

## Robert E. Shaw, Jr., PE

President  
Steel Structures Technology Center, Inc.  
5277 Leelanau Ct.  
Howell, MI 48843-5437 USA  
rshaw@steelstructures.com  
www.steelstructures.com



### Education

BS Civil Engineering - Rose-Hulman Institute of Technology, Terre Haute, IN, 1975

### Professional Registrations

Registered Professional Engineer - Michigan  
Registered International Code Council Special Inspector

- Structural Steel and Bolting (S1)
- Structural Welding (S2)

### Engineering Specialties

- steel construction quality and inspection
- high-strength bolted joints
- welded joints for structural steel
- remediation of deficient structures
- fitness for purpose of welded joints

### Technical Activities

#### *International Institute of Welding*

- Commission XV on Design, Analysis and Fabrication of Welded Structures (Chairman)
- Subcommittee XV-C on Fabrication (Past Chairman)
- Commission XIII on Fatigue of Welded Components and Structures (Expert)
- Select Committee on Quality Management in Welding and Allied Processes (Chairman)
- Working Group on Regional Activities (Member)
- Technical Management Board (past Member)

#### *American Welding Society*

- D1 Structural Welding Committee, responsible for all D1 structural welding codes (Member)
- Subcommittee D1Q on Steel, responsible for AWS D1.1 (Member)
- Subcommittee D1L on Seismic Welding, responsible for AWS D1.8 (Member)
- Subcommittee D1R on Strengthening and Repairing Existing Structures (past Chair, Advisor)
- Subcommittee D1X Executive Committee (Member)
- D1 Task Group 1 on Design (Member)
- D1 Task Group 6 on Prequalification (Member)

#### *American Institute of Steel Construction*

- Specifications Committee, responsible for AISC 360 Specification for Structural Steel Buildings (Member)
- Task Committee 6 on Connections (Member)
- Task Committee 9 on Seismic Issues, responsible for AISC 341 Seismic Provisions for Structural Steel Buildings (Member)
- Task Committee 13 on Quality Control and Quality Assurance (Member)
- Connections Prequalification Review Panel, responsible for AISC 358 Prequalified Connections for Special and Intermediate Steel Moment Frames (Member)

#### *Research Council on Structural Connections*

- Specifications Committee (Member)

### **ASTM International**

- Committee A01 on Steel, Stainless Steel and Related Alloys (Member)
- Subcommittee A01.02 on Structural Steels (Member)
- Committee F16 on Fasteners (Member)
- Subcommittee F16.02 on Steel Bolts, Nuts, Rivets and Washers (Member)
- Subcommittee F16.96 on Bolting Technology (Member)

### **ISO - International Organization for Standardization**

- ISO/TC 167/WG 3 Steel and aluminium structures, Execution of steel structures (US representative, chair TG 2 Mechanical fastening )

## **Publications**

### **Books**

- Structural Bolting Handbook - on testing, installation, inspection and use of bolts, published by SSTC, 2010
- Structural Welding Quality Handbook - on structural steel welding quality and inspection, published by SSTC, 2010
- Shop Inspection Handbook for Structural Steel Buildings - on references and standards, structural steels, fabrication, bolting, welding, and surface preparation/coatings, published by SSTC, 2010
- Structural Steel Inspectors Workbook, published by International Code Council, 2007
- Welding - Design Procedures and Inspections, Technical Instruction (TI 809-26), published by US Army Corps of Engineers, 1996
- Recommended Specifications and Quality Assurance Guidelines for Steel Moment-Frame Construction in Seismic Applications, (FEMA 353), published by Federal Emergency Management Agency (lead guideline writer), 2000
- Guide to Metric Steel Fabrication, published by American Institute of Steel Construction, 1990s
- Chapter 8 on "Inspection and Quality Control" for the textbook Handbook of Structural Steel Connection Design and Details, published by McGraw-Hill, editor Akbar Tamboli, 2010
- Chapter 12 on "Fabrication, Erection and Quality Control" for the textbook Steel LRFD Design, published by McGraw-Hill, editor Akbar Tamboli, 1997

### **Papers**

- "Inspection and NDE Protocols in National and International Steel Construction Standards", International Institute of Welding, SC-QUAL-192r3-13, 2015
- "Comparison of ISO 5817 Quality Criteria to that of National Steel Construction Standards – Surface Imperfections and Imperfections in Joint Geometry", International Institute of Welding, XV-1384r4-11, 2015
- "Weld Quality in Standards – Engineering v Workmanship", and "Inspection and NDE Protocols in International Standards", proceedings of *1st Australasian International Welding, Inspection and NDT Conference*, Perth Australia, March 2013
- "Design and Construction Standards for Steel Connections in Seismic Frames", with James O. Malley, proceedings of *14th World Conference on Earthquake Engineering*, Beijing China, October 2008
- "AISC Seismic Provisions for Structural Steel Buildings", with James O. Malley, proceedings of *14th World Conference on Earthquake Engineering*, Beijing China, October 2008
- "Meeting Challenges to Achieve Seismic Safety", proceedings of IIW International Congress, Chennai India, January 2008
- "Project specifications for new steel moment-frame building construction", *Earthquake Spectra*, published by Earthquake Engineering Research Institute, July 2003
- "Steel Design and Construction in the US after the Northridge Earthquake", proceedings of *Symposium on Steel Structure*, Japanese Society of Steel Construction, Tokyo Japan, April 2002
- "Ultrasonic Testing Procedures, Technician Skills, and Qualifications", *ASCE Journal of Materials in Civil Engineering*, published by American Society of Civil Engineers, Jan/Feb 2002
- "USA Practice for Steel Building Design, Welding and Inspection in Seismic Regions", proceedings of *7th International Symposium of Japan Welding Society*, Kobe Japan, November 2001
- "Engineering Decisions: Weld Quality Requirements", proceedings of *North American Steel Construction Conference* (AISC), Ft Lauderdale FL, May 2001

## Invited Lectures

- India – Indian Institute of Welding / American Welding Society, Lecture Series VII – "Structural Welding: Design and Specification", December 2014
- New Zealand - Heavy Engineering Research Association, "Achieving Performance in Bolted Connections ", March 2013
- Australia - Welding Technology Institute of Australia, "Structural Welding Design", March 2013
- Australia - 1st Australasian International Welding, Inspection and NDT Conference, "Weld Quality in Standards – Engineering v Workmanship", and "Inspection and NDE Protocols in International Standards", March 2013
- USA - North American Steel Construction Conference (AISC), "Suitable Inspection Intervals", April 2012
- South Africa - South African Institute of Welding, "Welding And Inspection Requirements For Steel Structures In Accordance With AWS D1.1 Structural Welding Code – Steel " and "Achieving Performance In Bolted Structural Joints ", May 2012
- New Zealand - Heavy Engineering Research Association, "Achieving Performance in Welded Seismic Connections", February 2012
- USA - North American Steel Construction Conference (AISC), "AISC 360 Chapter N - Are You Ready?", May 2010 and May 2011
- Australia - Welding Technology Institute of Australia, "Specifying and Achieving Performance in Structural Bolted Joints", September 2010, March 2013
- USA - North American Steel Construction Conference (AISC), "Steel Interchange LIVE!", April 2009
- Nigeria - Nigerian Institute of Welding, 1st Nigerian International Welding Congress, "The Engineering of Welded Structures: Design, Details, Production, and Quality", and "Engineering for the Repair and Strengthening of Welded Steel Structures", March 2009
- India -Institute of Steel Development and Growth, "Welding and Welded Connections", "Bolting and Bolted Connections", "Seismic Connections", "Steel Erection", and "Quality", January 2008
- India - Indian Institute of Welding, IIW International Congress, "Meeting Challenges to Achieve Seismic Safety", January 2008
- USA - North American Steel Construction Conference (AISC), "Steel Interchange LIVE!", May 2006
- USA - North American Steel Construction Conference (AISC), "Engineering Decisions: Weld Quality Requirements", May 2001
- Japan - Japanese Society of Steel Construction, "Steel Design and Construction in the US after the Northridge Earthquake", Tokyo Japan, April 2002
- Japan - 7th International Symposium of Japan Welding Society, "USA Practice for Steel Building Design, Welding and Inspection in Seismic Regions", Kobe Japan, November 2001

## In-House Training Seminars - representative clients

- Port Authority of New York and New Jersey (inspection)
- American Bridge / Fluor Joint Venture (bolting)
- Tacoma Narrows Constructors (bolting)
- New York School Construction Authority (inspection)
- Quality Management Company (bolting)
- Quality Management Company (AISC 360-10 Chapter N: QC and QA)
- Weidlinger Associates (welding design)
- STV, Inc. (welding design)
- Ove Arup & Partners (welding design)
- New York City Transit Authority / MTA (welding design, inspection)
- RK&K (steel bridge inspection)
- State of California, Division of the State Architect (welding design, inspection)
- Atlas-Copco Drilling Solutions (welding design)
- Centria (welding inspection)
- Kakivik Asset Management (Structural steel inspection)
- US Army Corps of Engineers (structural steel inspection)
- Aker Solutions (bolting)
- Danny's Construction (bolting, welding)
- TTL (structural steel inspection)
- Churchill Engineering (structural steel inspection)
- Operating Engineers - ASIP - Local 150 (structural steel inspection)
- numerous steel fabricators and erectors (bolting, welding, quality, inspection)
- numerous inspection and testing agencies ( bolting, welding, quality, inspection)

## Technical Consultation

- Principal Consultant to update the Commentary to the AWS D1.5-96 Bridge Welding Code for the NCHRP / Transportation Research Board
- Principal Consultant and Instructor to update and present Federal Highway Administration / National Highway Institute course on "*High Strength Bolts for Bridges*"
- 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, and served on the Welding and Joining Technical Advisory Panel
- Technical Consultant and Research Coordinator for XTB 200 ksi minimum tensile strength bolt assemblies, Marubeni-Itochu Steel America and Nippon Steel and Sumikin Bolten Corp.

## Project Consultation - representative projects

- Arecibo National Observatory, Puerto Rico (bolting)
- Municipal Services Building, City of Glendale, CA (seismic retrofit, repair, welding)
- Bay Bridge, San Francisco - Oakland, CA (seismic retrofit, welding)
- Calpine Fremont Energy Center, Fremont, OH (bolting)
- Florida Power & Light Port Everglades Plant, Ft Lauderdale, FL, (bolting)
- Miller Park Baseball Stadium, Milwaukee, WI (bolting, welding)
- Los Angeles County Courthouse, Van Nuys, CA (seismic retrofit, welding)
- Los Angeles County DPW Building, Alhambra, CA (seismic retrofit, welding)
- D. L. Lawrence Convention Center, Pittsburgh, PA (connection failure)
- Port Everglades Power Plant, Fort Lauderdale, FL (bolting)
- Athletic Training Facility, Iowa State University (welding)
- Palazzo Tower, Las Vegas, NV (bolting)
- Puentes Combined Cycle Thermal Power Plant, La Coruna, Spain (steel tolerances, bolting)
- University of Iowa Arts Building, Iowa City, IA (welding)
- Puente Hills Material Recovery Facility Administration Building, Whittier, CA (quality audit, welding)
- NASA Marshall Space Flight Center, Huntsville, AL (inspection and evaluation protocol for existing structure)
- Ambassador Bridge, Detroit, MI (deck grating welding)
- Boeing 787 Assembly Plant, Charleston, SC (bolting)
- World Trade Center Transportation Hub, New York, NY (welding, quality requirements)
- World Trade Center Oculus, New York, NY (welding, quality requirements)
- Intel Fab 42 – Chandler, AZ (welding)
- Intel D1X – Hillsboro, OR (welding, cambering)
- Third Highway System Bridge on the River Orinoco, Venezuela (bolting)
- Medupi Power Station – South Africa (bolting)
- Transbay Transit Center– San Francisco, CA (welding)

## Professional Employment

### ***Steel Structures Technology Center, Inc.***

- President (1990 - present)

### ***American Institute of Steel Construction, Inc.***

- Associate Director of Education (1986 - 1990)
- Regional Engineer (1981 - 1986)

### ***Mississippi Valley Structural Steel Division of Bristol Steel and Iron Works, Inc.***

- Sales Engineer (1976 - 1981)
  - Project Engineer (1975 - 1976)
  - Detailer (1973 - 1975)
-