages of steel as the material of choice for seismic design of multi-storey buildings.

Generally, steel frames performed very well and as expected. The fact that some inelastic demand has been observed in EBF active links along with some fractures raises the issue of reviewing current design and fabrication practices, establishing criteria for inspection, repair or replacement.

Major earthquakes have always triggered research and investigations resulting in changes to building codes and specifications. In the USA for example, an extensive and comprehensive series of investigations and reports has been completed for the Federal Emergency Management Agency (FEMA) after the Northridge earthquake in California.

Robert E. Shaw, one of the world's leading experts on seismic connections, was instrumental in this research and translating its results into codes such as AWS D1.8 Seismic Welding.

Bob will share his valuable experience with assessment, retrofitting and detailing of welded and bolted connections in moment frame, braced frame and steel plate shear wall systems with New Zealand colleagues through a series of seminars in February 2012. His popular seminars have already been offered in many countries around the globe.

Whilst the general principles of seismic design have much in common, there are significant differences in detailed approach and emphasis for application in different countries. Therefore relevant NZ standards (NZS 3404.1 1997 and 2009, and AS/NZS 1554.1) will also be discussed and compared to the newly updated US standards (AISC 341, AISC 358, AWS D1.8).

Do not miss this excellent professional development event!

REGISTRATION FEES (GST incl)

HERA Ordinary, Affiliate	HERA Associate, SCNZ, SESOC, NZSEE, IPENZ Members	Non Members
$558.00	$592.00	$648.00

Fees include coffee/tea, lunch and seminar notes

Persons enrolled who wish to cancel must do so in writing. Up to fourteen days prior to a module, a 10% administration deduction fee applies. Between seven to fourteen days prior, a 50% deduction applies; less than seven days no refund applies.

February 2012

Achieving Seismic Performance in Steel Connections

1-Day Seminar with International Expert

Robert E. Shaw, Jr., PE

President Steel Structures Technology Center, Inc., USA
Chairman of the International Institute of Welding
Commission XV on Design, Analysis and Fabrication of Welded Structures

HERA Innovation in Metals

SCNZ STEEL CONSTRUCTION NEW ZEALAND

iiw INTERNATIONAL INSTITUTE OF WELDING
A world of joining experience

THE PRESENTER

Robert E. Shaw, Jr., PE, is President of the Steel Structures Technology Center (SSTC), Inc., a consulting firm in the USA providing consulting services, technical resources and training related to the design, fabrication, erection, inspection and quality of steel-framed structures. Before founding the SSTC in 1990, Mr. Shaw served the American Institute of Steel Construction as Associate Director of Education.

Bob serves on the AISC Specifications Committee, including TC9 on Seismic Design, TC6 on Connections, TC13 on Quality Control and Quality Assurance, as well as AISC's Connections Prequalification Review Panel. He is a member of the AWS D1 Structural Welding Committee, including subcommittees responsible for AWS D1.1 Structural Welding Code - Steel and the AWS D1.8 Seismic Supplement.

He chairs the International Institute of Welding Commission XV on Design, Analysis and Fabrication of Welded Structures, and subcommission XV-C on Fabrication.

He is a member of the Specifications Committee of the Research Council on Structural Connections. He served as the Lead Guideline Writer for In-Process Construction Inspection for the SAC Joint Venture Program to Reduce Earthquake Hazards in Steel Moment Frame Structures - Phase 2, responsible for FEMA 353, and served on the Welding and Joining Technical Advisory Panel.

Bob has written a number of books and technical instructions such as:
Recommended Specifications and Quality Assurance Guidelines for Steel Moment-Frame Construction in Seismic Applications, (FEMA 353), 2000;
Structural Bolting Handbook, SSTC, 2010;
Structural Welding Quality Handbook, SSTC, 2010;
Shop Inspection Handbook for Structural Steel Buildings SSTC, 2010.

Bob has presented lectures and seminars on welding design and construction in Japan, China, India, Australia, Ecuador, Nigeria, Canada and the USA.

SEMINAR CONTENT

Deficiencies in the design, details, materials, welding and inspection of modern steel structures have been revealed by major earthquakes throughout the world. This seminar will focus on the welded and bolted connections in moment frame, braced frame and steel plate shear wall systems. Achieving adequate performance in these connections requires clear and concise designs, details and specifications by the design engineer, careful attention to detail and quality in the production of the connections by the fabricator and erector, and thorough inspection and non-destructive examination by the inspecting agency. Included in the discussion will be:

- Significant findings from connection failures
- Assessment of existing structural connections
- Retrofitting deficient connections
- Repair of damaged welds after earthquake
- Options for steel seismic force resisting systems
- Options and details for moment connections and bracing connections
- Designing and detailing to avoid weld overload failure
- Welding materials and mechanical properties
- Welding procedures and limitations
- Protecting the plastic hinge region
- Recommendations for inspection and non-destructive examination

Relevant NZ standards (NZS 3404.1 1997 and 2009) and recommendations will be discussed and compared to the newly updated US standards (AISC 341, AISC 358, AWS D1.8).

WHO SHOULD ATTEND?

The seminar will be particularly relevant for people involved in design, fabrication, assessment, inspection and repair, and retrofitting of steel structures subject to seismic loadings. Therefore attendance is recommended to designers, structural engineers, city council representatives, fabricators, quality control, maintenance and inspection personnel and people involved in seismic engineering research and development of corresponding standards and guidelines.

The Seminar will be especially relevant to the following industry sectors: Steel construction, infrastructure fabrication and maintenance, bridge building and power generation.

SEMINAR PROGRAMME

08:45
Registration

09:00 – 10:30
Significant findings from connection failures
Addressing existing structural connections

10:30 – 10:45
Morning Tea

10:45 – 12:15
Steel seismic force resisting systems
Moment connections and bracing connections

12:15 – 13:00
Lunch

13:00 – 14:30
Moment connections and bracing connections (continued)

14:30 – 14:45
Afternoon Tea

14:45 – 15:30
Welding materials, procedures, and construction practices

15:30 – 16:15
Structural steel, welding and bolting inspection

16:15 – 17:00
Comparison of NZ and US standards

17:00
Discussion

SEMINAR OUTCOMES

The seminar will provide working knowledge of:

- Assessment procedures of existing structures
- Detailing of seismic connections
- Strengthening and repairing existing structures
- Details of welded and bolted connections
- Inspection and NDT of seismic connections
- Relevant standards