

MICHEL BRUNEAU, Ph.D., P.Eng.

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RESEARCH INTEREST

Behavior of Structural Systems, with particular emphasis on:

- (i) Seismic Evaluation and Retrofit of Steel Bridges, Steel Buildings, and Masonry Structures;
- (ii) Earthquake Resistant Design, Blast Resistant Design, and Dynamic Response of Structures;
- (iii) Design of Resilient Structures and Systems, and Multi-Hazard Engineering;
- (iii) Ultimate Behavior of Steel, Metal, and Advanced Composite Structures;
- (iv) Behavior of Guyed-Towers, Cable Structures, Long-Span and Tall Structures.

EDUCATION

B. Sc. Civil Engineering, Université Laval, Québec, 1983

M.S. Structural Engineering, University of California, Berkeley, USA, 1984

Ph.D. Structural Engineering, University of California, Berkeley, USA, 1987

With specialization in Earthquake Resistant Design.

Ph.D. Thesis Supervisor: Steve Mahin

Ph.D. Research:

- a) Seismic Inelastic Response of Structures with Stiffness or Mass Eccentricities
- b) Investigation of Ultimate Behavior of A.I.S.C. Group 4 & 5 Heavy Steel Rolled Section Splices with Full and Partial Penetration Butt Welds (w/ Egor Popov as co-supervisor)

PROFESSIONAL EXPERIENCE

University at Buffalo (Buffalo, NY, USA)	SUNY Distinguished Professor	2018-now
	Professor	1998-2018
MCEER – Earthquake Engineering to Extreme Events (Formerly Multidisciplinary Center for Earthquake Engineering Research)	Director	2003-2008
	Deputy Director	1998-2003
University of Ottawa (Ottawa, Ontario, Canada)	Professor	1998-2000
	Associate Professor	1993-1998
	Assistant Professor	1990-1993
Ottawa Carleton Earthquake Engineering Research Center	Director	1994-1998
Morrison Hershfield Limited, Consulting Engineers, Toronto	Project Engineer	1987-1990
Buckland and Taylor Limited, Vancouver, B.C.	Assistant Engineer	1982-1983

Academic research, teaching, and administrative activities as described in details on the following pages.

SUMMARY OF SCHOLARSHIP ACTIVITIES

- Recognized nationally and internationally for the impact of extensive research contributions to the design and behavior of steel structures subjected to earthquakes and blasts. This research has encompassed contributions to the development and large-scale experimental validation of various metallic energy-dissipating design concepts to enhance the resilience of structures against extreme events, including concrete-filled composite plate steel walls (a.k.a. Speedcore), ductile steel plate shear walls, ductile bridge diaphragms, tubular eccentrically braced frames, structural fuses, and controlled-rocking piers.
- Many research findings and recommendations directly implemented in national and international design specifications for the design of buildings and bridges (including the American Institute of Steel Construction's AISC-341 Seismic Provisions for Structural Steel Buildings, the Canadian CSA S6 and S16 Standards for bridges and buildings, and the AASHTO Guide Specifications for LRFD Seismic Design), leading to their implementation in countless structures worldwide. For example, the innovative tubular eccentrically braced frames system was implemented in the \$1B temporary supports of the new San-Francisco Oakland Bay Bridge East Span; a 56-story high-rise (that became the 2nd tallest building in Seattle) was designed using findings from recent research on the seismic flexural behavior of concrete-filled composite plate steel walls, and; at a different scale, low-rise buildings (e.g., in Montreal and Los Angeles) have been built using the unique concept of perforated steel plate shear wall with horizontal boundary elements having reduced-beam sections.
- Has authored over 600 technical publications, including over 190 articles in the leading recognized peer-reviewed journals in his field. This body of work is extensively cited in the American (AISC) and Canadian (CSA) design codes and standards that regulate the seismic design of steel structures (note that references included in such design documents are not captured by Google Scholar).
- Has 26,000+ Google Scholar citations and an h-index of 67 (one of the most cited researchers in structural engineering and earthquake engineering).
- Lead author of the 2003 pioneering paper "A framework to quantitatively assess and enhance the seismic resilience of communities" that has formulated the concept and expression of disaster resilience in a manner that has since driven research in this field (making it one of the most cited paper on the topic of resilience). Also, lead author of the 900-pages textbook "Ductile Design of Steel Structures," a unique document used worldwide by structural engineers and that is considered by many to be the reference for the seismic design of steel structures.
- Fellow of Canadian Academy of Engineering, Distinguished Member of ASCE, SEI Fellow, and recipient of multiple awards. Most significantly, extensive contributions were underscored by the prestigious 2019 AISC Lifetime Achievement Award, the 2012 AISC T.R. Higgins Award, "for outstanding contribution to the engineering literature on fabricated structural steel," the 2017 ASCE Moisseff Award for "an important paper on structural design published in an ASCE journal", the 2016 Raymond C. Reese Research Prize for "best paper in an ASCE journal describing a notable achievement in structural engineering research," and the 2005 ASCE J. James Croes Medal (awarded to "authors of the paper, among all of the 20 journals published by ASCE, worthy of special commendation for its merit as a contribution to engineering science").
- Frequently invited as keynote speaker at multiple international conferences, and as a guest speaker by many universities and professional organizations worldwide (including Japan, China, Korea, Taiwan, Singapore, New Zealand, France, Italy, Switzerland, Canada, Mexico, among many, and nearly all 50 states nationally).
- Has conducted numerous reconnaissance visits to disaster stricken areas, such as for the 2010-11 Christchurch New Zealand earthquakes, the 2001 World Trade Center attack, the 1999 Turkey and Taiwan earthquakes, the 1994 Los Angeles earthquake and 1989 Loma Prieta (San Francisco) earthquake.
- In addition to the more than \$5 million in research grants received (as PI or co-PI) from a wide range of sponsors, was awarded over \$20 million in 2000 to develop the world's most versatile earthquake engineering testing facility (and a flagship node of the National Science Foundation Network for Earthquake Engineering Simulation), which opened in 2003.
- Served as Deputy Director (1998-2003) and as Director (2003-2008) of the Multidisciplinary Center for Earthquake Engineering Research (MCEER), a National Science Foundation Engineering Center headquartered at the University at Buffalo. Under this tenure, MCEER was awarded over \$60 million of research funding for multi-institution multidisciplinary research.

CURRENT AND PAST ACADEMIC RESEARCH ACTIVITIES

Past and current research projects involving the direction and supervision of students or research assistants are listed following. Detailed description of individual project are available upon request.

Supervision of Graduate Students:

Ph.D.

- Liu, J.H., Ph.D., *Composite Steel Plate Walls with Bolted Splices*, May 2021 - June 2024.
- Raman, R., Ph.D., *Experimental and Numerical Evaluation of the Performance of URM Walls Retrofitted with Steel Strong Backs Under Out-of-Plane Seismic Loads*, September 2019 - May 2024 (jointly supervised with Drs. K. Sett and A. Stavridis).
- Congdon, G., Ph.D., *Seismic Rehabilitation of Retrofitted Unreinforced Masonry Buildings*, September 2020 - now (jointly supervised with Drs. K. Sett and A. Stavridis).
- Singh, R.R., Ph.D., *Seismic Resilience of Retrofitted Unreinforced Masonry Buildings*, September 2020 - now (jointly supervised with Drs. K. Sett and A. Stavridis).
- Kazemian, A., Ph.D., *Fragility Models for Line Components and Line Exposures to Extreme Events*, September 2019 - 2024 (jointly supervised with Drs. K. Sett and T. Wu).
- Carrión, H.F., Ph.D., *Achieving Resilient Multi-Span Bridges by using Buckling-Restrained Braces*, January 2019 - December 2022.
- Kizilarslan, E., Ph.D., *Cyclic Inelastic Behavior of Coupled Composite Sandwich Walls*, June 2017 - November 2021.
- Kenarangi, H., Ph.D., *Contribution of Steel Casing to Single Shaft Foundation Structural Resistance*, June 2013 - August 2018.
- Wei, X., Ph.D., *Buckling Restrained Braces Applications for Superstructure and Substructure Protection in Bridges*, January 2011 - June 2016.
- Shresta, L., Ph.D., *Seismic Demands in Columns of Steel Frames*, June 2011 - August 2015.
- Imani, R., Ph.D., *Fire Resistance of Earthquake-Damaged Double-skin Concrete Filled Steel Tube Columns*, February 2011 - June 2014.
- Alzeni, Y., Ph.D., *Composite Steel Plate Shear Walls*, September 2008 - June 2014.
- Dowden, D., Ph.D., *Resilient Self-Centering Steel Plate Shear Walls*, October 2008 - June 2014.
- Fouche, P., Ph.D., *Multihazard Design of Bridges*, May 2007 - May 2014.
- Purba, R.H., Ph.D., *Design of Tall Steel Plate Shear Walls*, June 2008 - January 2014.
- Cui, S., Ph.D., *Seismic Performance of Buildings with Base Isolated Floors*, May 2006 - April 2012.
- El-Bahey, S., Ph.D., *Development of Structural Fuse Concepts for Bridges*, May 2007 - August 2010.
- Qu, B., Ph.D., *Seismic Behavior and Design of Boundary Frame Members in Steel Plate Shear Walls*, May 2005 - June 2008.
- Fujikura, S., Ph.D., *Multi-Hazard Resistant Highway Bridges Piers*, May 2005 - July 2008.
- Pollino, M., Ph.D., *Rocking Steel Framed Systems*, Jan. 2004 - Aug. 2007.
- Berman, J., Ph.D., *Seismic Retrofit of Large Bridges Braced Bent*, October 2002 - March 2006.
- Vargas, R., Ph.D., *Enhancing Resilience using Passive Energy Dissipation Systems*, May 2002 - February 2006.
- Vian, D., Ph.D., *Passive Energy Dissipation using Metallic In-fills*, June 2000 - Nov. 2005.
- Lee, K., Ph.D., *Seismic Evaluation of Large Bridges Braced Bent*, Jan. 1999 - Aug. 2003.
- Sarraf, M.H.K.M., Ph.D., *Seismic Evaluation of Large Steel Truss Bridges*, Jan. 1994 - Jan. 2002.
- Paquette, J., M.A.Sc./Ph.D., *Pseudo-dynamic Testing of Unreinforced Masonry Buildings having Flexible Wood Diaphragms*, Sept. 1995 - Jan. 2002.
- Zahrai, S.M., Ph.D., *Seismic Retrofit of Slab-on-Girder Steel Bridges using Ductile Diaphragms*, September 1992 - December 1997.
- Dicleli, M., Ph.D., *Effect of Extreme Gravity and Seismic Loads on Short to Medium Span Slab-on-Girder Steel Bridges*, Sept. 1990 - August 1993.
- Taghdi, M., Ph.D., *Seismic Resistance of Steel-plate Reinforced Shear Walls*, September 1990 - February 1998 (jointly supervised with Dr. Saatcioglu).

M.S./M.A.Sc.

- Salado Castillo, J.G., M.S., *Seismic Resilience Quantification for a Set of Buildings*, Sept 2019 - August 2020 (jointly supervised with Dr. N. Elhami Khorasani)
- Qureshi, R.K., M.S., *Effect of Seismic Duration on Steel Plate Shear Walls*, Sept 2015 - August 2016.
- Keller, D., M.S., *Multi-Hazard Resistant Bridge Pier Concept*, Sept. 2007 - May 2008.
- Purba, R.H., M.S., *Design of Perforated Steel Plate Shear Walls*, August 2005-August 2006.
- Pollino, M., M.S., *Controlled Rocking of Deck Truss Piers Towers*, Sept. 2001-Jan. 2004.
- Berman, J., M.S., *Thin Steel Infill Walls as Passive Energy Dissipators for the Seismic Retrofit of*

Hospitals, September 2000 - October 2002.

- Bhagwagar, T., M.S., *Seismic Evaluation of Advanced Materials for Seismic Retrofit of Critical Buildings*, March 1999 - March 2000.
- Vian, D., M.S., *Shake-Table Testing to Instability Collapse of Steel Frames*, Dec. 1998 - May 2000.
- Chessman, K., M.A.Sc., *Seismic Behavior of Buildings having Riveted Stiffened Seat Angle Beam-to-Column Steel Connections*, January 1997 - January 2001.
- Marson, J., M.A.Sc., *Competitive Steel Highway Bridge Pier Concept*, September 1996 - Jan. 2000.
- Burke, S., M.A.Sc., *Ductility of corroded steel*, January 1996 - April 2001.
- Bisson, M., M.A.Sc., *Seismic Retrofit of Concrete Encased Riveted Stiffened Seat Angle Beam-to-Column Steel Connections*, January 1994 - September 1997.
- Sarraf, M.H.K.M., M.A.Sc., *Seismic Behavior of Riveted Stiffened Seat Angle Beam-to-Column Steel Connections taken from an 83-Year Old Building*, September 1991 - December 1993.
- Wang, N., M.A.Sc., *Normalized Energy-Based Methods to Predict the Seismic Energy Ductile Response of Single-Degree-of-Freedom Structures*, January 1991 - January 1993.
- Boussabah, L., M.A.Sc., *Impact of Engineering Modeling Assumptions on Assessing the Seismic Performance of Montgomery Block Building*, January 1991 - January 1993.

M.Eng.

- Ashim Koiralo, M.S., *Canadian seismic design coefficients for coupled composite plate shear wall/ concrete filled (CC-PSW/CF)*, June 2023 - January 2024
- Conor Stucki, M.S., *Seismic Design of Temporary Bridges*, June 2016 - May 2017
- Fu, Y., *Orientation of Diagonal Tension in Steel Plate Shear Walls*, January 2015-May 2016.
- Wang, F., *Orientation of Diagonal Tension in Steel Plate Shear Walls having Different Aspect Ratios*, January 2015-May 2015.
- Ngeljaratan, L., *Detailing of Buckling Restrained Braces in Bi-Directional Ductile Diaphragms*, May 2013-June 2014.
- Zhang, S., *Seismic Demands on Buckling Restrained Braces in Bi-Directional Ductile Diaphragms*, September 2013-June 2014.
- Hassan, M., *Design and Behavior of Composite Drilled-Shafts*, May 2013-January 2014.
- Krishnappa, N., *Simulation of Blast Load Effects on Wide Flange Sections*, Sept. 2011-July 2012.
- Powell, Jason, M.Eng. *Seismic Design of Bridges with Steel Substructures using NCHRP 12-49 Proposed Specifications*, January 2000 - June 2000.
- Liu, J., M.Eng., *Aspects of Seismic Resistance of Steel Buildings*, May 1990 - Sept. 1996.
- Taddei, P., M.Eng., *Implementation of Refined Physical Hysteretic Brace Element*, Sept. 93 - Sept. 95.

Collaboration with Post-Doctoral Students:

- Cimellaro, G.P., *Engineering and Organizational Resilience of Health Care Facilities*, September 2008 - December 2008.
- Warn, G., *Blast Resistance of Seismically-Designed Steel Plate Shear Walls*, September 2006 - July 2007.
- Berman, J., *Cyclic Testing of a 3-Story Buckling Restrained Braced Frame with Novel Gusset Connection*, March 2006 - June 2006.
- Diego Lopez-Garcia, *Multihazard-Resistant Bridge Wall Pier Concept and Design of HBEs in Steel Plate Shear Walls*, Sept 2004 - June 2005.

Collaboration with Visiting Scholars:

- Professor Erkan Polat (Munzur University, Turkey), *Composite Steel Plate Shear Walls*, Sept. 2018 - February 2019.
- Professor Arturo Tena-Colunga (Universidad Autónoma Metropolitana Azcapotzalco, Mexico), *Ductile Steel Systems*. Hosted at University at Buffalo, Aug. 2007 - Aug. 2008.
- Professor Oguz Cem Celik (Istanbul Technical University), *Energy Dissipating Wall Infills*. Hosted at University at Buffalo, Sept. 2001 - Aug. 2003.
- Professor Young Hwa You (Kyonggi University, Korea), *Ultimate Behavior of Braces*. Hosted at University at Buffalo, Sept. 2001 - Dec. 2001.
- Professor J. Yu (Chengdu University of Science and Technology), *Specimens Issues for Shake Table Testing to Collapse of Slender Steel Columns*. Hosted at University of Ottawa, Sept. 1996 - Feb. 1997.

Supervision of Other Graduate Research Assistants:

- Domínguez Maldonado, V., *Assessment of Roughness Measurements in Predicting Friction Properties*, September 2019-December 2019.
- Mishra, S., Sreekumar, N., Jadhav, A.S., *Investigation of Effect of Using Perforated and Non-Perforated Steel Plate Shear Walls over Parts of Wall Height*, June 2019-December 2019.
- Sai Chowdeswara Rao Korlapati, *Investigation on the Feasibility of Using 3D Printed Steel Structural Fuse in Seismic Resistant Reinforced Concrete Members*, Sept. 2018 - June 2019 (jointly supervised with Pinar Okumus and Jongmin Shim)
- Seyed Omid Sajedi, *Investigation of Bridge Ductile Diaphragms with Longitudinal BRB Elements - Part II*, Sept. 2018 - Dec. 2018
- Rahul Raman and Sai Chowdeswara Rao Korlapati, *Review of Quality Ratings in Prior FEMA P695 Studies*, May 2018-Dec. 2018
- Kareem Ahmed Hussein Ahmed Eltouny, *Investigation on the Feasibility of Using 3D Printed Steel Structural Fuse in Seismic Resistant Reinforced Concrete Members*, Jan. 2018 - May 2018
- Seyed Omid Sajedi, *Investigation of Bridge Ductile Diaphragms with Longitudinal BRB Elements*, Jan. 2018 - June 2018
- Polat, E., Ph.D., *Behavior of Composite Steel Plate Shear Walls*, January 2015 - August 2016..
- Jain, R., *Finite Element modeling of Composite Drilled-Shafts*, May 2013-December 2013.
- Griffin, W., *Nonlinear Computer Models for Seismic Analysis of Unreinforced Masonry Buildings*, September 1997 - December 1998.
- Alfawakiri, F., *Seismic Response of Steel Bridges*, November 1997 - December 1999.
- Shao, X.Y., *Seismic Performance of Steel Railroad Bridges*, May 1993 - January 1995.
- Hans, A.S., *Seismic Evaluation/Retrofit of Unreinforced Masonry Buildings*, July 1993 -Dec. 94.
- Daukza, A., *Effect of Extreme loadings on Steel Bridges*, May - September 1990.

Supervision of Undergraduate Theses:

- Scouten, W., *Shake-Table Studies on Seismic Stability of Frames*, May to August 1997.
- Keaths, L., *Further Studies on Effect of Rust on Ductility of Steel*, January to December 1996.
- Burke, S., *Effect of Rust on Ductility of Steel*, September 1994 to December 1995.
- Narum, C., Durance, A., *Seismic Response of Gavin Canyon Bridge to Northridge Earthquake*, September 1994 to April 1995.
- Nasr, H., *Comparison of Canadian and American Steel Design Code Clause*, Fall 1994.
- Monette, L., *Seismic Response of Railroad Bridge during Train Crossing*, Spring 1994.
- Walker, D., *Testing of Seismic-Resistant Fiber-Glass Structural Beam-Column Connections*, Fall 1991 to Spring 1992.
- Tropper, M., *Evaluation of Energy Methods using NONSPEC*, Fall 1990.

Supervision of Undergraduate Students Research without Thesis:

- Conor Stucki, CSEE Senior Scholar, *Seismic Design of Temporary Bridges*, Jan. to April 2016.
- Mask Tatarsky, CSEE Senior Scholar, *Estimate of Drilled Shaft Specimens*, Jan. to April 2014.
- David Goldstein, CSEE Senior Scholar, *Testing of Sandwich Walls*, Jan. to April 2012.
- Paul Mongiovi, CSEE Senior Scholar, *Testing of Composite Steel Plate Shear Walls*, Jan. to April 2009.
- Robert Wurstner, NSF Research Experience for Undergraduate, *Based Isolated Floor*, May to August 2007.
- Lisa Armbruster, NSF Research Experience for Undergraduate, *Cyclic Performance of Buckling Restrained Braces*, May to August 2006.
- Jayce Grefrath, NSF Research Experience for Undergraduate, *Testing of Rocking Braced Piers*, May to August 2006.
- Michael Pollino, CSEE Senior Scholar, *Large Scale Testing of Steel Bridge Pier Members*, Jan. to April 2001.
- Michael Astrella, CSEE Senior Scholar, *Large Scale Testing of Steel Bridge Pier Members*, Jan. to April 2001.
- Jeffrey W. Berman, CSEE Senior Scholar, *Shake-Table Studies on Seismic Stability of Frames*, Jan. to April 2000.
- Collins Cook, CSEE Senior Scholar, *Testing of PTFE Membranes*, Jan. to April 1999.

RESEARCH GRANTS

University at Buffalo

- Pankow Foundation Research Grant, *Bolted Splice Details for Coupled Plate Shear Walls - Concrete Filled (Coupled-C-PSW/CF)*, \$234,961, September 2021 - August 2023.
- Cives Steel Company and AISC - *donation of material and fabrication of steel specimens for a C-PSW/CF wall specimen with bolted splices*: estimated value of \$40,000, Fall 2023.
- National Institute of Standards and Technology (NIST), *Seismic Rehabilitation of Existing Unreinforced Masonry Buildings*, \$584,000, September 2019 - August 2022 (A. Stavridis (PI), with M. Bruneau and K. Sett).
- CEATI International - Transmission Overhead Line Design & Extreme Event Mitigation Program (TODEM), *Development of Fragility Models for Line Components and Line Exposures to Extreme Events*, \$96,418, December 2019 - April 2021 (K. Sett (PI), with M. Bruneau and T. Wu).
- Cives Steel Company and AISC - *donation of material and fabrication of steel specimens for large T-shaped concrete-filled steel plate walls*: estimated value of \$80,000, April 2019 to January 2021.
- National Cooperative Highway Research Program - IDEA Program, *Achieving Resilient Multi-Span Bridges by using Buckling-Restrained Braces*, \$100,000, April 2019 - December 2022.
- California Department of Transportation, Cost-Share to National Cooperative Highway Research Program - IDEA Program, *Achieving Resilient Multi-Span Bridges by using Buckling-Restrained Braces*, \$50,000, August 2019 - July 2022.
- CoreBrace, RJ Watson, High Industries (High Steel, High Concrete, and High Transit) and AISC - *donation of material and fabrication of 16 buckling restrained braces, 4 uplift resistant slider bearings, and a 40-ft long steel bridge specimens in support of the NCHRP and Caltran research on Resilient Multi-Span Bridges*: estimated value of \$100,000, 2022.
- Cives Steel Company and AISC - *donation of material and fabrication of steel specimens for large C-shaped concrete-filled steel plate walls*: estimated value of \$80,000, May 2018.
- Pankow Foundation Research Grant, *R-Factor for Coupled Plate Shear Walls - Concrete Filled (Coupled-C-PSW/CF)*, \$165,805, June 2017 - May 2019 (with Amit Varma, co-PI, Purdue University, \$74,750 sub-award).
- Pankow Foundation Research Grant, *Seismic and Wind Behavior and Design of Coupled CF-CPSW Core Walls for Steel Buildings*, \$1,017,500, September 2016 - April 2022 (with Amit Varma, PI, Purdue University). UB sub-award: \$318,562
- National Cooperative Highway Research Program - Project 12-93, *Contribution of Steel Casing to Single Shaft Foundation Structural Resistance*, \$469,268, June 2013 - September 2017 (with Wagdy Wassef/Tom Murphy, of Modjeski and Masters).
- Dimension Fabricators - *donation of reinforcing cages (and shipping)*: estimated value of \$15,600, October 2015.
- Skyline Steel - *donation of ERW HSS and spiral-welded pipes*: value of \$3545, September 2015.
- National Cooperative Highway Research Program - IDEA Program, *Bidirectional-Ductile End Diaphragms for Seismic Performance and Substructure Protection.*, \$125,000, August 2013 - December 2015
- StarSeismic - *donation of Buckling Restrained Braces (BRBs)*: estimated value of \$40,000, March 2015.
- California Department of Transportation (Caltrans), *Resilient Bridges: Replaceable Structural Fuses for Post-Earthquake Accelerated Bridge Construction/Repair under Continued Service - Phase I: Analytical Investigation*, \$74,900, June 2011 - June 2012.
- American Institute of Steel Construction, *Concrete-Filled Steel Plate Sandwich Walls*, \$100,000 (plus donation of 7500lbs of shapes and plates with estimated value of \$15,000), June 2011 - May 2016.
- Department of Homeland Security and Engineer Research and Development Center (ERDC) of the U.S. Army Corps of Engineers , *Development and Validation of Multi-Hazard Bridge Pier Concepts*, \$88,694, November 2010 - June 2012.
- National Sciences Foundation (NSF), *NEESR-SG: Smart and Resilient Steel Walls for reducing Earthquake Impacts*, \$1,531,077 , Oct. 2008 - Sept. 2011 (Jeffrey Berman, Univ. Washington (PI), with M. Bruneau, L. Lowes (Univ. Washington), T. Okazaki (Univ. Minnesota)) - UB sub-award: \$350,628
- National Institute of Standards and Technology (NIST), *A Framework for Defining and Measuring Disaster Resilience at the Community Scale*, \$69,751, October 2009 - September 2010 (A. Reinhorn (PI), with M. Bruneau and C. Renschler).
- Corus Bi-Steel - *donation of Bi-Steel Specimens (, engineering & design, bi-steel panels, manufacture, additional fabrication, and shipping from the United Kingdom)*: value of 37,000 GBP (= \$52,540), January 2009.
- StarSeismic - *donation of Buckling Restrained Braces (BRBs)*: estimated value of \$30,000, Jan. 2009.

- New York State, *MCEER Operational Support Year 11*, \$2,000,000, July 2007-June 2008.
- National Sciences Foundation (NSF), Multidisciplinary Center for Earthquake Engineering Research, \$10,000,000, Oct. 1997 - Sept. 2007 (PI changed from G.C. Lee to M. Bruneau effective August 2003) - plus following supplements:
 - ▶ \$57,434, *Disaster Reconnaissance following Hurricane Katrina* (2005)
 - ▶ \$114,000, *Research Experience for Undergraduates Program* (2003), (submitted by A. Dargush on behalf of PI)
 - ▶ \$150,000, *Research Experience for Undergraduates for Louis Stokes Alliances for Minority Participation Program* (2004) (co-PI, M. Abdullah, Florida A&M University)
 - ▶ \$300,000, *ERC Supplemental Funding for Diversity Collaborations Initiative between MCEER and LSAMP programs in Florida and New York* (2004) (co-PI, M. Abdullah, Florida A&M University)
 - ▶ \$50,000, *Research Experience for Undergraduates Program* (2005)
- New York State, *MCEER Operational Support Years 6-10*, \$10,000,000, July 2003-June 2008.
- Federal Highway Administration (FHWA), through Multidisciplinary Center for Earthquake Engineering Research (MCEER), *Structural Fuse Concept for Bridges*, (Bruneau PI). *Year 1*: \$68,076, for Jan. 2008 to Dec. 2008; *Year 2*: \$72,405, for Jan. 2009 to Dec. 2009; *Year 3*: \$71,934, for Jan. 2010 to Dec. 2010; *Year 4*: \$75,267 for Jan 2011 to Dec. 2011.
- DIS Inc. - *in kind support and design of DIS isolated floor system*: \$42,754, November 2007.
- New York State Department of Transportation, *Development of post-earthquake bridge inspection guidelines*, \$200,000, October 2007 - September 2008. (J. O'Connor (PI), with M. Bruneau, S. Thevanayagam, R. Aboutaha (Syracuse Univ.), R. Imbsen (Consultant)).
- Department of Homeland Security (DHS), through the National Center for the Study of Preparedness and Catastrophic Event Response at Johns Hopkins University, *Developing Metrics to Measure Emergency Medical Response Capabilities, Year 1*: \$44,524, January - September 2007; *Year 2*: \$44,524, August 2007 - July 2008; *Year 3*: \$44,524.
- NSF and New York State (NYS), through MCEER, *Controlling Seismic Performance of Acute Care Facilities by Passive Displacement-Activated Damping and Isolated Floors*, and *Implementation of Resilience Concepts for Specific Critical Facilities*, \$113,150, October 2006-September 2007.
- Nippon Steel - *donation of Buckling Restrained Braces (BRBs)*: estimated value of \$30,000, September 2005.
- WorkSafe Technologies - *donation of ISO-Base™ base isolators*: estimated value of \$10,000, September 2005.
- NSF and NYS, through MCEER, *Controlling Response of Structural and Non-Structural Components and Systems in Acute Care Facilities by Passive Displacement-Activated Damping and Isolation Mechanisms*, and *Further Quantification of Resilience Dimensions for Specific Critical Facilities*, \$115,650, October 2005-September 2006.
- Federal Highway Administration (FHWA), through Multidisciplinary Center for Earthquake Engineering Research (MCEER), *Multi-hazard-Resistant Bridge Wall Pier Concept*, \$124,378, for January 2005- December 2006, and \$66,036 for July 2006 to September 2007 (Bruneau PI).
- NSF and NYS, through MCEER, *Formulation and Operationalization of the Structural Fuse Concept using Metallic Passive Energy Dissipation Systems*, and *Further Development in Operationalization of the Broader Resilience Concept and Measures for Critical Facilities*, \$106,000, October 2004-September 2005.
- NSF, *UB-NEES Operations (Versatile Large Scale Real Time Dynamic Hybrid Testing Facility)*, - \$7,373,625 Oct. 2004 - Sept. 2009 (A. Reinhorn PI, with M. Bruneau, M. Constantinou, A. Filiatrault, A. Whittaker).
- NSF, *Development of Real-Time Hybrid Seismic Testing National Facility for Non-Structural Components and Upgrade of the University at Buffalo NEES Node*, \$260,000, Oct. 2004 - Sept. 2005 (A. Filiatrault PI, with A. Reinhorn, A. Whittaker, M. Bruneau).
- NSF, *Collaborative Research: Behavior of Braced Steel Frames with Innovative Bracing Schemes - A NEES Collaborative Project*, \$177,671, Sept. 2003-Aug. 2006 (Bruneau PI, with A. Reinhorn co-PI at University at Buffalo, and partners in 4 other universities - PI changed to A. Reinhorn effective February 2004).
- NSF and NYS, through MCEER, *DisplacementBased Energy Dissipation Systems and Structural Fuses in Controlling Damage in Non-Structural Systems*, and *Operationalization of the Broader Resilience Concept and Measures for Critical Facilities*, \$106,000, October 2003-September 2004.
- FHWA, through Multidisciplinary Center for Earthquake Engineering Research (MCEER), *Seismic Retrofit of Steel Truss Braced Piers*, \$85,000, January 2004- December 2004 (Bruneau PI).
- FHWA, through Multidisciplinary Center for Earthquake Engineering Research (MCEER), *Seismic Retrofit of Steel Truss Braced Piers*, \$140,000, January 2003- December 2003 (Bruneau PI).
- FHWA, through MCEER, *Seismic Behavior of Skewed Bridges with Steel Superstructures*, \$50,000,

- January 2003 - December 2003 (Bruneau co-PI, with I.Buckle (PI, University of Nevada, Reno) and A.Itani (co-PI, University of Nevada, Reno)).
- NSF and NYS, though MCEER, *Advanced technologies and data for validation of integration methodologies - Displacement-based Energy Dissipation Systems - Metallic*, \$104,222, October 2002-September 2003.
 - NSF and NYS, though MCEER, *Supplemental Award to Conduct Reconnaissance Study of World Trade Center Disaster*, \$100,000, October 2001-September 2002 (Bruneau co-PI, with G. Lee (PI) and K. Tierney (co-PI, University of Delaware)).
 - NSF and NYS, though MCEER, *Seismic Retrofit of Hospitals - Technology Portfolio; Special Steel Shearwalls and Modular Infills*, \$83,000, October 2001-September 2002.
 - FHWA, though MCEER, *Seismic Retrofit of Steel Truss Braced Piers*, \$110,000, January 2002-December 2002 (Bruneau PI).
 - FHWA, though MCEER, *Seismic Behavior of Skewed Bridges with Steel Superstructures*, \$50,000, January 2002 - December 2002 (Bruneau co-PI, with I.Buckle (PI, University of Nevada, Reno) and A.Itani (co-PI, University of Nevada, Reno)).
 - NSF, George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) Equipment Grant, *Versatile High-Performance Shake-Tables Facility towards Real-Time Seismic Hybrid Testing*, \$6,160,785, February 2001-September 2004 (Bruneau PI, with co-PIs A.Reinhorn, M.Constantinou, S.Thevanayagam, E.Rojas) - plus IT-Supplement of \$458,069, May 2003-September 2004 - PI changed to A. Reinhorn effective March 2004, and co-PI E. Rojas replaced by A. Whittaker effective October 2002).
 - NSF, NEES Equipment Grant, *Large-Scale High Performance Testing Facility towards Real-Time Seismic Hybrid Testing*, \$4,379,865, February 2001-September 2004 (Bruneau PI, with co-PIs A.Reinhorn, M.Constantinou, S.Thevanayagam, E.Rojas) - Supplement of \$118,000, Jan. 2004-September 2004 - PI changed to A. Reinhorn effective March 2004, and co-PI E. Rojas replaced by A. Whittaker effective October 2002).
 - State University of New York, Construction Fund and School of Engineering and Applied Sciences, Matching Infrastructure Investment for construction of Ketter Hall addition to house UB-Node of NEES Facility (above two grants), \$9,000,000, February 2001-September 2004 (Bruneau PI, with co-PIs A.Reinhorn, M.Constantinou, S.Thevanayagam, E.Rojas).
 - NSF, US-Japan International Technology Exchange on Shake Table Hybrid Testing, \$36,800, May 2001 - December 2001 (Bruneau PI, with co-PIs A.Reinhorn and S.Thevanayagam).
 - Federal Highway Administration (FHWA), though MCEER, *Steel Truss Bridge Braced Pier and Substructure Connection Behavior*, \$150,000, April 2001- March 2002 (Bruneau PI, with John Mander, co-PI).
 - FHWA, though MCEER, *Seismic Performance of Bridges with Steel Superstructures*, \$29,000, April 2001- March 2002 (Bruneau co-PI, with I.Buckle (PI) and A.Itani (co-PI, University of Nevada, Reno))
 - NSF and NYS, though MCEER, *Seismic Retrofit of Hospitals using Advanced Metallic Passive Energy Dissipation Infills*, \$87,300, October 2000-September 2001.
 - NSF and NYS, though MCEER, *P-Δ Effects on Seismic Response of Flexible Frames*, \$54,670, and *Mitigation of Earthquake Disaster using Advanced Technologies 2 (MEDAT-2) Workshop*. \$35,000, October 1999 - September 2000.
 - FHWA, though MCEER, *Seismic Evaluation of Large Bridges Braced Bent*: \$100,000, December 1998-December 2000 (with John Mander, co-PI).
 - NSF and NYS, though MCEER, *Evaluation of Advanced Materials for the Seismic Retrofit of Hospital Buildings*: \$31,176, October 1998 - September 1999.

University of Ottawa

- Structural Steel Education Foundation (SSEF) Research Grant *Test of Ductile Diaphragms Concept for Deck Trusses*: \$13,544, September 1998.
- Brampton Brick, Fitzgerald Building Supplies, Ottawa Region Masonry Contractors Association, O.P.C. and International Union of Brick Layers and Allied Craftsmen (Industrial Promotion Fund), CPCA, George and Asmussen Ltd, *donation of material and labor to construct a single-story unreinforced masonry building 20' x 15' in plan*: estimated value of \$20,000, March 1998.
- CANAM-MANAC (Steel Fabricator), *donation of fabrication cost for reaction frame*: estimated value of \$5,000, January 1998.
- Natural Sciences and Engineering Research Council of Canada (NSERC) Equipment Grant/University of Ottawa, *Data Acquisition System for Structural Engineering Testing Facility*: \$33,00 March 1997 (co-applicant with Dr. M. Saatcioglu).
- SSEF/NSERC Industry Oriented Research Matching Grant, *Competitive Steel Highway Bridge Pier Concept*: \$19,200, for the period September 1996 to September 1997.

- NSERC Research Grant, for *Seismic Evaluation and Retrofit of Steel or Masonry Buildings*: \$103,550 for the period April 1, 1996, to August 31, 1999.
- CANRON (Steel Fabricator), *donation of fabrication cost for special steel diaphragm specimens*: estimated value of \$4,000, March 1996.
- Ontario Concrete Block Association and Ontario Brick Layers Union, *donation of material and labor for masonry wall seismic response experimental project*: estimated value of \$3,000, 1996.
- NSERC Collaborative Grant, *Innovative Seismic Retrofit of Existing Bridges*: \$437,100 for the period November 1, 1995, to October 31, 1998 (jointly with Drs. W.D.L. Finn, D. Mitchell, R. Redwood, M. Saatcioglu, R. Sexsmith).
- NSERC Equipment Grant, *New Hydraulic Pump for Structural Engineering Testing Facility*: \$30,000 March 1995 (co-applicant with Dr. M. Saatcioglu).
- NSERC Major Installation Grant on *Pseudo-dynamic Testing Facility*: \$352,787.00, March 1993.
- University of Ottawa, Supplemental Equipment Grant for “Pseudo-dynamic Testing Facility”: \$30,000, March 1993.
- NSERC Operating Grant, for *Evaluation of the Lateral Load Resistance of Existing Structures*: \$75,000 for the period April 1, 1993, to March 31, 1996.
- NSERC Strategic Grant, *Seismic Performance of Existing Bridges*: \$494,250 for the period November 1, 1992, to October 31, 1995 (jointly with Drs. W.D.L. Finn, D. Mitchell, M. Saatcioglu, R. Sexsmith).
- National Research Council/Public Works Canada, *Impact of Structural Engineering Modeling Decisions on the Seismic Performance of Masonry Buildings*: \$30,000, Dec. 1991, to March 1994.
- NSERC Operating Grant, for *Evaluation of the Lateral Load Resistance of Existing Structures*: \$64,290 for the period April 1, 1990, to March 31, 1993.
- Ontario Ministry of Transportation, Government of Ontario, for *Cumulative Effect of Extreme Permit Loads on Steel Bridges*: \$60,300 for the period April 1, 1990 to September 31, 1992.
- Public Works Canada, Government of Canada, for *Literature Survey on Seismic Performance of Thick Unreinforced Masonry Walls*: \$9,565 from February 19, 1991, to March 31, 1991.
- NSERC Seed Funding/University-Industry Research, for *Energy Methods for the Seismic Resistance of Steel Structures*: \$7,500 for the period March 1, 1992 to February 15, 1993.
- National Capital Commission, *partial-donation of existing steel beam-column semi-rigid assemblies taken from demolished historical building*: estimated value of \$5,000, November 1991.
- Ontario Ministry of Transportation, *donation of full-scale rusted bridge components taken from demolished existing steel bridge*: estimated value of \$5,000, July 1992.
- Morrison Molded Fiberglass, *donation of fiberglass structural shapes*: estimated value of \$1,560, January 1992.
- Faculty Development Fund, University of Ottawa, Engineering Faculty, *On-site evaluation of Damage from the 1992 Erzincan Earthquake*, \$4,000.00, with Dr. M. Saatcioglu, April 1992.
- Faculty Development Fund, University of Ottawa, Engineering Faculty, for *Ultimate Resistance of Existing Bridge and Building Structures*: \$3500.00, for the period December 7, 1990, to April 7, 1991.
- Faculty Development Fund, University of Ottawa, Engineering Faculty, for *Evaluation of the Lateral Load Resistance of Existing Structures*: \$5000.00, for the period January 16, 1990, to May 15, 1990.
- General Research Grant, School of Graduate Studies and Research, University Research Committee, University of Ottawa, for *Lateral Load Structural Engineering Design*: \$6,834.00, for the period January 15, 1990, to April 30, 1990.

Note: Canadian Government regulations forbid charging overhead to NSERC grants above. Grants held at University of Ottawa also benefitted from free technician time for research.

CONSULTING AND PEER REVIEW ACTIVITIES

Golden Gate Bridge Highway and Transportation District

San Francisco, 2013-now

- Member of Expert Design Technical Review Panel, for review of seismic evaluation and retrofit of Golden Gate suspension bridge, in San Francisco, California.

CEATI (the Centre for Energy Advancement through Technological Innovation)

Montreal, Canada, 2021-2023

- Co-Author (with Mathaios Panteli, Cypruss University) of White Paper on Resiliency

FortisBC

Vancouver, British Columbia, Canada, 2020

- Member of Review Team for Generating Station Spillway & Intake System Analysis

ARUP

Los Angeles, California, 2019

- Review of (W)rappier Tower Special Perforated Steel Plate Wall (SPSPW) Design.

AECOM

Mechanicsburg, Pennsylvania, 2017

- Proposed seismic design criteria for temporary bridge (for NCHRP 20-7).

City of Victoria / Dentons Canada LLP

Victoria, B.C., 2016

- Expert witness on review of seismic design criteria for a new bascule bridge

Degenkolb Engineers

San Francisco, 2015-2018

- Member of Peer Review Panel, for review of seismic design of Rainier Square Project (58 story skyscraper in Seattle, Washington).

CastConnex Corporation / Walter P. Moore

Toronto, 2013-now

- Member of Peer Review Panel for a FEMA P-795 evaluation of Scorpion Yielding Connectors for use in construction of Buckling Restrained Braces.

Arora Engineers

New Jersey, 2013-now

- Expert advisor on seismic analysis, evaluation, and retrofit of the Pulaski Bridge, New Jersey.

Jacobs Engineering

New Jersey, 2012, 2013

- Review of seismic analysis, design, and retrofit provisions proposed for revised edition of the New Jersey Transit Authority's Design Manual, in the perspective of national seismic practice and impact on design.
Review of Jacob's proposed seismic evaluation methodology for essential and critical bridges in New Jersey, and recommendations for selected bridge retrofit assessments.

Ministère des Transports Québec (Ministry of Transportation Québec)

Québec, 2010

- Expert review (provided in collaboration with Jean-Pierre Bardet, University of Southern California) of the seismic soil-structure interaction analyses conducted for a selected bent of the Île d'Orléans Bridge, a suspension bridge built in 1934 that spans the St-Lawrence River between Quebec City and Île d'Orléans. This included an assessment of: (i) adequacy of methodology for site specific seismic hazard definition; (ii) appropriateness of structural models and analysis approaches used to determine bridge response; (iii) credibility of obtained results, and; (iv) additional work needed to support the report's conclusions.

ARUP

New York, 2009

- Provided opinion on seismic design procedure for the new highway A30 bridges across the St-Lawrence River and Beauharnois Canal (for the Ministry of Transportation of Québec), including assessment of seismic performance per the Canadian Highway Bridge Design Code versus dual-Level evaluation procedures.

DMJM HARRIS / ARUP

New York, 2008

- Member of Expert Panel, Tappan Zee Bridge Foundation Expert Workshop, for review of seismic retrofit of Tappan Zee Bridge (Cantilever steel truss on steel truss piers) and Foundations (on steel piles) over Hudson River, New York Thruway.

Klohn Crippen / American Bridge / Fluor JV

Vancouver/California, 2006-08

- Conceptual review of seismic design, Temporary Towers for Self-Anchored Suspension Span (SAS) Superstructure of San Francisco Oakland Bay Bridge, including implementation of eccentrically braced steel towers with tubular links.

Hydro-Québec

Montréal, 2003

- Assessment of seismic evaluation procedures for tall unreinforced masonry walls.

Montréal, 1999

- Development of seismic evaluation procedures for unreinforced clay masonry sub-station buildings.

Aluminerie Loralco

Québec, 1997

- Issues with respect to developing an emergency post-earthquake inspection plan.

Trow Engineering / Pall Dynamics Limited

Ottawa, 1997.

- Development of spectra-compatible time-histories for Bogota soft-soil sites.

Canadian Mortgage and Housing Corporation

Ottawa, 1996.

- Earthquake engineering expert services for review of document on seismic retrofit of residential houses.

Industrial Research Assistance Program, National Research Council of Canada

Ottawa and Montreal, 1996 and 1998.

- Earthquake engineering expert services for review of progress on an IRAP sponsored project on the development of a new type of base isolation system for bridges.

Sauve Auger Boucher Consultants

Ottawa, 1993

- Provided expertise on ductile earthquake resistant design.

Morrison Hershfield Limited

Toronto and Ottawa, 1990-1993

- Preliminary seismic structural adequacy evaluation of two government buildings in Ottawa - identification of possible deficiencies and life-threatening features.
- Comments on philosophy and modeling techniques for the seismic-resistance adequacy of an existing five-story reinforced masonry building in Ottawa not complying to many of the Ontario Building Code seismic requirements.
- Specialist Technical Advisor on dynamic and advanced structural analysis methods for a design-verification partner qualification interview of Morrison Hershfield's by Mobil Oil Canada, for the Hibernia gravity base offshore platform project.
- Specialist Consultant on various other projects and structural engineering software development.

North York, 1987-1990

- Involved in many structural analysis and design projects, as well as retrofitting studies and structural adequacy investigations of existing buildings subjected to various loading conditions, including seismic.
- Acquired experience in analysis or design of steel, reinforced concrete, and aluminum structures, as well as timber and masonry to some extent.
- Also involved in special structural engineering projects such as the experimental and analytical study of wind-induced dynamic excitation problem on an unusual radar tower, and the study of blast-resistant structures.
- Also principal investigator in industry-research activities. For example: (i) study investigating the use of various reliability classes and load factors for the analysis and upgrading of existing broadcasting steel guyed-towers. Resulting recommendations formulated have been adopted into the Canadian tower code CSA-S37-M86. (ii) development of a state-of-the-art computer program for the three-dimensional geometrically non-linear analysis of guyed towers. The program is used by Morrison Hershfield Limited as their advanced analysis/design tool for guyed-towers.

URS/John Blume

San-Francisco, 1986.

- Calibration of ductility in a tower with a strong stiffness discontinuity subjected to earthquake excitation (with Dr. S.A. Mahin, University of California, Berkeley)

Pacific Bell

San Ramone, 1986.

- Performance and interface adequacy evaluation of a 3-D graphics software.

Buckland and Taylor Limited

North Vancouver, 1982 and 1983

- Involved in the design or analysis of several steel bridges and structures, including the Annacis Island cable-stayed bridge with a world record span, Gulf Oil's Mobile Arctic Caisson (the first fully mobile Arctic drilling rig), and the Port Alfred Log Conveyor Suspension Bridge (restoration project).
- Also involved in research activities on: (i) Investigation of reusability of Swedish modular short-span suspension bridges; (ii) Development of computer simulation statistical model to investigate fatigue in bridges; (iii) Studies on torsion of trusses with unstiffened sides.

PROFESSIONAL AFFILIATIONS

- Distinguished Member, American Society of Civil Engineering (2012-now)
- Fellow, American Society of Civil Engineering (2007-2012)
- Member, American Society of Civil Engineering (1985-2007)
- Member, Earthquake Engineering Research Institute (since 1984)
- Member, Canadian Association for Earthquake Engineering (since 1994)
- Member, Canadian Society of Civil Engineering (1981-2000)
- Member, The Masonry Society (1992-1997)
- Registered Professional Engineer, Province of Ontario (since 1988)

COMMITTEE PARTICIPATION

Code-Writing Committees

- Member, AISC Task Committee 5, Composite Structures (2016 - now).
- Member, AISC Task Committee 9, Seismic Design, (2006 - 2016), Corresponding Member (2001-2006).
- Member, Building Seismic Safety Commission, Provisions Update Committee, Issue Team 4 on Shear Walls (2016-2019)
- Member, AISC Adhoc Task Committee 12 Sub-committee on Modular Composite Construction, Seismic Design, (2010 - 2015).
- Member, CSA-S16.1 Standard, Limit States Design (LSD) of Steel Structures, Seismic Task-Group (1998 - now), and Composite Columns Task-Group (1998 - 2014).
- Member Seismic Committee of Canadian Highway Bridge Design Code (1994 - now).
- Member, Standing Committee on Earthquake Design of the Canadian National Building Code; formerly named Canadian National Committee on Earthquake Engineering (CANCEE) (2007 - 2014).
- Building Seismic Safety Commission, NEHRP Recommended Provisions Update Committee, Technical Subcommittee 6 on Steel Structures, Member (2001-2005), Corresponding member (1998 - 2000, and 2006-2008).
- Research Team Member, NCHRP 12-49 Comprehensive Specification for the Seismic Design of Bridges (1998 - 2001) - modified version adopted in 2007 as next generation AASHTO Seismic Design Guide Specifications.

Project Review Committees and Workshop Expert Panels

- Invited Reviewer, AISC Design Guide 6, 2nd Edition - "Composite Column Design" (2020-2023)
- Invited Reviewer, AISC Design Guide - "Wind, Seismic, and Fire Design Guides for Composite Plate Shear Walls/Concrete Filled (C-PSW/CFs), SpeedCore Systems" (2020-2021)
- Invited Expert, FHWA-NIST Research Planning Workshop on the Fire Safety of Highway Bridges, October 30th, 2019, Gaithersburg, Maryland
- Invited Reviewer, AISC Design Guide 32 - "Design of Modular Steel-Plate Composite Walls for Safety-Related Nuclear Facilities" (2017)
- Invited Reviewer, California Department of Transportation, Guide Specifications for Seismic Design of Steel Bridges, 2nd Edition (2014).
- Member of Project Review Panel, "Development of Updated NEHRP Post-earthquake Investigations Strategy: Phase I", NEHRP Consultants Joint Venture, (2013).
- Member of Project Review Panel, NEHRP Seismic Design Technical Brief No. 8: Seismic Design of

Steel Special Concentrically Braced Frame Systems - A Guide for Practicing Engineers”, NEHRP Consultants Joint Venture, (2013).

- Member, Highway Seismic Advisory Panel (HSAP), FHWA Research Project, ‘Improving the Seismic Resilience of the Federal-Aid Highway System’, University of Nevada, Reno (2008-2012).
- Member of Peace Bridge Technical Jury Committee, to recommend final design concept for border crossing signature bridge (2005).
- Member of Steering Committee, ATC-58 FEMA-Funded Project to Develop Performance-Based Seismic Design Guidelines, Applied Technology Council (2002-2008).
- Member, FHWA Panel, “Recommendations for Seismic Performance Testing of Bridge Piers” (2002-2005).
- Member, FHWA Seismic Virtual-Team (2001- 2012).
- Member of NCHRP Project Panel, NCHRP 12-54 Integral Connections of Modern Steel Bridge Structures (1999-2002)
- Invited Reviewer, California Department of Transportation, Guide Specifications for Seismic Design of Steel Bridges, 1st Edition (2000).

Member of Editorial Boards

- Founding Co-Chief Editor, Elsevier Journal of Resilient Cities and Structures, (2021-now)
- Engineering Structures Journal (2007-2012).
- Journal of Disaster Research (2007-now).
- Journal of Earthquake Engineering (2002-2021).
- Journal of Earthquake Engineering and Engineering Vibrations (2002-2010).
- Guest Editor (2021) (with Profs. G.P. Cimellaro, Politecnico di Torino, Italy, A. Mufti, University of Manitoba, Canada, L. Xie, Institute of Engineering Mechanics, China, Dr. Marco Domaneschi, Politecnico di Torino, Italy), Special Issue of International Journal of Sustainable Materials and Structural Systems on: “Resilience in the World: Share the Knowledge, See the Future, Help Communities”

Conferences and Workshop Steering Committees

- Member of Planning Committee, World Steel Bridge Symposium, (2018-2023)
- Member of Steering Committee, Symposium on Aging Steel Buildings, New York, December 2009.
- Co-Chair of Steering Committee, Symposium on Emerging Developments in Multi-Hazard Engineering, New York, September 2007.
- Member of International Steering Committee, 2007 Meeting of the Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER) - Earthquake Engineering Research: From Strong Seismic Regions to Regions of Moderate Seismicity, Kowloon, Honk Kong, 2006-2007.
- Member of Steering Committee, 5th National Seismic Conference and Workshop for Bridges and Highways, San Francisco, 2006 (2005-2006).
- Co-chair of Steering Committee, 7th U.S. National Conference on Earthquake Engineering, Boston, (1999-2002).
- Co-chair of Steering Committee, MCEER Workshop: Lessons from the World Trade Center Terrorist Attack - Management of Complex Civil Emergencies and Terrorism-Resistant Civil Engineering Design, New York City, (1999-2002).
- Member of Steering Committee, 3rd National Seismic Conference and Workshop on Bridges and Highways, Portland (2001-2002).
- Co-Chair (with Dan Inman), MEDAT-2 Workshop on Mitigating Earthquake Disasters using Advanced Technologies, Las Vegas, November 2000.
- Co-chair (with Ian Buckle and John Kulicki), NCHRP 12-49 Workshop on Seismic Provisions for Steel Bridges, Las Vegas, July 2000.

Member of Conferences Technical, Scientific, and International Advisory Committees

- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2025), Rhodes, Greece, June 15-18 2025 (2023-2025).
- Member of International Scientific Committee, Third International Conference on Resilience, Earthquake Engineering, and Structural Health Monitoring, Torino-Ispra, Italy, June 2024 (2023-2024).
- Member of International Scientific Committee, Eleventh International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Salerno, Italy, July 2024 (2022-2024).
- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2023), Athens, Greece, June 12-14 2023 (2021-2023).
- Member of Local Advisory Committee, 18th World Conference on Earthquake Engineering, bid for hosting in Montreal, Canada, 2024

- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2021), Athens, Greece (Virtually/COVID), June 21-23 2021 (2019-2021).
- Member of International Scientific Committee, Tenth International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Timisoara, Romania, May. 2021 (2019-2021).
- Member of International Scientific Committee, Second International Conference on Resilience, Nanjing/Shanghai, China, November 2018.
- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2019), Crete, Greece, June 24-26, 2019
- Member of International Scientific Committee, Ninth International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Christchurch, New Zealand, Feb. 2018 (2017-2018).
- Member of International Scientific Committee, First International Conference on Resilience, Torino, Italy, September 2016.
- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2017), Island of Rhodes, Greece, June 2017 (2016-2017).
- Member of Scientific Committee, Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2015), Crete, Greece, May 2015 (2014-2015).
- Member of International Scientific Committee, Eight International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Shanghai, China, July 2015 (2013-2015).
- Member of International Advisory Committee, International Symposium on Engineering Lessons Learned from the 2011 Great East Japan Earthquake- March 3-4, 2012, Tokyo, Japan.
- Member of International Scientific Committee, Seventh International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Santiago, Chile, January 2012 (2010-2012).
- Member of International Advisory Committee, 8th International Conference on Short & Medium Span Bridges, Niagara Falls, Canada, 2010 (2008-2010).
- Member of International Scientific Committee, Fifth International Conference on Bridge Maintenance, Safety and Management (IABMAS2010), Philadelphia, Pennsylvania, July 2010 (2008-2010).
- Member of International Scientific Committee, Sixth International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Philadelphia, Pennsylvania, August 2009 (2007-2009).
- Member of International Scientific Committee, First International Conference on Analysis and Design of Structures against Explosive and Impact Loads, Tianjin, China, September 2006 (2005-2006).
- Member of International Scientific Committee, Fifth International Conference on Behaviour of Steel Structures in Seismic Areas (STESSA), Yokohama, Japan, 2006 (2004-2006).
- Member of International Advisory Committee, 7th International Conference on Short & Medium Span Bridges, Montreal, Canada, 2006 (2004-2006).
- Member of International Advisory Committee, 1st Canadian Conference on Effective Design of Structures, Hamilton, Canada, 2005 (2004-2005).
- Member of Scientific Committee, Advances in Experimental Structural Engineering Conference, Nagoya, Japan, 2005 (2003-2005).
- Member of International Advisory Board, Full-Scale Building Test Project, Kyoto University, Kyoto, Japan, (2003-2004).
- Member of International Advisory Committee, Full-Scale CFT Frame Testing and International Workshop on Steel and Concrete Composite Construction, Taipei, Taiwan, 2003.
- Member of International Scientific Committee, Australian Conference on Mechanics of Structures and Materials, Perth, Australia, Dec. 2004.
- Member of Technical Committee, 4th National Seismic Conference and Workshop for Bridges and Highways, Memphis, Tennessee, Feb. 2004.
- Member of International Scientific Committee, 4th International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Naples, Italy, (2001-2003).
- Member of Editorial Board, 8th International Conference on Civil and Structural Engineering Computing, Vienna, Austria (2000-2001).
- Member of International Scientific Committee and Organizing Committee, 3rd International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Montréal, Canada (1999-2000)
- Member of Technical Committee, 8th Canadian Conference on Earthquake Engineering, Vancouver, Canada (1998-99)
- Member of Program Committee, 8th North American Masonry Conference, Austin, Texas (1998-99)

ASCE Technical Committees

- Member, American Society of Civil Engineers/Structural Engineers Institute (ASCE/SEI), Committee of Composite Construction (under the ASCE Metals committee), (2012-2016).

- Member, American Society of Civil Engineers/Structural Engineers Institute (ASCE/SEI), Disaster Resilience of Structures, Infrastructures and Communities Committee (under the ASCE Seismic Effects committee), (2012-2016).
- Member, American Society of Civil Engineers/Structural Engineers Institute (ASCE/SEI), Multi-Hazard Mitigation Committee, (under the ASCE Dynamic Effects committee), (2011-2016).
- Member, American Society of Civil Engineers/Structural Engineers Institute (ASCE/SEI) Bridge and Tunnel Security Committee, (2005-2014).
- Member, American Society of Civil Engineers (ASCE) Seismic Committee, (1999-2005).
- Member, American Society of Civil Engineers (ASCE) Steel Bridge Committee, (1993 - 1999).

Others

- Director, Ottawa Carleton Earthquake Engineering Research Centre (1994-1998).
- Member, Jury Panel, T.R. Higgins Lectureship Award (2021-2023).
- Member, Transportation Research Board (TRB) Committee AFF50 - Seismic Design of Bridges, (2000-2012).
- Corresponding Member, American Institute of Steel Construction Blast and Impact Resistant Design Committee, Research Interest Task Group (BIRDC RITG), (2004 - now).
- Member (on behalf of MCEER) of the Multihazard Mitigation Council, National Institute of Building Sciences, (2004 - 2008).
- Member Faculty of Admitted University, Consortium of Universities for Research in Earthquake Engineering (CUREE) (2000 - 2016).
- Member, NSF George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) Site Council (2001 - 2003)
- Member, Earthquake Engineering Research Institute, Nomination Committee, (2003).
- Member, Earthquake Engineering Research Institute, Meetings and Conferences Committee, (1999-2002).
- Co-chair, Earthquake Engineering Research Institute, National Conference Committee (1999-2002)
- Member, Canadian Association for Earthquake Engineering Standing Committee on Seismic Design (1994-now).
- Corresponding Member, Research Committee of the Structural Engineers Association of Northern California (SEAONC), (1993-1995).
- Associate Member, American Concrete Institute ACI-ASCE Committee 442 (Response of Concrete Buildings to Lateral Forces), Sub-committee on Masonry (1992-1995)
- International Association of Spatial Structures (IASS), Working Group 4, Guyed Masts and Towers (1990-1995)

RECONNAISSANCE VISIT TO DISASTER STRICKEN AREA

On-site observation and study of structural damage for:

- Christchurch (New Zealand) earthquake of February 22, 2011, Richter Magnitude 6.3.
- Darfield/Christchurch (New Zealand) earthquake of September 4, 2010, Richter Magnitude 7.1.
- World Trade Center towers and buildings near Ground Zero, New York City, September 11, 2001.
- Chi Chi (Taiwan) earthquake of September 21, 1999, Richter Magnitude 7.6.
- Kocaeli (Izmit) Turkey earthquake of August 17, 1999, Richter Magnitude 7.4.
- Hyogoken Nanbu (Kobe, Japan) earthquake of January 17, 1995, Richter Magnitude 7.2.
- Northridge (Los Angeles) earthquake of January 17, 1994, Richter Magnitude 6.6.
- Erzincan, Turkey, earthquake of March 13, 1992, Richter Magnitude 6.8.
- San Francisco/Oakland/Santa Cruz/ Hollister/Los Gatos/Watsonville, Loma Prieta earthquake of October 17, 1989, Richter Magnitude 7.1.
- Mexico City, Mexico, earthquake of September 19, 1985, Richter Magnitude 8.1.
- Morgan Hill, California, U.S.A., earthquake, 1984, Richter Magnitude 6.2.

AWARDS (ENGINEERING)

- 2022 Distinguished Member, American Society of Civil Engineers (ASCE's highest honor, bestowed on those "who have attained eminence in some branch of engineering.")
- 2020 AISC Special Achievement Award (for groundbreaking work in the development and promotion of SpeedCore).
- 2020 ASCE Walter LeFevre Award (collectively with 40 faculty and 14 staff members), awarded to the University at Buffalo Department of Civil, Structural, and Environmental Engineering in recognition for its actions in promoting licensure, ethics and professionalism
- 2019 AISC Lifetime Achievement Award (recognizing individuals who have reached the pinnacle of their profession and demonstrated over an extended period of time, innovation and originality in

- structural steel design and construction)
- 2018 SUNY Distinguished Professor
- 2018 Fellow, Structural Engineering Institute
- 2017 Fellow, Canadian Academy of Engineering
- 2017 SUNY Chancellor's Award for Excellence in Scholarship & Creative Activities
- 2017 ASCE Moisseff Award, recognizing an important paper published in an ASCE journal, dealing with the board field of structural design. The ASCE award committee particularly noted the “team’s contributions to the development of a new structural system that is safe, effective, and provides advantages over current systems.”
- 2016 ASCE Raymond C. Reese Research Prize, for best paper in an ASCE journal describing a notable achievement in structural engineering research, with special consideration for how the research can be used.
- 2016 ETH Zurich (Swiss Federal Institute of Technology) Short Visit Fellowship
- 2016 & 2015 University of Canterbury Quake Center, Visiting Professor Fellowship
- 2015 SEAS Senior Researcher of the Year Award, School of Engineering and Applied Sciences, University at Buffalo (1st recipient of this award established by SEAS in 2015).
- 2012 AISC T.R. Higgins Award, for outstanding contribution to the engineering literature on fabricated structural steel (recipient of the Higgins Award gives a lecture to over 3000 engineers and students across USA).
- 2011 ASCE George Winter Award (Award Citation: “For contributions to structural engineering and seismic hazard mitigation and contributions to creative fictional literature which succeed in telling the hazard mitigation story to a broader audience”)
- 2010 Visiting Erskine Fellowship, University of Canterbury, Christchurch, New Zealand
- 2007 Fellow, American Society of Civil Engineers
- 2007 Beyer Distinguished Lecture Award, University of Houston
- 2007 University at Buffalo Sustained Achievement Award
- 2006 Excellence in Structural Engineering Awards in the in the category “Study/Research/ Guidelines”, awarded by the Structural Engineering Association of Northern California, for the “Steel Plate Shear Walls AISC Design Guide” by Sabelli, R., and Bruneau, M.
- 2005 J. James Croes Medal of the ASCE - awarded to authors of the paper, among all journals published by ASCE, that is judged worthy of special commendation for its merit as a contribution to engineering science.
- Top 100 Grantees/Principal Investigators Award/Recognition, University at Buffalo, 2002-2008.
- 1996, Honorable Mention (2nd place) for Gzowski Medal, for best paper in the Canadian Journal of Civil Engineering in 1996.
- 1996, Pratley Award for best paper in bridge engineering in the Canadian Journal of Civil Engineering in 1996.
- Nominated by University of Ottawa for 1997 Natural Sciences and Engineering Research Council (NSERC) E.W. R. Steacie Memorial Fellowship (only 4 awarded across Canada each year in Sciences and Engineering).
- 1996, First recipient of University of Ottawa Young Researcher Award, 1996, awarded to best young researcher at the University of Ottawa.
- 1996 George S. Glinski Award for Excellence in Research, awarded to best researcher of the University of Ottawa Faculty of Engineering.
- 1994, Gzowski Medal, for best paper in the Canadian Journal of Civil Engineering in 1994.
- 1995, Japanese Society for Promotion of Sciences/NSERC Bilateral Exchange Program - funding a 6 month research visit to Japan, 1995 (an equivalent award by the Japan Sciences Technology Fund had to be declined since both awards could not be held concurrently).
- 1994, CSCE/JSCE Japan Travel Grant, to visit engineering firms and research institutes in Japan.
- 1988, Technology Inflow Program Award, Industrial Research Assistance Program, National Research Council of Canada.
- 1987-90, Industrial Research Fellowship - NSERC.
- 1983-87, “1967 Science and Engineering” Scholarship - NSERC.
- 1986, Giar Award - Sigma-Xi Scientific Society.
- 1985 & 1987, W.H. & I.S. Popert Research Fellowship - U.C. Berkeley, 1985 & 1987.
- 1983, Prix d'Excellence de l'Ordre des Ingénieurs du Québec - Ordre des Ingénieurs du Québec.
- 1982 & 1983, Undergraduate Industrial Summer Research Award, NSERC.

AWARDS (NON-ENGINEERING)

- 2017 Garcia Memorial Prize for Best Fiction Book of the Year, for “My Author is Dead”
- 2017 Reader Views - Reviewers Choice Literary Award, 1st Place, General Fiction/Novel for “My Author is Dead”

- 2013, Best Second Novel, 2013 Next Generation Indie Book Awards for “The Emancipating Death of a Boring Engineer”
- 2010, Grand Prize, 2nd Place, Fiction, 2010 Next Generation Indie Book Awards for “Shaken Allegiances”
- 2010, 1st Place, Regional Fiction, 2010 Next Generation Indie Book Awards for “Shaken Allegiances”

MISCELLANEOUS ACTIVITIES

- Participation in Public Review of Proposed Changes to the National Building Code, 1988 - 1995.
- Peer-Reviewer for various Grant Organization (NSF, NSERC, FCAR) (1991 - now).
- Regular reviewer for the American Society of Civil Engineers Journal of Structural Engineering and Journal of Bridge Engineering, Canadian Journal of Civil Engineering, American Institute of Steel Construction Engineering Journal, Engineering Structures Journal, and occasional reviewer for miscellaneous other journals, such as Journal of Earthquake Engineering and Structural Dynamics, Earthquake Engineering Research Institute Spectra, Journal of Constructional Steel Research, Journal of Earthquake Engineering, The Masonry Society Journal, Advances in Engineering Software, Computer and Structures, ISET Journal of Earthquake Technology, National Hazards Research and Application Information Center special publication, and others.
- Regular reviewer for miscellaneous conferences (e.g. the Transportation Research Board Annual Meeting, Canadian Conference on Earthquake Engineering, National Seismic Bridge Conference, International Conference on Short and Medium Span Bridges, North American Masonry Conference, etc.)
- Session Chairman and Session Leader at many conferences.

GUEST SPEAKER - Short Courses and Seminars

- “From Northridge to Resilience: Innovative strategies to ensure post-earthquake functionality”, as part of Webinar on “30th Anniversary of the 1994 California Northridge Earthquake, Innovations, and Historical Perspectives,” by Transportation Research Board, October 2024
- “Reconstructing Christchurch: A Seismic Shift in Building Structural System”, Webinar, American Institute of Steel Construction, February 2019.
- “Reconstructing Christchurch: A Seismic Shift”, 2019 Engineers Week Seminar Series, Buffalo, NY, February 2019.
- “Concrete-Filled Composite Plate Shear Walls Seminar”, New York Steel Institute Seminar, New York City, October 2018.
- “The Rest of the Story: Reminiscences on Resilience and UB-NEES”, Symposium to Honor the Career and Contributions of Andrei M. Reinhorn, Buffalo, September 2013.
- “General introduction to Earthquake Engineering, Introduction to FHWA Seismic Manual, and Non-conventional Ideas to Achieve Satisfactory Seismic Performance”, Short Course, Jacobs Engineerings, New Jersey, June 2013.
- “Improving Community Resilience through Emerging Systems in North America Seismic Design”, Short Course, University of Torino, Italy, Spring 2011.
- “Steel Plate Shear Walls, Buckling Restrained Braces, and Ductile Steel Diaphragms”, Short Course, University of Canterbury, New Zealand, February 2010
- “Steel Frames Longevity”, Symposium, Aging Buildings: Designing for Longevity, New York City, December 2009.
- “The 4R's of Resilience and SOMBRERO - Conceptual Approach,” National Institute of Standards and Technology (NIST), Washington, D.C., April 2009
- “Definition and Potential Benefits of Multihazard Engineering as a Mean towards Resilience,” Seminar on Resilience, National Institute of Standards and Technology (NIST), Washington, D.C., April 2009
- “Multi-hazard Disaster Resilience Concept Overview - from Concepts to Applications”, Seminar on Advanced Technologies for the Seismic and Multi-hazard Design and Retrofit of Offshore Structures, Industrial Structures and LNG Tanks, Houston, December 2006.
- “SPSW: State-of-the-art Steel Design”, Seminar of the Steel Institute of New York, New York City, January 2006.
- “Steel Plate Shear Wall Buildings: Design Requirements and Research”, North American Steel Construction Conference, Montreal, Canada, April 2005.
- “Applications of Steel Plate Shear Walls for Seismic Retrofit of Hospital Buildings”, “The George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES)”, “Overview of MCEER Research and Concept of Resilience”, Hospital Research & Retrofit Seminar, California Office of State Health Planning and Development, Sacramento, California, February 2005

- “Ductile Design of Steel Structures”, Short Course, Dominican Republic, October 2004
- “NSF NEES Program / Ketter Hall new Laboratory”, KEERC-MCEER Joint Seminar on Contributions to Earthquake Engineering, Buffalo, NY, July 2002.
- “Multidisciplinary Center on Earthquake Engineering Research; Damage to Buildings at Ground Zero and Ancillary Benefits of Earthquake-Resistant Design with Regard to Human-Made Disasters”, Urban Hazard Forum, John Jay College of Criminal Justice, City University of New York, Jan.2002.
- “Earthquake-induced Damage to Steel Buildings and Unreinforced Masonry Buildings”, Post-Earthquake Structural Damage Evaluation, MCEER Short Course to Buffalo Division of Army Corps of Engineers, March 2001.
- “Performance, Evaluation, and Seismic Retrofit of Steel Bridges”, National Steel Bridge Alliance Course on LRFD Steel Bridge Design, Buffalo, NY, June 2000, 2001 and 2002.
- “Earthquake-resistant Design of Ductile Steel Moment Resisting Frames”, Seminar on “Codes, Standards, and Seismic Design Requirements for Steel Structures in 2000 and beyond”, organized by the Canadian Institute of Steel Construction, Vancouver, January 1999, attended by 150 practicing engineers.
- “Earthquake-resistant Design of Steel Buildings”, Short Course of the Ottawa Carleton Earthquake Engineering Research Centre, Ottawa, May 1996.

GUEST SPEAKER - Workshops (without Printed Proceedings)

- “Concepts, Applications and Standards in Electricity Infrastructure Resilience”, (co-presented with Mathaios Panteli), T&D Joint Workshop:Black Sky Hazards – Planning and operation utility best practices, CEATI (the Centre for Energy Advancement through Technological Innovation), May 2022
- “Fundamentals of Seismic Design of Steel Structures”, Workshop, Civil Engineering Congress (CIC 2014), Costa Rica, May 2014.
- “Enhancing Resilience - Some Engineering Issues”, Workshop for a Cross-Disciplinary Program for Disaster Resilience Vulnerability, and Risk Reduction, National Sciences Foundation, Arlington, Virginia, June 2011 - also presented at the Quake Summit, Buffalo, New York, June 2011.
- “Benefits of a Multi-hazard Engineering Approach for Blast Resistant Design of Bridges”, Workshop on Safety and Behavior of Bridges Subjected to Blast in a Multi-Hazard Environment, New York City, February 2009
- “Multi-hazard protection of Highway Bridges”, SEI/ASCE Bridge and Tunnel Security Committee Workshop, Washington, D.C, July 2006
- “Blast Resistance of Concrete Filled Steel Tubes”, High Performance Steel Design Advisory Group, Joint meeting of the American Iron and Steel Institute Task Force and AASHTO T-14 Committee on Structural Steel Design, Washington, D.C, July 2006
- “Perspective of Communities Resilience to Frame Integrated Coordinated Research”, National Academy of Science, Disasters Roundtable Workshop 16: Community Disaster Resilience, Washington, D.C., March 2006.
- “Enhancing the Resilience of Communities against Extreme Events from an Earthquake Engineering Perspective”, Conversation in the Disciplines, Albany, New York, September 2005.
- “MCEER’s Perspective on Role of Social Sciences in Earthquake Engineering Research”, panel member, Workshop of the National Academy of Sciences’ Committee on Disaster Research in the Social Sciences, Washington, D.C., August, 2004.
- “Multidisciplinary Center for Earthquake Engineering Research (MCEER) Research Relevant to Performance-Based Design”, ATC-58 Workshop, San Francisco, California, February 2003.
- “Looking Back and Moving Forward: Lessons Learned and Long-Term Effects of September 11”, panel member, 28th Hazards Research and Applications Workshop, Boulder Colorado, July 2003.
- “Earthquakes Engineering Issues in New York State”, New York State Disaster Preparedness Commission Mitigation Workshop, Albany, NY, October 2002.
- “Structural Engineering Reconnaissance at Ground Zero” (prepared with J. Berman, G.Warn, A. Whittaker and A. Reinhorn), Learning from Urban Disasters - NSF Response and Opportunities for Future Research Workshop, NYC, December 2001.
- “MCEER-NCREE Past Collaboration and Proposed Future Tri-Center Collaboration”, MCEER-NCREE-PEER Trilateral Workshop on Center-to-Center Cooperative Research, Taipei, Taiwan, November 2000.
- “Overview of Proposed Seismic Provisions for Steel Bridges”, NCHRP 12-49 Workshop on Seismic Provisions for Steel Bridges, Las Vegas, July 2000.
- “Innovative Approaches for Seismic Resistance of Steel Bridges”, NCHRP 12-49 Workshop on Seismic Provisions for Steel Bridges, Las Vegas, July 2000.
- “(The never-ending saga of) Soft-Stories”, Workshop in Setting Research & Development Priorities, American Society of Civil Engineers and Institute for Business and Home Safety, Washington, June

- 2000.
- “Future Research on Structural Control within MCEER”, Exploring Partnerships in the Application of Structural Control Technology, New York City, New York, December 1999.
- Canadian representative, “U.S.-Japan Workshop on U.S.-Japan workshop on Cooperative Research for Mitigation of Urban Earthquake Disasters: Learning from Kobe and Northridge”, Maui, Dec. 1995.
- “Appendix A of the New Guidelines for Seismic Evaluation of Existing Buildings”, Workshop presented to more than 600 engineers in Quebec City, Montreal, Toronto and Ottawa, September 1993.
- Presented “Earthquake Preparedness Workshops” to various groups to discuss Canadian seismicity, the concepts of earthquake resistant design and issues related to survivability of important existing structures and equipments. The Department of National Defense Canada, Public Works Canada, the Department of External Affairs Canada, Protection Civile du Québec, and Emergency Preparedness Canada are some of the agencies which participated to those workshops.

GUEST SPEAKER - Invited Technical Lectures

- New Design Strategies to Make Earthquake Resilient Steel Bridges”, École polytechnique fédérale de Lausanne (EPFL), May 3, 2024.“
- “The Lessons of Catastrophe: Structural Challenges and New Disaster Perspectives”, Natural Hazards Center, Making Mitigation Work Webinar Series, October 10, 2023
- “Quantification of Building-Resilience as a Component of City-Resilience”, Inaugural Presentation of the Elsevier Journal of Resilient Cities and Structures Webinar Series, September 14, 2023
- “Achieving Resilient Multi-Span Bridge by using Buckling-Restrained Braces”, Washington Department of Transportation Webinar, September 14, 2023 - shorter version also presented to Transportation Research Board (TRB) Seismic Design and Performance of Bridges (AKB50) on August 31, 2023, and to TRB Steel Bridge Committee on July 18, 2023.
- “The Blessings of Disaster: A Bridge to Initiate Discussions Toward a More Resilient Society”
 - École polytechnique fédérale de Lausanne (EPFL), April 24, 2024.
 - Canadian Society for Civil Engineering, National Webinar, Dec. 13, 2023.
 - American Society for Civil Engineering, National Webinar, Dec. 12, 2023.
 - National Institute of Standards and Technology, Washington, D.C., Nov. 28, 2023.
 - Ingénieurs en structure de Montréal/Montreal Structural Engineers, Montreal, Nov.14, 2023.
 - Société Canadienne de Génie Civil, Quebec, Nov.13, 2023.
 - Structural Engineers Association of Massachusetts, Boston, Ma, May 17, 2023.
 - 2023 Engineers Week Seminar Series, New York State Society of Professional Engineers, Buffalo, NY, February 24, 2023.
- “The Blessings of Disaster: The Lessons That Catastrophes Teach Us and Why Our Future Depends on It”
 - University at Buffalo Alumni Association Webinar Series (for national and international alumni), Sept. 21, 2023
 - New York State Floodplain and Stormwater Managers Association Webinar Series, May 3, 2023.
 - American Council of Engineering Companies of New York Webinar Series, New York, NY, April 20, 2023.
 - Distinguished Lecture Series on Urban Resilience, Green Construction Research & Training Center University of British Columbia Webinar, March 1, 2023.
 - Multidisciplinary group, University at Buffalo, November 11, 2022.
- “Perspectives and Research on Disaster Resilience - Filling Gaps in Institutional Memory on Earthquake Engineering and Extreme Event Research at UB – and Overview of Some Recent Personal Projects on Resilience”, multidisciplinary group, University at Buffalo, October 1, 2022.
- “Structural Engineering Perspectives on Designing Resilient Buildings,” Webinar, Tianjin University, China, October 2021.
- “Resilience Reflections, 20 Years after 9/11,” Webinar, Canadian Society of Civil Engineering, September 2021.
- “Perspectives on Structural Engineering Resilience,” Inaugural Lecture of the Distinguished Webinar Series in Earthquake Engineering & Seismology of the Canadian Association of Earthquake Engineering, May 2021.
- “Plain Vanilla and Other Flavors of Steel Plate Shear Walls” The Institution of Structural Engineers (IstructE) Webinar, March 2021.
- “Resilience Challenges and Pragmatic Strategies for Resilient Structures”, Seminar, Research Institute of Structural Engineering and Disaster Reduction, Tongji University, Shanghai, China, November 2018.
- “Challenges to Achieving Resilience” Fall Meeting of the Transmission Overhead Line Design &

- Extreme Event Mitigation (TODEM) Group, Tucson, Arizona, November 2018.
- “The Rebuilding of Christchurch New Zealand” CISC Ontario Steel Spring Symposium, Toronto/Vaughan, Canada, May 2018.
- “Reconstructing Christchurch: Quantitative Findings on Shift in Building Structural Systems”, CISC Steel Breakfast Seminar, Vancouver, Canada, February 2018.
- “Buckling-Restrained Braces and Other Structural Fuse Strategies for Resilient Bridges”, Engineering Seminar, Department of Civil, Structural and Environmental Engineering, University at Buffalo.
- “Steel Plate Shear Walls: Strong, Ductile, Resilient (and More?)”, Zachry Distinguished Lecture Series, Texas A&M, January 2017.
- “Hurdles on the Road to Achieving Engineering Resilience”, Center for Future Resilient Systems, Singapore-ETH, Singapore, October 2016.
- “Perspectives on Engineering Resilience”, Risk Center Seminar, Swiss Federal Institute of Technology, Zurich, Switzerland, October 2016.
- “Buckling-Restrained Braces and Other Structural Fuse Strategies for Resilient Bridges”, Structural Engineering Colloquium, Swiss Federal Institute of Technology, Zurich, Switzerland, October 2016.
- “Steel Plate Shear Walls in North America”, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, October 2016.
- “Perspectives on Earthquakes, Steel, Ductility, Research, Implementation, Multi-Hazard, Resilience, and the Meaning of Life”, ASCE University at Buffalo Student Chapter, Buffalo, November 2014
- “Seismic Behavior of Concrete-Filled Steel Sandwich Walls (and Concrete-Filled Steel Tube Columns)”, Department of Civil and Environmental Engineering, University of Houston, October 2014.
- “Steel Plate Shear Walls (SPSW), TEBF, CFST, SF and Other Short Stories”, 2012 AISC T.R. Higgins Lecture
 - Rocky Mountain Steel Construction Association, Denver, June 2012
 - Structural Engineers Association of Texas State Conference, San Antonio, Texas, Sept. 2012
 - University of Minnesota, Minneapolis, Minnesota, September 2012.
 - Pacific Northwest Steel Fabricators Association, Portland, Oregon, October 2012
 - Pacific Northwest Steel Fabricators Association, Seattle, Washington, November 2012
 - Structural Engineers Association of Central California, Sacramento, California, March 2013
 - Structural Engineers Association of New York, New York, March 2013
 - 58th Structural Engineering Conference, Lawrence, Kansas, March 2013
 - Purdue University, West Lafayette, Indiana, March 2013
 - Structural Engineerings Institute - Maryland, Baltimore, MD, March 2013
 - Structural Engineers Association of Alabama, Birmingham, Alabama, April 2013
- “Longevity and Resilience of Steel Structures (without equations)”, Department of Civil Engineering, University of Minnesota, Minneapolis, September 2012.
- “Infrastructure Damage from the 9/3/2010 (Mw 7.1) and 2/21/2011 (Mw 6.3) Christchurch (New Zealand) Earthquakes” (with M. Anagnostopoulou), MCEER/CSEE/EERI Student Chapters, University at Buffalo, March 2011.
- “Performance of Bridges during the M7.1 September 4, 2010, Darfield Earthquake (Canterbury, New Zealand)”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January 2011.
- “Rocking, Fusing, Self-Centering, and Multi-Hazard: Some Research and some Questions”, Structural Engineers Association of British Columbia, Vancouver, Canada, November 2010.
- “Longevity and Resilience of Steel Structures”, Department of Civil Engineering, University of Canterbury, Christchurch, New Zealand, April 2010.
- “Steel Plate Shear Walls, Buckling Restrained Braced Frames: Emerging “Classy” Seismic-Resistant Steel Systems in North America”, Lecture Tour, New Zealand Society for Earthquake Engineering and Auckland Structures Group, Auckland, March 2010, Wellington, April 2010.
- “Investigation on the Structural Fuse Concept for Bridges”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January 2010.
- “Steel Plate Shear Walls: Recent experimental and analytical research”, Department of Civil Engineering, University of Colorado, Boulder, March 2009.
- “New Bridge Design Protects Against Terrorist Attack,” Association for Bridge Construction and Design, Western New York Meeting, February 2009.
- “Structural Fuse Concept for Bridges”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January 2009.
- “Steel Plate Shear Walls”, Department of Civil, Geological and Mining Engineering, Ecole Polytechnique, Montreal, May 2008.
- “Multi-Hazard Design of Bridge Columns: Update on Blast Resistance of Seismically Detailed Columns”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January

2008.

- “Steel Plate Shear Walls: Recent Experimental and Analytical Research”, Beyer Distinguished Lecture Series, Department of Civil and Environmental Engineering, University of Houston, November 2007.
- “Research on Seismic Performance and Design of Steel Plate Shear Wall”, Graduate Seminar, Department of Architectural Engineering, Tongji University, Shanghai, China, October 2006.
- “Seismic (and Multi-hazard) Performance of Steel Bridges”, Graduate Seminar, Civil Engineering Department, Tongji University, Shanghai, China, October 2006.
- “Steel Plate Shear Walls - Seismic Performance, Design Requirements, and New Directions”, 4th Graduate Seminar on Structural Dynamics and Earthquake Engineering, University of Toronto, April 2006.
- “From Earthquake Engineering to Multi-Hazard Engineering”, UB Alumni Association Lecture Series, San Francisco, March 2006.
- “Seismic (and Multi-hazard) Performance of Steel Bridges - Overview of Research at the University at Buffalo”, California Department of Transportation Steel Committee, March 2006.
- “Multi-hazard-Resistant Bridge Pier Concept”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January 2006.
- “Extreme Events: Mitigation and Response - A Strategic Strength” University at Buffalo SEAS Dean’s Council, UB Mission Review II, and UB Council, October to December 2005.
- “Earthquake Resistant Design of Structures”, invited lecture as part of course Geological Disaster, offered by Department of Geology, University at Buffalo, Buffalo, NY, September 2005.
- “From Earthquake Engineering to Multi-Hazard Engineering”, Science Coalition’s Science 101 Capitol Hill Session on Natural Disasters, June 2005.
- “A Framework to Quantitatively Assess and Enhance Seismic Resilience”, lecture as part of course A social Perspective on Extreme Event Engineering, jointly offered by Department of Civil, Structural and Environmental Engineering, and Department of Urban Planning, University at Buffalo, Buffalo, NY, March 2004.
- “A Strategic Team Approach Towards Enhancing the Resilience of Infrastructure against Extreme Events”, Subcommittee on Disaster Reduction, National Science and Technology Council, March 2005 - also presented to Exchange Club of Capitol Hill, November 2004 - also presented to the Washington Advisory Group, University at Buffalo, November 2004.
- “Comportement sismique des structures en acier et recherche expérimentale aux Etats-Unis”, Ecole Polytechnique/McGill University, Montreal, Canada, December 2004.
- “Enhancing the Seismic Resilience of Infrastructure and Seismic Performance of Steel Bridges”, Ottawa Carleton Earthquake Engineering Research Center, December 2004.
- “One destructive earthquake per week in Buffalo - Where and Why?”, UB Alumni Association Lecture Series, Buffalo, 2004 - also presented at UB Newman Center - The Bridge Lecture Series, Buffalo, July 2004.
- “Seismic Evaluation and Retrofit of Bridge Braced Bents”, Seismic Committee of the Transportation Research Board, TRB Annual Meeting, January 2004.
- “How to Design an Earthquake Resistant Building: Earthquake Engineering at the University at Buffalo”, Clinical Society of Surgeons, Buffalo, October 2003.
- “Seismic Evaluation and Retrofit of Bridge Braced Bents”, Department of Civil Engineering, Cornell University, Ithaca, New York, May 2003.
- “Trends in Earthquake Engineering Research in the USA”, Kyoto University, November 2002.
- “Multidisciplinary Center for Earthquake Engineering Research and NEES”, presentation to Committee on Developing a Long-term Research Agenda for the Network for Earthquake Engineering Simulation (NEES), National Academy of Sciences, National Research Council, Irvine, April 2002.
- “Seismic Performance of Steel Bridges - Turning Vulnerabilities into Opportunities”, Department of Civil Engineering, University of Minnesota, Feb. 2002.
- “Seismic Performance of Unreinforced Masonry Buildings - Can loose bricks really stick together during earthquakes?”, Department of Civil Engineering, University of Minnesota, Feb. 2002.
- “World Trade Center Attack - Structural Engineering Reconnaissance at Ground Zero” (co-speaker with A. Reinhorn and A. Whittaker), presented to ASCE Buffalo Section Meeting, University at Buffalo Dean’s Council, UB Council, and UB Foundation Council, October 2001.
- “How Does MCEER’s Experience Compares to NEES”, NSF NEES Meeting, Washington, Dec. 2001.
- “Earthquake Engineering in the New Millenium”, ASCE Buffalo Section Meeting, May 2001.
- “NEES Program, NEES Grants, and MCEER’s Earthquake Engineering Research at UB”, Presentation to SUNY Buffalo’s Dean Council, Buffalo, April 2001.
- “The UB-Node of the George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES),

NEES Kick-off Meeting, NSF, Washington, February 2001, also presented at the Tokyo Institute of Technology, May 2001.

- “Structural Damage from the August 17, 1999 Kocaeli (Turkey) Earthquake”, Speaker as part of a joint presentation by ASCE Buffalo Chapter and MCEER, Buffalo, October 1999 (also presented to Department of Civil, Structural and Environmental Engineering, SUNY Buffalo, September 1999).
- “Damage from the 1999 Turkey and Taiwan Earthquakes”, Presentation to SUNY Buffalo’s Dean Council, Buffalo, October 1999.
- “Performance, Design and Retrofit of Steel Bridges”, Presented to CALTRANS (California Department of Transportation) engineers, Sacramento, California, April 1999.
- “Seismic Performance of Steel Structures”, Invited lecture to the British Columbia Regional Committee of the Canadian Institute of Steel Construction, Vancouver, October 1997.
- “Seismic evaluation and retrofit of steel bridges”, Invited lecture to the National Center for Earthquake Engineering Research, State University of New York at Buffalo, January 1997.
- “Lessons from the Kobe Earthquake - Damage to steel structures”, Invited lecture to the Geological Survey of Canada, Resources Canada, Ottawa, January 1997.
- “Seismic evaluation and retrofit of masonry buildings”, Invited lecture to the Montréal Engineering Society, McGill University, Montréal, November 1996.
- “Surviving Earthquakes/ Survivre aux tremblements de terre”, Public lecture in acceptance of the Glinski Award (Sept. 20, 1996) and for University of Ottawa’s Faculty of Engineering Anniversary (Sept. 21, 1996), University of Ottawa.
- “Unreinforced Masonry Seismic Resistance”, Invited Lecture, 29th Canadian Masonry Conference, Ottawa, May 1996.
- “Performance of Steel Buildings during the January 17, 1995 Kobe Earthquake”, Invited Lecture, Structural Steel Educators Foundation, Sixth Annual Meeting, Toronto, March 1996.
- “Structural Damage to Steel Bridges from the Hyogoken Nanbu (Kobe, Japan) Earthquake”, Invited Lecture, Civil Engineering Department, Clarkson University, Potsdam, N.Y., November 1995.
- “Damage to Steel Structures from the January 17, 1995, Hyogoken Nanbu (Kobe, Japan) Earthquake”, Ottawa Carleton Earthquake Engineering Research Centre Lecture, Ottawa, November 1995.
- “How to become an Engineer in Japan”, Invited Lecture to Civil Engineering Graduate Student Association, University of Ottawa, Sept. 1995.
- “Earthquake Resistant Design in Canada, and Overview of some of the Earthquake Engineering Research Activities at the University of Ottawa”, Invited Lecture to the Departments of Civil Engineering of Osaka University and Nagoya University, April 1995.
- “Performance of Buildings and Bridges during the January 17, 1994 Northridge (L.A.) Earthquake”, Invited Lecture, Structural Steel Educators Foundation, Sixth Annual Meeting, Toronto, March 1994.
- “Structural Damages caused by the January 17, 1994 Northridge (L.A.) Earthquake”, Invited Lecture to the Geological Survey of Canada, Energy Mines and Resources, March 1994.
- “Performance of Structures during the January 17, 1994 Northridge (L.A.) Earthquake”, Part of Special seminar of the Ottawa-Carleton Institute for Graduate Studies in Civil Engineering, February 1994.
- “Performance of Structures during the 1992 Erzincan (Turkey) Earthquake”, Invited Lecture to the University of Ottawa Ottawa-Carleton Institute for Graduate Studies in Civil Engineering, June 1992.
- “Structural Damages Caused by the October 1989 Loma Prieta (San Francisco) Earthquake - Whose fault?” (in French), Invited Seminar, Ecole Polytechnique, Université de Montréal, March 1992.
- “Philosophy versus Compromises”, Invited Lecture to the Structural Steel Educators Foundation, Fifth Annual Meeting, Toronto, March 1992.
- “Effective use of Computer Generated Slides for Engineering Conference Presentations”, Invited Lecture on the University of Ottawa Campus open to all professors, February 1992.
- Presentation of Seminar “Preliminary Report of Structural Damage from the Loma Prieta (San Francisco) Earthquake of October 17, 1989” to officials from various public agencies including Public Works Canada, Parliamentary Precinct, Emergency Preparedness Canada, National Research Council, Department of National Defence, as well as from other governmental agencies; November 1989.
- “Report of Structural Damage from the Earthquake of October 17, 1989”, Invited Lecture to the Canadian Institute of Steel Construction, December 1989.
- “Preliminary Report of Structural Damage from the Loma Prieta Earthquake”, Invited Lecture, University of Ottawa Ottawa-Carleton Institute for Graduate Studies in Civil Engineering, Jan. 1990.
- “Structural Damage from the San Francisco Earthquake”, Invited Lecture to the Structural Steel Educators Foundation, Fourth Annual Meeting, Toronto, Feb. 1990.
- “Report of Damage from the Loma Prieta Earthquake”, Invited Lecture to the BOMA (Building Owners and Managers Association) of Ottawa/Carleton, April 1990.

- “The Loma Prieta (San Francisco) Earthquake of October 17, 1989”, Invited Lecture to the Canadian Society of Civil Engineer, Quebec City Chapter, April 1990.
- “Report of Structural Damage from the Earthquake of October 17, 1989”, Invited Lecture to the McGill 17th Construction Colloquium, Ottawa, October 12, 1990.
- Technical Presentation to the CSA-S37 Standard Committee, “Proposed modifications to the CSA-S37 Standard for the evaluation of existing guyed-towers”, November 1988.

INVITED CONFERENCE PRESENTATIONS (without Publications)

- “The Blessings of Disaster: Building Bridges Toward a more Resilient Society”, *Keynote Speaker*, XXIV Congreso Nacional De Ingeniería Estructural, Mexican Society of Structural Engineering (SMIE), November 2024.
- “The Blessings of Disaster - The Lessons That Catastrophes Teach Us and Why Our Future Depends on It”, *Keynote Speaker*, Construction Industry Roundtable Fall Conference, November 2024.
- “Les bienfaits des désastres : les leçons que les catastrophes nous enseignent et pourquoi notre avenir en dépend”, Colloque sur la sécurité civile, Gouvernement du Québec, Quebec City, Canada, October 2024.
- “The Blessings of Disaster”, *Keynote Speaker*, ASCE INSPIRE Conference - Infrastructure Innovation & Adaptation for a Sustainable & Resilient World, Washington, D.C., November 2023
- “New Design Strategies to Make Seismically Resilient Steel Buildings and Bridges”, *Keynote Speaker*, Tongzhou Forum, Research Centre of Education Ministry of China for Steel Structures and National Research Centre for Pre-fabrication Construction of China, August 2023.
- “From Earthquake Engineering to Nuclear Holocaust, via The Blessings of Disaster: The Lessons That Catastrophes Teach Us and Why Our Future Depends on It”, *Keynote (banquet) Speaker*, Canadian Conference - Pacific Conference on Earthquake Engineering, Vancouver, Canada, June 2023
- “New Design Strategies to Make Steel Bridges Resilient to Extreme Events”, 2023 North American Steel Construction Conference, Charlotte, North Carolina, April 2023.
- Invited Panelist, Webinar, “Human Continuity: Do we still have a chance?”, EIS Council, March 2, 2023.
- “Structural Steel and Resilience”, *Keynote Speaker*, The Flash Steel Conference, American Institute of Steel Construction, October 18-20, 2022 (online) -- and participation in Special Wrap-up Roundtable Session with all 3 Keynote Speakers of the conference.
- “The Importance of Building-Resilience toward City-Resilience”, *Plenary Speaker* on the International High-End Forum on Resilience of Critical Infrastructure Systems, under the auspices of the Chinese Academy of Engineering, Shanghai, November 18-20, 2022
- “Resilient Buildings from A Post-Christchurch Earthquake Perspective”, A Year after – Samos (Sisam) Mw 7.0 Earthquake, On-Line Symposium, Istanbul Technical University Disaster Management Institute, October 2021.
- “SpeedCore - Lessons from Research and Implementation, Part One: Research” (co-presented with A. Varma), 2021 North American Steel Conference, Virtual Conference (due to COVID-19).
- “Reconstructing Christchurch: A Seismic Shift in Building Structural Systems”, 2019 The Canadian Steel Conference, Montreal, Canada, October 2019.
- “Resilience Dilemma”, *Keynote Speaker/Thought Leader*, 2nd Global Resilience Research Network (GRRN) Summit, Freiburg, Germany April 2019.
- “Post-Earthquake Reconstruction of Christchurch: Steel City New Zealand”, 2019 North American Steel Construction Conference, St. Louis, April 2019 (presented twice).
- “Lessons From the First SpeedCore Project” (co-presented with R. Klemencic and A. Varma), 2019 North American Steel Construction Conference, St. Louis, April 2019 (presented twice).
- “Findings from NCHPR 12-93: Contribution of the Steel Casing to the Flexural and Shear Behavior of Circular Reinforced Concrete Filled Steel Tube Shafts” (co-presented with H. Kenarangi), 2019 World Steel Bridge Symposium (as part of 2019 North American Steel Construction Conference), St. Louis, April 2019 (presented twice).
- “Christchurch: Rebuilding a Resilient City?”, *Keynote Speaker*, 2nd International Workshop on Resilience, Nanjing/Shanghai, China November 2018
- “Structural Engineering Dilemmas, Resilient EPCOT, and other Perspectives on the Road to Engineering Resilience”, Panel on First Interdisciplinary Technical Summit (ITS): Resilience of Structures and Infrastructure Systems, ASCE/SEI 2018 Structures Congress, Fort Worth, Texas, April 2018.
- “Reconstructing Christchurch: Quantitative Findings on Shift in Building Structural Systems”, 2018 CISC Educators Forum, Ottawa, Canada, March 2018.
- “Buckling Restrained Braces and other Structural Fuse Strategies for Resilient Bridges”, *Keynote Speaker*, Congreso Estructuras 2017 - XIV Seminario de Ingeniería Estructural y Sísmica, Costa

Rica, August 2017.

- “Steel Plate Shear Walls and Composite (Sandwich) Walls”, *Keynote Speaker*, Congreso Estructuras 2017 - XIV Seminario de Ingenieria Estructural y Sismica, Costa Rica, August 2017.
- "Findings and Design Recommendations from Project NCHRP 12-93: Contribution of Steel Casing to Single Shaft Foundation Structural Resistance", AASHTO Subcommittee on Bridges & Structures Conference - Presented to Technical Committee T3 on Seismic Design, T-14 Structural Steel Design, and T-15 Substructures and Retaining Walls, Spokane, Washington, June 2017.
- “Resilience: The Structural Engineering Dilemma”, *Opening Lecture/Keynote*, 1st International Workshop on Resilience, Torino, Italy, September 2016.
- “Composite Plate Shear Walls—Concrete Filled (C-PSW/CF)”, 2016 North American Steel Construction Conference, Orlando, Florida, April 2016 (presented twice).
- “Innovations in Self-Centering Steel Plate Shear Walls”, ATC-SEI Conference on Improving Seismic Performance of Existing Buildings, San Francisco, December 2015 (presented by Tricia Clayton, U. Texas, Austin).
- “Steel Plate Shear Walls (SPSW) and other Structural Systems for Extreme Event Resilience”, *Keynote Speaker*, Civil Engineering Congress (CIC 2014), Costa Rica, May 2014.
- “Fiction and other Informal Tools to Broaden Awareness of Structural Engineering”, ASCE/SEI 2015 Structures Congress, Portland, Oregon, April 2014.
- “Finite Element Simulation of Concrete Filled Double-Skin Tube Columns Subjected to Post-earthquake Fires”, ASCE/SEI 2015 Structures Congress, Portland, Oregon, April 2014 (presented by R. Imani).
- “Simplified Analytical Method for the Calculation of Axial Load Capacity and Design of Concrete Filled Double-Skin Tube Columns Subjected to Fire”, ASCE/SEI 2015 Structures Congress, Portland, Oregon, April 2014 (presented by R. Imani).
- “Panel Discussion: From LRFD to Risk-based Design and Beyond: Structure and Infrastructure Resilience”, ASCE/SEI 2014 Structures Congress, Boston, April 2014.
- “Effect of Earthquake Damage on Fire Performance of Ductile Concrete Filled Double-Skin Tube Columns”, ASCE/SEI 2014 Structures Congress, Boston, April 2014.
- “Concrete Filled Steel Tubes and Modified Steel Jacketed Columns Bridge Pier Systems under Blast Loading: A finite Element Study”, ASCE/SEI 2014 Structures Congress, Boston, April 2014.
- “Experimental Validation of Multihazard Resilient Concrete Filled Columns and Wall Piers”, ASCE/SEI 2014 Structures Congress, Boston, April 2014.
- “Research on Concrete-Filled Steel Plate Sandwich Walls”, 2014 North American Steel Construction Conference, Toronto, Canada, March, 2014 (presented twice).
- “Perforated Steel Plate Shear Walls in Action”, 2014 North American Steel Construction Conference, Toronto, Canada, March, 2014.
- “Recent Developments in Seismic Design and Construction of Special Plate Shear Walls”, 2014 North American Steel Construction Conference, Toronto, Canada, March, 2014.
- “Seismic Resistance of Steel Plate Shear Walls”, *Keynote Speaker*, XII Symposium de Ingenieria Civil, Universidad Panamericana, Guadalajara, Mexico, May 2013.
- “Punching holes in steel plate walls, filling tubes with concrete, and other recipes for resilient steel structures”, *Keynote Speaker*, Segundo Simposio Internacional Del Posgrado En Ingenieria Estructural De La Uam Azcapotzalco, Mexico City, January 2012.
- “Introductory thoughts on the 4 Rs of Resilience, Decision Systems, and Potential Benefits of Multihazard Engineering as a Means towards Resilience,” Quake Summit 2011, Buffalo, June 2011
- “Blast Resistance of Concrete-Filled Double-Skin Tube Columns,” 2011 ASCE Structures Congress, Las Vegas, April 2011.
- “Cost-Effective Multihazard Resistant Bridge Pier Concept”, 2011 ASCE Structures Congress, Las Vegas, April 2011.
- “How Could Quantified Resilience Contribute to Capture the Multiple Dimensions of Risk?”, Panel Session on Multiple Dimensions of Risk, 2010 ASCE Structures Congress, Orlando, May 2010.
- “Lateral Load Resisting Structural Steel Systems: New AISC Additions and Possible Future Directions”, *Keynote Speaker*, “Research Directions and Priorities for Steel Structures”, April 2010, University of Canterbury, New Zealand..
- “Experimental Capabilities Needed to Validate a Multi-Hazard Bridge Pier Concept”, 7th National Science Foundation NEES Annual Meeting, Honolulu, Hawaii, June 2009.
- *Plenary Session Lecture*, “Natural & Human impacts on critical infrastructures”, Canadian Telecommunications Emergency Preparedness Association Annual Meeting, Montreal, May 2008.
- “Multi-Hazard Design of Bridge Blast Resistance of Various types of Seismically Detailed Columns”, AASHTO Bridges & Structures Conference - Technical Committee T1 on Bridge and Tunnel Security, Omaha, Nebraska, May 2008.
- “Benefits of a Multi-hazard Engineering Approach”, *Invited Speaker, Plenary Session.*, 2008 Annual

- Meeting of the Earthquake Engineering Research Institute, New Orleans, Louisiana, February 2008.
- “Multi-hazard Resilience of Infrastructure”, Conference on Protecting New York from Terrorism and Disaster: Taking Stock, Setting Directions, New York City, January 2008.
- “Critical Infrastructure Disaster Resilience”, *Keynote Lecture*, 6th Annual Critical Infrastructure Assurance Program Conference, Toronto, Canada, November 2007.
- “The 4 R’s of Resilience and Multi-Hazard Engineering”, Symposium on Emerging Developments in Multi-Hazard Engineering, New York City, NY, September 2007.
- “The Need for Integrated Multi-Hazard Engineering Design Solutions to Enhance Disaster Resilience”, Symposium on Emerging Developments in Multi-Hazard Engineering, New York City, NY, September 2007.
- “Resilience, Multi-Hazard Engineering, MCEER, and the MCEER Remote Sensing Institute”, International Symposium on Remote Sensing Applications to natural Hazards, Washington, D.C., September 2007.
- “Manage the Risk Ahead - Enhance Disaster Resilience against the Next Big One”, *Keynote Lecture*, Disaster Preparedness and Business Continuity Executive Forum, Washington, D.C., 2006.
- “The Current and Future Infrastructure: How Can Integration be Achieved?”, Civil Infrastructure Resilience/ISBE 2006, 5th Annual TISP Congress on Infrastructure Security for the Built Environment, Washington, D.C., February 2006.
- “Some Aspects of Multi-Hazard Protection for Highway Bridges”, 21st US-Japan Workshop, Tsukuba, Japan, October, 2005.
- “Enhancing the Resilience of Acute Care Facilities against Extreme Events”, United Nations World Conference on Disaster Reduction, Kobe, Japan, January 2005.
- “Enhancing the Resilience of Highway Networks against Extreme Events” (on behalf of Ian Buckle, University Nevada, Reno), United Nations World Conference on Disaster Reduction, Kobe, Japan, January 2005.
- “Decade’s Perspective on Bridge Engineering: Lessons from Northridge and Kobe Earthquakes”, 84th Annual Meeting of the Transportation Research Board, Washington, D.C., January 2005.
- “Enhancing the Resilience of Infrastructure against Extreme Events”, *Keynote Lecture*, Associated General Contractors of America (NY State) and New York State Department of Transportation Joint Annual Conference, Saratoga, NY, December 2004.
- “The UB-NEES Equipment Site”, 2nd Annual NEES Consortium Meeting, San Diego, May 2004.
- “Recommended LRFD Guidelines for the Seismic Design of Highway Bridges”, 4th National Seismic Conference & Workshop on Bridges and Highways, Memphis, Tennessee, February 2004.
- “Advanced Technologies to Enhance Community Resilience”, Session on Recent Innovative Research Outcomes from the NSF Earthquake Engineering Research Centers, ASCE Congress, Washington, D.C., November 2002.
- “MCEER’s WTC Research”, Urban Security Conference Panel, Brooklyn Polytechnic University, Brooklyn, NY, October 2002.
- “Earthquakes in New York State - Panel”, 2002 Disaster Preparedness Conference, New York State Disaster Preparedness Commission Annual Conference, Niagara Falls, NY, September 2002.
- “Research Vision and Implementations at National EERC’s - MCEER” (jointly with G. Lee), 7th National Conference on Earthquake Engineering, Boston, July 2002.
- Moderator of Debate on “It Will Take a Major Devastating Earthquake East of the Rockies to Ensure That National Earthquake-resistant Requirements Become Mandatory”, 7th National Conference on Earthquake Engineering, Boston, July 2002.
- “Overview of the NEES Initiative and Expectations from a NEES Node”, Industrial GRID Summit, Paris, France, June 2001.
- “Seismic Performance of Structures during the September 21, 1999 Chi Chi Taiwan Earthquake”, Invited speaker, Special Session on the 1999 Kocaeli (Turkey) and Chi Chi (Taiwan) Earthquake, ACI Convention, Baltimore, November 1999 (also presented at MCEER 1999 annual investigator’s meeting, and to the University of Buffalo Dean’s Council).
- “Issues in Seismic Retrofitting of Existing Canadian Heritage Structures”, Invited by Chairman of American Concrete Institute Committee on Structural Safety for special session “Safety Assessment of Existing Structures”, 1993 ACI spring convention, Vancouver, March 1993.
- “Performance of Unreinforced Masonry Buildings during the 1992 Erzincan Earthquake”, Invited Lecture to the Earthquake Engineering Research Institute Annual meeting, Seattle, February 1993.
- “Structural Damage from the 1992 Erzincan (Turkey) Earthquake”, Special Presentation, 1992 Annual CSCE Conference, Québec City, May 1992.

Over a hundred other miscellaneous presentations made as part of MCEER activities (e.g., to FHWA Highway Seismic Advisory Committee, to MCEER’s sponsors and potential sponsors, as part of MCEER’s Annual Meeting and Professional Days, MCEER’s NSF Site Visits, MCEER Research

Coordination meetings, University at Buffalo President and Dean advisory boards, etc.) and to various code and standard committees (e.g. AISC, ASCE, CSA, etc.) as a member or invited guest.

TEACHING AND CURRICULUM DEVELOPMENT

Teaching of Undergraduate courses

University at Buffalo

- Structural Steel Design (CIE-428) 1999 (twice), 2000, and every year from 2007 to 2024 (except 2009, 2010, 2016, and 2023)
- UB Discovery Seminar, Extreme Events: UB's Research Role (UE-141G), 2007.

Student evaluation - Overall Instructor Rating::

Fall 2022, CIE 428: 4.3/5.0
Fall 2021, CIE 428: 4.5/5.0
Fall 2020, CIE 428: 4.7/5.0 (online/COVID)
Fall 2019, CIE 428: 4.6/5.0
Fall 2018, CIE 428: 4.0/5.0
Fall 2017, CIE 428: 4.8/5.0

University of Ottawa

- Structural Steel Design I (CVG-3142), 1990 (twice), 1991, 1992, 1993, 1994, 1996, 1997, 1998
- Structural Steel Design II (CVG-4143), 1992, 1993, 1994, 1995, 1996, 1997 **
- Résistance des Matériaux I (CVG-2540), 1991, 1992, 1993, 1994, 1996, 1997, 1998

Student evaluation for undergraduate courses at University of Ottawa (last 3 years): 4.36/5.0

Teaching of Graduate courses

University at Buffalo

- Plastic Analysis and Design (CIE-521) 1998, 2017, 2018
- Steel Structures (CIE-524) Every year from 2001 to 2022 (except 2010 and 2017)
- Structural Dynamics And Earthquake Engineering II (CIE-619) Every year from 2011 to 2016

Student evaluation - Overall Instructor Rating:

Spring 2023, CIE 524: 5.0/5.0
Spring 2022, CIE 524: 4.9/5.0
Spring 2021, CIE 524: 4.6/5.0 (online/COVID)
Spring 2020, Not performed by University
Spring 2019, CIE 524: 4.8/5.0
Spring 2018, CIE 524: 4.8/5.0
Fall 2017, CIE 521: 4.8/5.0

University of Ottawa

- Earthquake Engineering (CVG-5155), 1991, 1992, 1995
- Advanced Structural Steel Design (CVG-5143), 1990, 1991, 1993, 1996, 1997. **
- Computer Methods for Linear and Non-linear Structural Analysis, 1994. **

Student evaluation for graduate courses at University of Ottawa (average for last 3 years): 4.36/5.0

Curriculum Development

- Developed three new courses, shown by ** above. These were added to the civil engineering curriculum at the University of Ottawa.
- Developed a "Structures and Geotechnical Option" within the undergraduate civil engineering program as part of the University of Ottawa Faculty Engineering global restructuring of its programs. The new option provides students with an opportunity to developed some specialization within the undergraduate program (a similar "Environmental Option" had existed since 1992 at the University of Ottawa). The Structures and Geotechnical Option was implemented starting in 1998.

SUMMARY OF ACADEMIC ADMINISTRATION AND LEADERSHIP

Multidisciplinary Center for Earthquake Engineering Research (MCEER), 1998-2008

Description of Organization:

- MCEER was established as an Engineering Research Center (ERC) funded by the National Science Foundation (NSF). It was also supported by New York State, the Federal Highway Administration, and may other sponsors.
- The center was headquartered at the University at Buffalo (UB) and spearheaded multidisciplinary research to enhance the disaster resilience of communities, developing advanced technologies toward that goal, working with over 90 faculty engineers and social scientists (and hundreds of graduate and undergraduate students) at its core institutions (UB, Cornell, USC, and University of Colorado Boulder) and at dozens of other institutions across the nation and internationally.
- The Center MCEER received over \$60M in funding from its sponsors from 1998 to 2008.
- The Center headquarter had a staff of 16 employees to manage the research programs, an industry partnership program, an education program, a publication series (from print to DVD to web), a nationally recognized technical information service, and accounting. In addition, MCEER also supported technicians in the structural laboratory of UB's Department of Civil, Structural and Environmental Engineering.

Role:

- Appointed Director of MCEER in 2003, following a nationwide search. Previously served as MCEER's Deputy Director for 5 years. Director reported directly to the Dean of the School of Engineering
- As Director, responsible for technical, education, tech transfer, industry partnership, and administrative activities of the Center, starting from the vision, mission, and strategic plan of the Center, down to ensuring execution of the plan, industry partnership and advisory program, diversity program, fiscal control, branding of the Center, SWOT analysis, and detailed financial reporting to the Center's sponsors (and most significantly to NSF, which required an annual site review and detailed reporting on progress and accomplishments with respect to research, education, diversity, industry partnerships, business development, project management, personnel, publications, research thrust coordination, and coordination with other National Centers).
- During this tenure at MCEER, advancing the vision of the Center also involved meeting with congressional representatives, senators, leaders of multiple federal agencies and of the White House's Office of Science and Technology Policy, and the UB council, in coordination with the University at Buffalo's President Office.

Accomplishments:

- The Center was recognized nationally and internationally for its innovation in the development of advanced technologies to advance the state-of-the-art in earthquake engineering and its impact on state-of-practice.
- The Center has formulated the disaster resilience concept framework that today is at the foundation of most research on this topic, and has pioneered the multihazard engineering approach.
- Some of MCEER's accomplishments from 1998-2008 are presented in the following 58 pages report that was developed for promotional purposes: <http://mceer.buffalo.edu/pdf/report/08-SP09.pdf>
- From 1998 to 2008, MCEER has impacted and shaped the careers of almost 70 undergraduates and more than 100 each of MS and PhD students (including 28% women). Many of those participated in MCEER's Student Leadership Council that provided them with national exposure. Approximately 30% of those graduate students joined academia.
- MCEER's international visibility and engagement of faculty members of UB's Department of Civil, Structural and Environmental engineering contributed to increasing the number of graduate students (60% of the applicants) to UB's Ph.D. and M.S. programs in Structural and Earthquake Engineering, and had a significant impact on the department's ranking of the graduate program (reached 24th).
- When stepping down as Center Director, left MCEER in solid financial health, with \$2M/year of funding as a recurring New York State budget line item, recent renewal of a six-year research

contract of ~\$1.6M/year from the Federal Highway Administration, and an Industry Program with partners in 20 states and Canadian provinces. The Dean of the School of Engineering summed it up by stating that “*Michel Bruneau has been a tireless champion of MCEER and a forceful advocate for its capabilities in enhancing the reputation of the University.*”

Principal Investigator, Establishment of NEES@Buffalo, 2001-2004

Description of Experimental Facility and Funding Context:

- The National Science Foundation awarded \$81.9M as part of a national competition to build the George E. Brown Network for Earthquake Engineering Simulation (NEES), which consists of advanced state-of-the-art experimental facilities, fully integrated with cyberinfrastructure, data/metadata models and repository, and teleobservation/teleoperation capabilities.
- The University at Buffalo received 2 of the 15 awards, for a total of \$11.2M of NSF funding, to build the NEES@Buffalo facility, combining the grants for a *Versatile High-Performance Shake-Tables Facility towards Real-Time Seismic Hybrid Testing* and for a *Large-Scale High Performance Testing Facility towards Real-Time Seismic Hybrid Testing* to create what was the world’s most versatile earthquake engineering facility at the time.
- Key features of the facility include two 23’x23’ 6-degrees-of-freedom shake tables with 50 tons payload capacity that can each be relocated anywhere within a 120’ trench, multiple high-capacity high-stroke dynamic actuators for structural hybrid testing, and a 25’ tall 10’x10’ laminar box for geotechnical testing.
- No other NEES site received two NSF awards or a larger total funding.

Role:

- Principal Investigator of the two winning proposal (\$11.2M) and of a \$9M award from State University of New York, Construction Fund for the construction of a complex 14,000 ft² Ketter Hall addition to house the new equipment and provide a 63’ long, 30’ tall reaction wall, 3200 ft² strong floor.
- Together with other proposal co-PIs, oversaw all steps required to bring this national laboratory online by the NSF-imposed deadline, including construction of the Ketter Hall addition that had to be completed in half the time normally required by similar SUNY construction projects.
- This period of development also involved joining a national effort to develop the long-term vision, bylaws, and plans to facilitate system-wide integration of the experimental facilities into the NEES collaboratory (other NEES sites were BYU, Cornell, Colorado Boulder, Illinois Urbana-Champaign, Lehigh, Minnesota, Oregon, RPI, UC Berkeley, UC Davis, UCLA, UC San Diego, UC Santa Barbara, UNR, UT Austin).
- This project entailed comprehensive NSF oversight, including NSF site visits/review, Gantt charts, project risk management plan, and detailed reporting on all construction, management, outreach, training, cooperation with NEES consortium partners activities and financials aspects to meet the high standards expected in such endeavors.

Accomplishments:

- After a Grand Opening, on September 2004, attended by UB’s academic leadership, congressional representatives, senators, and prominent researchers and practicing engineers from across the US, NEES@Buffalo rapidly became one of the busiest and best run sites in the NEES community, providing access and unique technical expertise to researchers in dozens of universities nationwide.
- From 2004 to 2014, the NEES@Buffalo facility received approximately \$15M from NSF over a ten year period to operate as a shared national earthquake engineering laboratory, and received awards for the quality of its services.
- NEES@Buffalo has fulfilled over 100 large-scale testing services contracts to more than 50 national and international engineering firms and industry, making it possible for them to validate engineering concepts for implementation in seismic regions.
- As a testimony to the advancements it provided, the NEES@Buffalo facility, and particularly its innovative concept of relocatable shake-tables, has since been copied in recently opened facilities in Asia.

Chair, UB2020 Strategic Strength on Extreme Events, 2004-2008

Description of Strategic Effort:

- In 2004, the University at Buffalo's President and Provost invited proposals for "Foci of Excellence" from the entire UB academic community, as part of an academic strategic planning effort to advance the entire institution.
- From the 120 proposals received, 10 Strategic Strengths were established. These were chosen on the basis of demonstrated excellence in scholarship and achievement, a committed leader, interdisciplinary research, existing or potential funding, and demonstration of sustainable self-sustaining growth.
- Institutional investments and hiring of 750 new faculty members from 2008 to 2020 would then be driven such as to fulfil the visions and missions of the UB2020 Strategic Strengths.

Role:

- Selected as Chair of the UB2020 Strategic Strength on Extreme Events by a committee of faculty members from five different UB schools and three research centers.
- The Chair was responsible for coordinating the committee's role in collecting university-wide input from the existing multidisciplinary extreme events experts at UB and to synthesize the information collected and the insights of the committee members into a White paper identifying existing and needed resources and capabilities, recommending areas where the university should focus and invest, and formulating timelines and five-year growth plans with milestones to achieve the vision.
- As Chair of the Strategic Strength, reported to the Vice Provost for Strategic Initiatives at UB to discuss the path ahead for implementation of the strategic plan.

Accomplishment:

- The resulting 59-pages White Paper "UB2020: Extreme Events: Mitigation and Response" provided a vision statement, a definition of the focused strategic strengths, strategies to balance multidisciplinary breadth and focus, plans for research and education collaboration opportunities, a proposed organizational and operational structure, a recommended hiring plan to provide complementary technical expertise, a road-map for a 12-year implementation plan and a 5-year timeline for near-term high-return impacts, and proposed metrics to measure success and excellence of the strategic strength.
- The Provost's response to the plan included the following statement: "*The work of the Extreme Events Coordinating committee is exemplary and is beginning to draw attention from external audiences. We have featured your initiative as an aspect of the proposal we have submitted for Empire Innovation Program funding.*"
- The Dean of the School of Engineering underscored that "*Bruneau has served as the leader of the UB Strategic Strength in Extreme Events, considered by many to be the best organized and led strategic strength effort on campus*" and that has he "*played a vital role in recent UB faculty hiring and multi-investigator and multi-campus proposal development.*"

Founding Member/Director, Ottawa-Carleton Earthquake Engineering Research Center, 1994-1998

Description of Organization:

- The Ottawa-Carleton Earthquake Engineering Research Center (OCEERC) was founded to serve as a focal point for the earthquake engineering expertise that existed in Canada's National Capital region, principally at the University of Ottawa and Carleton University, but also in multiple Federal Government Agencies.
- The Center organized technology transfer activities (seminars and short courses) and maintained a report publication series.

Role:

- Served as one of the six founding members, and was appointed as first Director of the Center in 1994. Served in this capacity until subsequent appointment at the University at Buffalo.

- Responsibilities included development of the Center's branding and bylaws, establishment of technical report series, reporting to the Dean of the Faculty of Engineering, and general day-to-day operations of the center activities.

Accomplishment:

- The OCEERC brought more visibility to the research activities of the Center-affiliated faculty members and students, and provided them with a platform to coordinate and focus the earthquake engineering activities taking place in the National Capital Region in both universities and federal government agencies (such as the National Research Council of Canada, Geological Survey of Canada, Department of National Defense, and others contributing to the field).

NETWORKING

International Relationships

Strong track-record of collaboration with universities and research centers worldwide. For example, during tenure at MCEER, research cooperation and ties were established with the National Center for Research in Earthquake Engineering in Taiwan, the Disaster Prevention Research Institute in Kyoto Japan, the Hyogo Earthquake Engineering Research Center (a.k.a. E-Defense) in Japan, the Tokyo Institute of Technology (and its former Center for Urban Earthquake Engineering), the State Key Laboratory of Disaster Prevention in Civil Engineering Key Laboratories at Tongji University in China, the University of Pavia in Italy, and many more. Also has strong ties in New Zealand where two sabbatical leaves were spent, in Switzerland with two other sabbatical leaves, and in Canada due to decades of interactions with its academic and professional worlds.

Government Agencies and Industry

Past activities as MCEER Director has led to the development of good working relationships with leaders of many federal agencies, such as the Federal Emergency Management Agency (DHS/FEMA), the Federal Highway Administration, the U.S. Army Corps of Engineers, the National Science Foundation, as well as many state agencies, such as the Department of Transportation of many states (from California to New York), the New York State Emergency Management Office, and many more. As a consequence of professional activities, has also developed an extensive network of contacts in consulting engineering firms and regulatory agencies in the USA and Canada.

LIST OF ADMINISTRATIVE ACTIVITIES

Multidisciplinary Center for Earthquake Engineering Research

- Director, 2003 - 2008.
Leadership and Management of MCEER: Development and implementation of MCEER's Business Plan for the Center's growth over the next decade, and restructuring of MCEER operations to meet the new vision and mission statement; Strategic meetings with UB management and funding agencies; Development of future initiatives and vision to ensure continued success and growth of the Center; responsible for management of the Center, budgeting and staffing of the Center; Development and broad coordination of research programs (assisted by a Deputy Director); Interaction and reporting to funding agencies to fulfill sponsor requirements; Interaction with MCEER investigators and partners; numerous presentations at MCEER functions (e.g. Annual Investigators' meeting, Advisory Committee meetings, Industry Partners meetings, etc.) and at numerous other venues to describe MCEER to various groups and agencies or to express MCEER's position on specific topics.
- Deputy Director, 1998 - 2003.
Development of MCEER Strategic Plan, technical development and coordination of research programs, interaction with funding agencies and MCEER investigators, and assisting the director in the day-to-day management of the Center. The managerial duties attached to this position also include preparation of numerous reports to fulfil the requirements of granting agencies (e.g. 80-page Technical Section of MCEER's Annual Report to NSF), and numerous presentations at MCEER functions (e.g. Annual Investigators' meeting, Advisory Committee meetings, Industry Partners meetings, etc.) and at numerous other venues to describe MCEER to various groups and agencies or to express MCEER's position on specific topics.
- Chair, MCEER forum "Visions of Leaders: Structural and Geotechnical Earthquake Engineering Research Needs for the Mitigation of Earthquake Risks for the Next Decade", University at Buffalo, Buffalo, NY, September 2004.
- Coordinator of MCEER NSF-funded Research Multi-hazard Thrust Area (2005 - 2008).
- Coordinator of MCEER NSF-funded Research Thrust Area 2 (1999 - 2003).

University at Buffalo

- Member, Committee on Five Year Decadal Review of Engineering Dean (2019).
- Featured researcher on UB video: <https://www.buffalo.edu/campaign.htm> (2018).
- Chair, Faculty Advisory Committee on UB2020 Strategic Strength on Extreme Events: Mitigation and Response (2007-2008).
- Chair of Leadership Committee on UB2020 Strategic Strength on Extreme Events: Mitigation and Response (2005-2006).
- Presentation of UB2020 Strategic Strength on Extreme Events White Paper to *Mission Review II Site Visit Team* and numerous other groups, University at Buffalo, October 2005.
- Chair, MCEER Seminar and Webcast, "Examining Extreme Events: Hurricane Katrina's Impact on Critical Infrastructure, Societal Systems, Public Health and Environment" (2005).
- Welcoming Remarks on behalf of UB and UB2020 Strategic Strength on Extreme Events for Laurie Garrett (Pulitzer-Winning Expert on Global Healthcare, Disease- Prevention & Bioterrorism), UB Distinguished Speaker Series (2006).
- Member of UB Business Alliance Technology Advisory Panel (2000-2002)

School of Engineering and Applied Sciences, SUNY Buffalo

- Member, Faculty Promotion Committee (2022-2023).
- Member, Dean's Committee of SUNY Distinguished Faculty (2020-now).
- Member (Alternate), Faculty Promotion Committee (2017-2019; 2021).
- Member, Faculty Promotion Committee (2013-2016).

Structural Engineering and Earthquake Simulation Laboratory, SUNY Buffalo

- Director, Structural Engineering and Earthquake Simulation Laboratory (SEESL) (2018-2020)
- Deputy Director, Structural Engineering and Earthquake Simulation Laboratory (SEESL) (2020-2021)

Department of Civil, Structural, and Environmental Engineering, SUNY Buffalo

- Member, Search Committee for Professor of Empire Innovation, (2022-2023).
- Chair, CSEE Undergraduate Structures Curriculum Review Committee (2021-2022).
- Chair, CSEE Committee on Review of Income Fund Reimbursable (IFR) (2019-2021).
- Co-Coordinator of Structures-Computations-Geotechnical group meetings (2019-now).
- Chair, CSEE Undergraduate Laboratory Committee (2014-2016).
- Member, Search Committee for position in Structural Engineering, Spring 2016.
- Member, Search Committee for position in Engineering Materials, Spring 2014.
- Member, Search Committee for position in Geotechnical Engineering, Spring 2013.
- Member, CSEE ABET Committee (2013-2014).
- Chair, CSEE Sub-Committee on Capstone Course Development (2010-2012).
- Member, CSEE Undergraduate Studies Committee (2010-2013).
- Member, Dean-appointed Committee on the Future of Structural Engineering at UB, 2008.
- Member, Department Awards Committee, Fall 2005 - 2008.
- Chair, Committee on Grand Opening of the National Science Foundation George E. Brown Jr., Network for Earthquake Engineering Simulation Facility, Buffalo, (2004).
- PI for University at Buffalo of NEES Grant
These managerial duties related to implementation of this advanced testing facility require coordination with Department of Civil Engineering, School of Engineering and Applied Sciences, UB Office of Facilities and Planning, UB Offices of the President and Provost, SUNY Construction Fund, Consultants, Equipment Suppliers, and the National Science Foundation. Duties include preparation of numerous reports to fulfil the requirements of the National Science Foundation and numerous presentations to describe the NEES UB-Node to various groups and agencies.
- Chair of Search Committee for position in Structural Engineering, Spring 2000, Spring 2003.
- Departmental of Civil, Structural and Environmental Engineering, Strategic Plan Committee (2000-2002)

Ottawa-Carleton Earthquake Engineering Research Centre

- Director, 1994 - 1998.
- One of the six founding member, 1994.

University of Ottawa (past administrative activities)

- Director of Structures Laboratory, March 1996 - 1998.
- Chairman, University of Ottawa Faculty of Engineering Ontario Student Opportunity Trust Fund Campaign, February-March 1997.
- Member of Department Teaching Personnel Committee, July 1991 - Dec. 1994, July 1995 - July 1996.
- Member of Faculty Council, Oct. 93 - Dec. 1994, and July 1995 - July 1996.
- Faculty Coordinator for University Day, 1992 - July 1996.
- Member, Vice-Rector's Committee on Research Infrastructure for Major Facilities, 1995 - 1996.
- Member of University Liaison Committee for University Day, 1994 - 1996.
- Civil Engineering Coordinator of Exchanges France's Universities, 1993 - 1996.
- Departmental Advisor for Scholarships, January 1990 - July 1996.
- Departmental Committee for Computing Needs, July 1991 - December 1994.
- Dean's Advisory Committee on Computing, November 1993 - December 1994.
- Undergraduate Student Adviser for second year students, academic year 1990-91.
- Undergraduate Student Adviser for third year students, academic year 1991-92.
- Undergraduate Student Adviser for fourth year students, academic year 1992-93.
- Academic Standing Committee, July 1, 1991, to June 30, 1993.

- Engineering Faculty representative on the Media-Users Subcommittee of the Senate Committee on Teaching Resources, June 1990 - March 1993.
- Ad-Hoc Departmental Committee for Comprehensive Exams: 1992-93.
- Ad-Hoc Departmental Committee for Seminars: 1992-1993.

MISCELLANEOUS ACADEMIC-RELATED ACTIVITIES

Collaborations with News and Trade Media

- Frequent invited contributions to science radio and television programs (e.g., Discovery Channel, Discovery Channel Canada, National Public Radio, ABC, Global TV, TVA, Radio-Canada, Découverte, PBS Academic Minute, TRT World, Al Jazeera, etc.), including participation in the Radio-Canada documentary that won the “Prix Gémeaux 2014 pour le meilleur reportage” and the “Boldly Buffalo: The Campaign for UB” that won a 2019 New York Emmy Award (commercial category).
- Frequently interviewed for, or cited by, press media (e.g, New York Times, Business Week, Popular Mechanics, etc.) as well as engineering trade publications (e.g., Engineering News Records, AISC Modern Steel Construction, ASCE Civil Engineering Magazine, CISC Advantage Steel, EERI Newsletter, Engineering Today, The Conversation, etc.).
- Participated in ASCE Plot Points Podcast Series (Episode 132, Nov.8, 2022, <https://plotpoints.asce.org/e/episode-132-michel-bruneau-on-the-blessings-of-disaster-part-1> and Episode 133, Nov.22, 2022, <https://plotpoints.asce.org/e/michel-bruneau-on-how-we-must-learn-from-from-disasters>)
- Participated in AISC Podcast Series (Steel Profiles - Episode #19 - June 2012, at <http://www.aisc.org/content.aspx?id=25892>)
- Participated in Earthquake Engineering Research Institute Arts & Letters Webinar, <https://www.eeri.org/products-page/arts-letters/eeri-arts-letters-webinar-interview-with-michel-bruneau/>

Services to General Public

- University of Ottawa Christmas lecture, *Surviving Earthquakes*, December 29, 1997.
- Half-day course on Earthquake Engineering to students from Association of Bright Childrens, April 1993 and May 1998.
- Instructor for the University of Ottawa High School Mini-Course. Two-lectures (1.5 hours each) presented in May 1990, and one lecture (two hours) in each of May 1991 and 1992.
- *Earthquake Response of Buildings*: Demonstrations of experimental and computer simulations of the seismic response of structures during earthquake, University of Ottawa Open House, Fall 1990 (2 days).

Other Professional Contributions as Reviewer

- Frequently Chairman of Ph.D. and M.A.Sc. Examining Boards, member of Ph.D. Comprehensive Exam Committees, member of Ph.D. Thesis Examination Committees, member of M.A.Sc. Thesis Examination Committees, member of Thesis Proposal Examination Committees, evaluator, M.Eng. Theses, and external thesis examiner (for University of Auckland, Swiss Federal Institute of Technology in Zurich, Mexico Metropolitan Autonomous University, University of British Columbia, University of Toronto, McGill University, Ecole Polytechnique, Carleton University, University at Buffalo, to name a few).
- Frequently serving as external evaluator for promotion and tenure cases nationally and internationally (confidential list).

LIST OF PUBLICATIONS

Google Scholar: Citation: 26,198; h-index: 67; i10-index:226

Most cited refereed journal publication: Bruneau et al. 2003 (“Framework for analytical quantification of disaster resilience”); ranked 51st by number of citations out of 120,691 civil engineering articles tracked by Web of Science, for the 2010-2014 period (ending October 18th).

Additional Citation Metric: Ranked in “*Top 1000* Scientists in the field of Engineering and Technology” Worldwide, per Research.com 2022, and ranked in *top 0.05%* of all scholars worldwide by ScholarGPS.com in 2024.

Impact of Publications per Exaly Search Engine (per May 2022 data)

[https://exaly.com/author/7741194/michel-bruneau/journal-rankings:](https://exaly.com/author/7741194/michel-bruneau/journal-rankings)

Earthquake Spectra:

- 1st most cited paper (*Lifetime*)
- 2nd most cited author (*Lifetime*)
- 1st most cited author (2003 and 2007)
- 1st most cited paper (2003 and 2007)

ASCE Journal of Structural Engineering

- 8th most cited author (*Lifetime*)
- 2nd most published author (*Lifetime*)
- 1st most cited author (2009)
- 4th most cited author (2005)
- 5th most cited author (2003)
- 6th most cited paper (2005)
- 10th most cited author (2008)
- 11th most cited paper (2003)

ASCE Journal of Bridge Engineering

- 6th most published author (*Lifetime*)
- 3rd most cited author (2004)

Engineering Structures

- 3rd most cited paper in Engineering Structures (*Lifetime*)
- 29th most published author in Engineering Structures (*Lifetime*)
- 1st most cited author in Engineering Structures (2010)
- 1st most cited paper in Engineering Structures (2010)
- 9th most published author (2017)

Canadian Journal of Civil Engineering

- 11th most published author (*Lifetime*)
- 1st most cited author (1995 and 1996)
- 1st most cited paper in Canadian Journal of Civil Engineering (1995)

Structure & Infrastructure Engineering

- 1st most cited paper (2010)
- 1st most cited author (2010)

Refereed Journal Publications (193)

- (1) Carrion-Cabrera H., and Bruneau M. "Shake Table Testing of Bidirectional Ductile Diaphragms with Buckling-Restrained Braces in V-shaped configuration", Engineering Structures, Vol.137, No.10 <https://doi.org/10.1016/j.engstruct.2024.118627>.
- (2) Kizilarlan E., Kenarangi, H., Bruneau, M., (2024). “Finite Element Modeling of Concrete Filled-Composite Plate Shear Walls (CF CPSWs)”, Structures Journal, <https://doi.org/10.1016/j.istruc.2024.106668>
- (3) Carrion-Cabrera H., and Bruneau M., (2024). “Asynchronous shake table testing of seismic resilient multi-span bridges having buckling restrained braces”, ASCE Journal of Structural Engineering, Vol.150, No.7, <https://doi.org/10.1061/JSENDH.STENG-12845>

- (4) Koirala, A., Kizilarlan E., Tremblay, R., Bruneau, M., (2024). “Canadian seismic design coefficients for coupled composite plate shear wall/ concrete filled (CC-PSW/CF)”, Canadian Journal of Civil Engineering, <https://doi.org/10.1139/cjce-2023-0137>
- (5) Koirala, A., Kizilarlan E., Bruneau, M., Tremblay, R., (2024). “Subduction and shallow earthquake demand on coupled composite plate shear wall/ concrete filled (CC-PSW/CF)”, ASCE Journal of Structural Engineering, Vol.150, No.8 <https://doi.org/10.1061/JSENDH.STENG-12704>
- (6) Carrion-Cabrera H., and Bruneau M., (2024). “Equivalent Lateral Force Design Method for Longitudinal Buckling-Restrained Braces in Bidirectional Ductile Diaphragms”, ASCE Journal of Structural Engineering, Vol.150, No.3 <https://doi.org/10.1061/JSENDH.STENG-12846>
- (7) Kizilarlan E., Bruneau, M., (2023) “Cyclic Behavior of T-Shaped Concrete Filled-Composite Plate Shear Walls (CF CPSWs)”, ASCE Journal of Structural Engineering, Vol.149, No.8 <https://doi.org/10.1061/JSENDH.STENG-11693>
- (8) Kizilarlan E., Bruneau, M., (2023). “Verification of Seismic Response Modification Factors of Uncoupled Composite Plate Shear Walls/concrete-filled (C-PSW/CF)”, ASCE Journal of Structural Engineering, Vol.149, No.6 <https://doi.org/10.1061/JSENDH.STENG-11783>
- (9) Wei, X. Bruneau, M., (2022). “Cyclic Inelastic Behavior of Plate Welded to Concrete-filled Circular Hollow Section,” International Journal of Steel Structures, <https://doi.org/10.1007/s13296-022-00679-y> .
- (10) Singh, R.R., Bruneau, M., Stavridis, A., Sett, K., (2022). “Resilience Deficit Index for Quantification of Resilience”, Journal of Resilient Cities and Structures, Vol.1, No.2, pp.1-9 <https://doi.org/10.1016/j.rcns.2022.06.001>
- (11) Carrion-Cabrera, H., Bruneau, M., (2022). “Longitudinal-direction Design of Buckling-restrained Braces in Resilient Multi-span Bridges”, Proceedings of the Institution of Civil Engineers – Bridge Engineering, Institution of Civil Engineers, (in press) <https://doi.org/10.1680/jbren.21.00097>
- (12) Salado Castillo, J.V., Bruneau, M., Elhami-Khorasani, N., (2022). “Seismic Resilience of Building Inventory Towards Resilient Cities”, Resilient Cities and Structures Journal, Vol.1, pp.1-12 <https://doi.org/10.1016/j.rcns.2022.03.002>
- (13) Carrion-Cabrera, H., Bruneau, M. (2022)., “Seismic Response of Regular Multi-span Bridges having Buckling-Restrained Braces in their Longitudinal Direction,” Engineering Structures Journal, Vol.259, <https://doi.org/10.1016/j.engstruct.2022.114127>
- (14) Salado Castillo, J.V., Bruneau, M., Elhami-Khorasani, N., (2021). “Functionality Measures for Quantification of Building Seismic Resilience Index”, Engineering Structures Journal, Vol.253, <https://doi.org/10.1016/j.engstruct.2021.113800>
- (15) Dowden, D.M., Bruneau, M., (2021). “Shake Table Testing of Perforated Steel Plate Wall Having Light Gauge Bolted Infill Panels”, Journal of Constructional Steel Research, Vol.188, <https://doi.org/10.1016/j.jcsr.2021.107030>
- (16) Broberg, M., Shafaei, S., Kizilarlan, E., Seo, J., Varma, A.H., Bruneau, M., Klemencic, R., (2021). “Capacity Design of Coupled Composite Plate Shear Walls-Concrete Filled (Coupled-C-PSW/CF)”, ASCE Journal of Structural Engineering, Vol. 148, No. 4, [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0003296](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003296)
- (17) Kizilarlan, E., Broberg, M., Shafaei, S., Varma, A.H., Bruneau, M., (2021). “Seismic Design Coefficients and Factors for Coupled Composite Plate Shear Walls/Concrete Filled (Coupled-C-PSW/CF)”, Engineering Structures Journal, Vol.244, <https://doi.org/10.1016/j.engstruct.2021.112766>
- (18) Kizilarlan, E., Broberg, M., Shafaei, S., Varma, A.H., Bruneau, M. (2021). “Non-linear Analysis Models for Composite Plate Shear 1 Walls-concrete Filled (C-PSW/CF)”, Journal of Constructional Steel Research, Vol 184, <https://doi.org/10.1016/j.jcsr.2021.106803> .
- (19) Kenarangi, H., Bruneau, M., Varma, A., Ahmad, M. (2021). “Simplified Equations for Shear Strength of Composite Concrete Filled Steel Tubes”, AISC Engineering Journal, Vol.58, No.3, pp.197-221.

- (20) Kizilarlan, E., Bruneau, M., (2021). “Hysteretic Response of Repaired C-Shaped Concrete Filled-Composite Plate Shear Walls (CF-CPSWs)”, *Engineering Structures Journal*, Vol.241 <https://doi.org/10.1016/j.engstruct.2021.112410>
- (21) Polat, E., Kenarangi, H., Bruneau, M., (2021). “Investigation of tie bars axial force demands in Composite Plate Shear Wall-Concrete Filled”, *International Journal of Steel Structures*, Vol.21, No. 3, pp.901-921 <https://doi.org/10.1007/s13296-021-00480-3>
- (22) Domaneschi, M., Cimellaro, G.P., Xie, L., Bruneau, M., Wu, Z., Didier, M., Noori, M., Mufti, A., Lu, X., Xinzheng, L., Ou, J., Sheikh, S., Zhou, Y., Yoda, T., Taciroglu, E., Häring, I., Sextos, A., (2021). “Present and future resilience research driven by science and technology”, *International Journal of Sustainable Materials and Structural Systems*, Special Issue on: Resilience in the World: Share the Knowledge, See the Future, Help Communities, Vol.5 No.1/2, pp.50-89 <https://doi.org/10.1504/IJSMSS.2021.115783>
- (23) Kenarangi, H., Kizilarlan, E., Bruneau, M., (2021). “Cyclic Behavior of C-Shaped Composite Plate Shear Walls - Concrete Filled”, *Engineering Structures Journal*, Vol. 226, No.1. <https://doi.org/10.1016/j.engstruct.2020.111306>
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- (28) Bruneau, M., Reinhorn, A., (2019). *Invited*, “Forum Paper: Structural Engineering Dilemmas, Resilient EPCOT, and other Perspectives on the Road to Engineering Resilience,” *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A: Civil Engineering* entitled Resilience Quantification and Modeling for Decision Making, Special Issue: Resilience quantification and modeling for decision making, Vol.5, No.3, <https://doi.org/10.1061/AJRUA6.0001011> .
- (29) Dowden, D.M., Bruneau, M., (2019). “Quasi-Static Cyclic Testing and Analytical Investigation of Steel Plate Shear Walls with Different Post-Tensioned Beam-to-Column Rocking Connections”, *Engineering Structures Journal*, Vol.187, No.5, pp. 43-56 <https://doi.org/10.1016/j.engstruct.2019.02.048>
- (30) Kenarangi, H., Bruneau, M., (2019). “Experimental Study on Composite Action in Reinforced Concrete Filled Steel Tube Shaft Foundations”, *ASCE Journal of Bridge Engineering*, Vol.24, No.7, DOI:10.1061/(ASCE)BE.1943-5592.0001407.
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- (33) Fu, Y., Bruneau, M., (2019). “Complementary Evaluation of Diagonal Tension Field Inclination Angle in Steel Plate Shear Walls”, *AISC Engineering Journal*, Vol.56, pp.47-61.
- (34) Stucki, C., Bruneau, M., (2018). “Reduction of Seismic Acceleration Parameters for Temporary Bridge Design”, *ASCE Journal of Bridge Engineering*, Vol.23, No.10, [https://doi.org/10.1061/\(ASCE\)BE.1943-5592.0001292](https://doi.org/10.1061/(ASCE)BE.1943-5592.0001292)

- (35) Imani, R., Bruneau, M., (2018). “Post-Fire Axial Load Resistance of Concrete-Filled Double-Skin Tube (CFDST) Stub Columns”, AISC Engineering Journal, Vol. 55, No.4, pp. 203-207
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- (38) Wei, X. Bruneau, M., (2018). “Experimental Investigation of Buckling Restrained Braces for Bridge Bidirectional Ductile End Diaphragms,”ASCE Journal of Structural Engineering, Vol. 144, No.6 [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002042](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002042)
- (39) Polat, E., Bruneau, M., (2018). “Cyclic Inelastic In-plane Flexural Behavior of Concrete Filled Sandwich Steel Panel Walls with Different Cross-Section Properties,”AISC Engineering Journal, Vol.55, No.1, pp.45-75.
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- (182) Bruneau, M. (1993). "A Practical and Efficient Vectorial Approach to Consider Loads on Guyed-Towers' Cable Element", *International Journal of Computers & Structures*, Vol.46, No.2, pp.331-338.

- (183) Bruneau, M. (1993). "Monitoring Well-Being of Civil Engineering Profession", ASCE Journal of Professional Issues in Engineering Education and Practice," Vol.119, No.1, pp.14-26, 1993.
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- (185) Bruneau, M., Mahin, S.A. (1992). "Inelastic Seismic Torsional Response of Simple Symmetric Structures", Canadian Journal of Civil Engineering, Vol.19, No.1, pp.11-25.
- (186) Bruneau, M., Mahin, S.A. (1991). "Some Aspects of Defining a Simple General Purpose Model for the Study of Seismic Inelastic Torsional Coupling", Journal of Earthquake Engineering, Vol.1, No.1, pp.1-19.
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- (188) Bruneau, M., Mahin, S.A. (1991). "Full Scale Tests of Butt Welded Splices in Heavy Rolled Steel Sections Subjected to Primary Tensile Stresses", Engineering Journal of the American Institute of Steel Construction, Vol. 28, No.1, pp.1-17.
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- (190) Bruneau, M., Mahin, S.A. (1990). "Ultimate Behavior of Heavy Steel Section Welded Splices and Design Implications", ASCE Journal of Structural Engineering, Vol. 116, No. 8, pp.2214-2235.
- (191) Bruneau, M. (1990). "Preliminary Report of Structural Damage from the Loma Prieta (San Francisco) Earthquake of October 17, 1989, and Pertinence to Canadian Structural Engineering Practice", Canadian Journal of Civil Engineering, Vol. 17, No. 2, pp.198-208.
- (192) Magued, M.H., Bruneau, M., Dryburgh, R.B. (1989). "Evolution of Design Standards and Recorded Failures of Guyed Towers in Canada", Canadian Journal of Civil Engineering, Vol. 16, No. 5, pp. 725-732.
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Papers in Refereed Conference Proceedings (258)

- (194) Bruneau, M., (2024). Invited. "Building Bridges to Achieve a Resilient Society", International Conference in Commemoration of the 25th Anniversary of the 1999 Chi-Chi Earthquake, Taipei, Taiwan, September 2024.
- (195) Bruneau, M., (2024). *Keynote Lecture*. "Seismically Resilient Bridges," Fourth International Bridge Seismic Workshop, Ottawa, Canada, August 2024.
- (196) Bruneau, M., (2024). *Invited*. "The Blessings of Disaster:" Building Bridges Toward a More Resilient Society," Fourth International Bridge Seismic Workshop, Ottawa, Canada, August 2024.
- (197) Carrion-Cabrera, H., Bruneau, M., (2024). *Invited*. "Performance of Buckling Restrained Braces in Bi-Directional Ductile Diaphragms," 18th World Conference on Earthquake Engineering, Milan, Italy, July 2024.
- (198) Bruneau, M., (2024). *Invited*. "It takes a disaster: Leveraging catastrophes as a necessity to achieve seismic resilience," 18th World Conference on Earthquake Engineering, Milan, Italy, July 2024.
- (199) Congdon, G., Stavridis, A., Raman, R., Bruneau, M., Sett, K. (2024). "Bidirectional Shake-table Test of a Retrofitted URM Building" 18th World Conference on Earthquake Engineering, Milan, Italy, July 2024.
- (200) Raman, R., Congdon, G., Singh, R., Stavridis, A., Bruneau, M., Sett, K. (2024). "Pullout Tests of Masonry Adhesive Anchors" 18th World Conference on Earthquake Engineering, Milan, Italy, July 2024.
- (201) Carrion-Cabrera, H., Bruneau, M., (2023). "Buckling Restrained Braces to Achieve Resilient Multi-Span Bridges," Canadian Conference - Pacific Conference on Earthquake Engineering, Vancouver, B.C., Canada, June 2023.

- (202) Bruneau, M., (2023). *Keynote Lecture*. “From Earthquake Engineering to Nuclear Holocaust, via The Blessings of Disaster: The Lessons That Catastrophes Teach Us and Why Our Future Depends on It,” Canadian Conference - Pacific Conference on Earthquake Engineering, Vancouver, B.C., Canada, June 2023.
- (203) Kizilarслан, E., Broberg, M., Shafaei, S., Varma, A.H., Bruneau, M., (2022). “Seismic Design Coefficients and Factors for Coupled Composite Plate Shear Walls/Concrete Filled (Coupled-C-PSW/CF)”, Structural Engineers Association of California Convention, Indian Wells, California, August 2022
- (204) Carrion-Cabrera, H., Bruneau, M., (2022). “Longitudinal Seismic Response of Regular Multi-span Bridges having Buckling-Restrained Braces in Bi-directional ductile end diaphragm,” 12th National Conference on Earthquake Engineering, Salt Lake City, Utah, June 2022.
- (205) Kenarangi, H., Kizilarслан, E., Bruneau, M., (2022). “Inelastic Cyclic Behavior of C-Shaped Composite Plate Shear Walls - Concrete Filled”, 12th National Conference on Earthquake Engineering, Salt Lake City, Utah, June 2022.
- (206) Salado Castillo, J.V., Bruneau, M., Elhami-Khorasani, N. (2021). “Assessing Sensitivity of Resilience Quantification for Buildings”, 17th World Conference on Earthquake Engineering (Rescheduled edition), Sendai, September 2021.
- (207) Bruneau, M., Carrion-Cabrera, H., (2020). “Buckling-Restrained Braces in Bi-Directional Ductile Diaphragms of Multi-Span Bridges”, 17th World Conference on Earthquake Engineering, Sendai, September 2020 (Paper 2g-0167).
- (208) Bruneau, M., Kenarangi, H., Kizilarслан, E., (2020). “Cyclic Flexural Behavior of C-Shaped Plate Shear Walls - Concrete Filled,” 17th World Conference on Earthquake Engineering, Sendai, September 2020 (Paper 2i-0214).
- (209) Bruneau, M., MacRae, G., (2018). *Keynote Lecture*, “Christchurch: Rebuilding a Resilient City?”, Proceedings of 2nd International Workshop on Resilience (IRW) 2018, Nanjing/Shanghai, China November 2018, Chapter 3 of Book “Resilience of Critical Infrastructure Systems —Emerging Developments and Future Challenges”, Editors: Zhishen Wu, Xilin Lu, and Mohammad Noori, CRC Press, pp. 49-56.
- (210) Bruneau, M., Cimellaro, G.P., Didier, M., Domaneschi, M., Häring, I., Lu, X., Mufti, A., Noori, M., Ou, J., Sextos, A., Sheikh, Taciroglu, E., Wu, Z., S., Xie, L., Yoda, T., Zhou, Y. (2020). “Challenges and generic research questions for future research on resilience, Proceedings of 2nd International Workshop on Resilience (IRW) 2018, Nanjing/Shanghai, China November 2018, Chapter 1 of Book “Resilience of Critical Infrastructure Systems —Emerging Developments and Future Challenges”, Editors: Zhishen Wu, Xilin Lu, and Mohammad Noori, CRC Press, pp. 1-42
- (211) Bruneau, M., MacRae, G., (2019). *Invited Plenary Speaker*, “Reconstructing a very Different Christchurch: How the 2011 Earthquakes have Driven Decisions on Selection of Structural Systems”, CompDyn 2019, Crete, Greece, June 2019.
- (212) Kizilarслан, E., Bruneau, M., (2019). “Preliminary Results from FEMA P695 Study on Coupled Composite Plate Shear Walls-Concrete-Filled”, Proceedings of the Annual Stability Conference of the Structural Stability Research Council, St-Louis, April 2019.
- (213) Kenarangi, H., Bruneau, M., (2019). “Findings from NCHRP 12-93: Contribution of the Steel Casing to the Flexural and Shear Behavior of Circular Reinforced Concrete Filled Steel Tube Shafts”, 2019 World Steel Bridge Symposium, St-Louis, April 2019.
- (214) Bruneau, M., MacRae, G., (2018). “Lessons on Attaining Resilience based on the Christchurch Rebuild Structural Form Drivers Study”, 17th U.S.-Japan-New Zealand Workshop on the Improvement of Structural Engineering and Resilience (ATC-15-16), Queenstown, New Zealand, November 2018.
- (215) Bruneau, M., MacRae, G., (2018). “Post-Earthquake Christchurch: A City Rebuilding in Steel”, 87th Annual Convention, Structural Engineers Association of California, Palm Springs, California, September, 2018
- (216) Bruneau, M., MacRae, G., (2018). “Understanding Structural Selection Decisions in Christchurch's Reconstruction”, 11th National Conference on Earthquake Engineering, Los Angeles, July 2018.

- (217) Shrestha, L., Bruneau, M., (2018). “Estimating Axial Force Demand in Columns of Seismic-Resistant Steel Structures”, 11th National Conference on Earthquake Engineering, Los Angeles, July 2018.
- (218) Bruneau, M., MacRae, G., (2018). *Keynote Speaker* “Reconstructing Christchurch: Quantitative Findings on Shift in Building Structural Systems”, 9th International Conference on the Behaviour of Steel Structures in Seismic Areas (STESSA), Christchurch, New Zealand, February 2018.
- (219) MacRae, G., Clifton, C., Bruneau, M., (2018). *Keynote Lecture*, “New Zealand Research Applications of, and Developments in, Low Damage Technology for Steel Structures”, 9th International Conference on the Behaviour of Steel Structures in Seismic Areas (STESSA), Christchurch, New Zealand, February 2018.
- (220) Bruneau, M., Reinhorn, A., (2018). *Invited Opening Speaker*. “Resilience: The Structural Engineering Dilemma”, Proceedings of 1st International Workshop on Resilience, Torino, Italy, September 2016
- (221) Bruneau, M., Alzeni, Y., (2017). *Invited*. “In-plane Cyclic Testing of Concrete Filled Sandwich Steel Panel Walls with and Without Boundary Elements”, 8th International Conference on Composite Construction in Steel and Concrete, Jackson Hole, Wyoming, July 2017.
- (222) Purba R., Bruneau, M., (2017). “Assessment of Collapse Potential of Steel Plate Shear Walls Having Infill Plates Designed Using Two Different Philosophies”, 16th World Conference on Earthquake Engineering, Santiago, Chile, January 2017.
- (223) Wei, X., Bruneau, M., (2017). *Invited*. “Experimental Performance of Buckling Restrained Braces Subjected to Bidirectional Displacement Histories”, Special Session on “State-of-the-Art Design of Buckling Restrained Braces (BRBs) and Cutting-Edge Research”, 16th World Conference on Earthquake Engineering, Santiago, Chile, January 2017.
- (224) MacRae, G., Clifton, C., Bruneau, M., (2016). “Some NZ Earthquake Lessons and Better Building Construction”, Australian Earthquake Engineering Society 2016 Conference, November 2016, Melbourne, Australia
- (225) Dowden, D., Bruneau, M., (2016). *Invited*. “Self-Centering Steel Plate Shear Walls with NewZ-BREAKSS Post-tensioned Rocking Connection Detail Free of Beam-Growth”, 8th International Workshop on Connections in Steel Structures, Boston, May 2016.
- (226) Imani, R. and Bruneau, M. (2015) “Numerical Investigation of the Failures Observed in Eccentrically-Braced Frames in the Aftermath of the Christchurch Earthquake Series (2010–2011)”, ASCE 7th Congress on Forensic Engineering, Miami, Florida, November 2015, pp. 468-475 doi: 10.1061/9780784479711.045
- (227) Imani, R. and Bruneau, M. (2015) “Experimental and Numerical Investigation on the Resistance and Failure Behavior of Ductile Concrete-Filled Double-Skin Tube Columns Subjected to Post-Earthquake Fires” ASCE 7th Congress on Forensic Engineering, Miami, Florida, November 2015, pp. 476-482. doi: 10.1061/9780784479711.046
- (228) Dowdell, D.J., Hamersley, B., Bruneau, M., Tudor, S., (2015). “Tubular Eccentrically Braced Frames for the Seismic Protection of the San Francisco Oakland Bay Bridge Self Anchored Suspension Span During Construction,” 11th Canadian Conference on Earthquake Engineering, Victoria, Canada, July 2015
- (229) MacRae, G.A., Clifton, G.C., Bruneau, M., Kanvinde, A., Gardiner, S., (2015). “Lessons from Steel Structures in Christchurch Earthquakes,” 8th International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Shanghai, China, July 2015
- (230) Clayton, P.M., Dowden, D.M., Li, C.H., Berman, J., Bruneau, M., Lowes, L.M., Tsai, K.C., (2015). “Self-Centering Steel Plate Shear Walls for Improving Seismic Resilience”, Eight International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2015, Shanghai, China, July 2015.
- (231) Bruneau, M., Fujikura, S., Fouché, P., Chiarito, V.P., (2015). *Invited Keynote Speaker*, “Multi-hazard (Blast and Seismic) Resistance of Various Types of Bridge Columns”, 11th International Conference on Shock & Impact Loads on Structures, Ottawa, Canada, May 2015.
- (232) Cimellaro, G.P., Solari, D., Arcidiacono, V., Renschler, C., Reinhorn, A., Bruneau, M., (2014). “Community Resilience Assessment Integrating Network Interdependencies”, 10th National

- Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D3930NV8W).
- (233) Clayton, P.M., Li, C.H., Dowden, D.M., Berman, J., Tsai, K.C., Lowes, L.M., Bruneau, M., (2014). “Advances in Self-Centering Steel Plate Shear Wall Testing and Design” 10th National Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D3GM81P60).
- (234) Imani, R., Mosqueda, G., Bruneau, M., (2014). “Post-Earthquake Fire Resistance of Ductile Concrete Filled Double-Skin Tube Columns”, 10th National Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D3HH6C63X).
- (235) Dowden, D.M., Bruneau, M., (2014). “Cyclic and Dynamic Testing of Self-centering Steel Plate Shear Walls”, 10th National Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D32N4ZJ4H).
- (236) Purba, R., Bruneau, M., (2014). “Seismic Performance of Steel Plate Shear Walls Considering Various Design Approaches”, 10th National Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D3154DP70).
- (237) Alzeni, Y., Bruneau, M., (2014). “Cyclic Inelastic In-plane Behavior of Concrete Filled Steel Sandwich Panel Walls”, 10th National Conference on Earthquake Engineering, Anchorage, Alaska, July 2014 (DOI: 10.4231/D3G15TB80).
- (238) Clayton, P.M., Dowden, D.M., Li, C.H., Berman, J., Lowes, L.M., Bruneau, M., Tsai, K.C., (2013). “Pseudo-dynamic Testing of Self-centering Steel Plate Shear Walls”, 5th International Conference on Advances in Experimental Structural Engineering, Taipei, Taiwan, November 2013.
- (239) Clayton, P.M., Dowden, D.M., Li, C.H., Berman, J., Bruneau, M., Lowes, L.M., Tsai, K.C., (2013). “Full-Scale Testing of Self-Centering Steel Plate Shear Walls”, ASCE/SEI Structures Congress, Pittsburgh, May 2013.
- (240) Cimellaro, G.P., Arcidiacono, V., Renschler, C., Bruneau, M., Reinhorn, A., (2013). “Community Resilience Assessment Integrating Network Interdependencies”, ASCE/SEI Structures Congress, Pittsburgh, May 2013.
- (241) Cimellaro, G.P., Arcidiacono, V., Bruneau, M., Reinhorn, A., (2013). “Disaster Resilience of Hospitals Considering Emergency Ambulance Services”, ASCE/SEI Structures Congress, Pittsburgh, May 2013.
- (242) Fouche, P., Bruneau, M., Chiarito, V., Manor, J., (2013). “Blast and Earthquake Resistant Bridge Pier Concept: Retrofit and Alternative Design Options”, ASCE/SEI Structures Congress, Pittsburgh, May 2013.
- (243) Fujikura, S., Bruneau M., (2013). *Invited Paper*, “Multi-hazard Resistant of Highway Bridge Piers Having Concrete-filled Steel Tube,” International Symposium for Bridge Earthquake Engineering in Honor of Retirement of Professor Kazuhiko Kawashima, Tokyo, Japan, March 15, 2013.
- (244) Bruneau, M., (2013). *Invited Keynote Speaker*, “Self-centering Steel Plate Shear Walls”, Steel Innovations 2013 Conference, Christchurch, February 2013.
- (245) Bruneau, M., Alzeni, Y., Fouche, P., (2013). *Invited Paper* “Seismic Behavior of Concrete-filled Steel Sandwich Walls and Concrete-filled Steel Tube Columns”, Steel Innovations 2013 Conference, Christchurch, February 2013 - Also presented at 7th Seismic Bridge Conference, Oakland, California, May 2013.
- (246) Palermo, A., Wotherspoon, L., M., Hogan, L., Kivell, A., Yashinsky, M., Bruneau, M., Camnasio, E., (2012). *Invited*, “Overview of Bridge Performance during the 2011 Christchurch Earthquake”, 28th US-Japan Bridge Engineering Workshop, Portland, Oregon, October 2012.
- (247) Clifton, G.C., Nashid, H., Ferguson, G, Bruneau, M., MacRae, G.A., Gardiner, S., (2012). “Performance of Eccentrically Braced Framed Buildings In The Christchurch Earthquake Series of 2010/2011”, 15th World Conference on Earthquake Engineering, Lisbon, Portugal, September. 2012, Paper 2502..
- (248) Celik, O.C., Bruneau, (2012). “Bidirectional-resistant Ductile End Diaphragms with Buckling Restrained Braces for Skewed Steel Bridges ”, 15th World Conference on Earthquake Engineering, Lisbon, Portugal, September. 2012, Paper 0603.

- (249) Cimellaro G.P., Arcidiacono V., Reinhorn A. M., Bruneau M., (2012), "Community Resilience Evaluation Including Interdependencies", 15th World Conference on Earthquake Engineering, Lisbon Portugal, Paper 5532
- (250) Cimellaro, G.P., Villa, O., Reinhorn, A.M., Bruneau, M., Kim, H.U., (2012). "Resilience-Based Design of Natural Gas Pipelines", 15th World Conference on Earthquake Engineering, Lisbon Portugal
- (251) Dowden, D.M., Clayton, P.M., Winkley, T., Berman, J., Bruneau, M., Lowes, L.M., (2012). "Experimental Investigation of Self-centering Steel Plate Shear Walls", ASCE/SEI Structures Congress, Chicago, March 2012.
- (252) Palermo, A., Wotherspoon, L., M., Hogan, L., Kivell, A., Yashinsky, M., Bruneau, M., Camnasio, E., (2012). "Overview of Bridge Performance during the 2011 Christchurch Earthquake", 6th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2012), Lake Como, Italy, July 2012.
- (253) Wotherspoon, L., Hogan, L., Palermo, A., LeHeux, M., Bruneau, M., Anagnostopoulou, M., (2012). "Performance of Bridges during the 2010 Darfield Earthquake", 6th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2012), Lake Como, Italy, July 2012.
- (254) Bruneau, M. (2012). *Keynote Lecture*, "Steel Plate Shear Walls (SPSW), TEBF, CFST, SF, and Other Short Stories", T.R. Higgins Award Lecture (<http://www.aisc.org/content.aspx?id=572>), presented to:
- North American Steel Construction Conference, Dallas, Texas, April 2012.
 - Rocky Mountain Steel Construction Association, Denver, June 2012
 - Structural Engineers Association of Texas State Conference, San Antonio, Texas, Sept. 2012
 - University of Minnesota, Minneapolis, Minnesota, September 2012.
 - Pacific Northwest Steel Fabricators Association, Portland, Oregon, October 2012
 - Pacific Northwest Steel Fabricators Association, Seattle, Washington, November 2012
 - Structural Engineers Association of Central California, Sacramento, California, March 2013
 - Structural Engineers Association of New York, New York, March 2013
 - 58th Structural Engineering Conference, Lawrence, Kansas, March 2013
 - Purdue University, West Lafayette, Indiana, March 2013
 - Structural Engineerings Institute - Maryland, Baltimore, MD, March 2013
 - Structural Engineers Association of Alabama, Birmingham, Alabama, April 2013
- (255) Clifton, C., Bruneau, M., MacRae, G., Leon, R., Fussell, A., (2012). *Invited Keynote Paper, presented by C. Clifton*, "Multistorey Steel Framed Building Damage from the Christchurch Earthquake Series of 2010/2011", Seventh International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2012, Santiago, Chile, January 2012.
- (256) Cimellaro, G.C., Renschler, C., Frazier, A., Arendt, L., Bruneau, M., Reinhorn, A.M., (2011). "Community resilience index for road network systems", Eighth International Conference on Structural Dynamics EURO-DYN 2011, Leuven, Belgium, July 2011.
- (257) Cimellaro, G.P., Renschler, C.S., Frazier, A., Arendt, L.A., Reinhorn, A.M., Bruneau, M., (2011). "State of Art of Community Resilience of Physical Infrastructures," ASCE/SEI Structures Congress, Las Vegas, April 2011.
- (258) Clayton, P.M., Dowden, D., Purba, R., Berman, J.W., Lowes, L.N., Bruneau, M., (2011). "Seismic Design and Analysis of Resilient Steel Plate Shear Walls", ASCE/SEI Structures Congress, Las Vegas, April 2011.
- (259) Purba, R., Bruneau, M., (2011). "Behavior of Steel Plate Shear Walls with In-Span Plastic Hinges", ASCE/SEI Structures Congress, Las Vegas, April 2011.
- (260) El-Bahey, S., Bruneau, M., (2010). "Structural Fuse Concept for Bridges," TRB Seventh International Bridge Engineering Conference, San Antonio, Texas, December 2010.
- (261) El-Bahey, S., Bruneau, M., (2010). "Analytical Development and Experimental Validation of a Structural-Fuse Bridge Pier Concept," 8th International Conference on Short and Medium Span Bridges, Niagara Falls, Ontario, Canada, August 2010 - CD-ROM Paper No.1302.

- (262) Fouche, P., Bruneau, M., (2010). "Non-Linear Analysis of Multi-Hazard Performance of Concrete Filled Steel Tubes Bridge Piers," 8th International Conference on Short and Medium Span Bridges, Niagara Falls, Ontario, Canada, August 2010.
- (263) Bahey, S.E., Bruneau, (2010). "Structural Fuse Concept for Bridges", Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.1302.
- (264) Purba, R., Bruneau, (2010). "Finite Element Investigation and Design Recommendations for Perforated Steel Plate Shear Walls ", Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.327.
- (265) Tremblay, R., Bruneau, M., Driver, R.G., Metten, A., Montgomery C.J., Rogers, C.A., (2010). "Seismic Design of Steel Structures in Accordance with CSA-S16-09", Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.1768.
- (266) Renschler, C.S., Frazier, A.E., Arendt, K.L.A., Cimellaro, G.P., Reinhorn, A.M., Bruneau, M., "Developing the 'PEOPLES' Resilience Framework for Defining and Measuring Disaster Resilience at the Community Scale", Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.1827.
- (267) Berman, J, Lowes, L., Bruneau, M., Fahnstock, L., Tsai, K.C., (2010). "An Overview of NEESR-SG: Smart and Resilient Steel Walls for Reducing Earthquake Impacts," Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.1087.
- (268) Cui, S., Bruneau, M., Kasalanati, A. (2010). "Behavior of Multi-directional Spring Units in Isolated Floor System," Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.662.
- (269) Qu, B., Bruneau, M., (2010). "Design of Steel Plate Shear Walls Considering Boundary Frame Moment Resisting Action," Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.306.
- (270) Celik, O., Bruneau, M., (2010). "Bidirectional-resistant Ductile End Diaphragms for Straight Steel Bridges," Joint 9th US and 10th Canadian Conference on Earthquake Engineering, Toronto, Canada, July 2010 - CD-ROM Paper No.111.
- (271) Cimellaro, G.C., Reinhorn, A.M., Bruneau, M., (2010). "Organizational Model of a Hospital System", 2010 New Zealand Society for Earthquake Engineering Annual Technical Conference, March 2010.
- (272) Cimellaro, G. P., Reinhorn, A. M., and Bruneau, M. (2010). "Organizational metamodel for hospital emergency Department," 14th European Conference on Earthquake Engineering (14ECEE), Ohrid, Republic of Macedonia, August-September 2010, paper 1022, pp.2895-2902.
- (273) Bruneau, M., El-Bahey, S., Fujikura, S., Keller, D., (2010). *Invited Keynote Speaker*, "Structural Fuses and Concrete-Filled Steel Shapes for Seismic- and Multi-Hazard Resistant Design," 2010 New Zealand Society for Earthquake Engineering Annual Technical Conference, March 2010.
- (274) Bruneau, M., Keller, D., Fouché, P., (2009). *Invited Speaker*, "Multi-Hazard (Blast, Seismic, Tsunamis, Collision) Resistant Bridge Piers", 80th Shock & Vibration Symposium (SAVIAC), San Diego, California, October 2009.
- (275) El-Bahey, S., Bruneau, M., (2009). *Invited Speaker*, "Structural Fuse Concept for Bridges," International Conference in Commemoration of the 10th Anniversary of the 1999 Chi-Chi Earthquake, Taipei, Taiwan, September 2009.
- (276) Fujikura, S., Bruneau, M., (2009). "Blast Performance of Various Seismic-Resistant Bridge Pier Concepts," 5th New York City Bridge Conference, New York City, August 2009.
- (277) Pollino, M., Bruneau, M., (2009). "Experimental Seismic Testing of a Controlled Rocking Bridge Steel Truss Pier," Sixth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2009, Philadelphia, August 2009, pp.601-606.
- (278) Qu, B., Bruneau, M., (2009). "Seismic Design of Boundary Frame Members of Steel Plate Shear Walls," Sixth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2009, Philadelphia, August 2009, pp.965-970.

- (279) Keller, D., Bruneau, M., (2009). “Multi-Hazard Resistant Steel Plate Shear Wall Bridge Pier,” Sixth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2009, Philadelphia, August 2009, pp.835-840.
- (280) Bruneau, M., Purba, R., Qu, B., Warn, R., Tsai, K.C., (2009). *Invited Speaker*, “Innovations in Steel Plate Shear Wall Design,” Sixth International Conference on Urban Earthquake Engineering, Tokyo, Japan, March 2009.
- (281) Fujikura, S., Bruneau, M., (2008). “Blast Resistance of Seismically Designed Bridge Piers”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008 - also presented at 6th National Seismic Conference on Bridges & Highways, Charleston, South Carolina, July 2008
- (282) Cui, S., Bruneau, M., (2008). “Isolated Floor Systems in Structural Fuse Frames”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (283) Qu, B., Bruneau, M., (2008). Ductile Design of Intermediate Horizontal Boundary Elements in Steel Plate Shear Walls”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (284) Vargas, R., Bruneau, M., (2008). “Experimental Validation of the Structural Fuse Concept”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (285) Berman, J., Bruneau, M., (2008). “Development of Self-stabilizing Links for Eccentrically Braced Frames”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (286) Berman, J., Bruneau, M., (2008). “An Improved Procedure for Capacity Design of Vertical Boundary Elements in Steel Plate Shear Walls”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (287) Cimellaro, G.C., Fumo, C., Reinhorn, A.M., Bruneau, M., (2008). “Seismic Resilience of Health Care Facilities: Organizational Aspects”, 14th World Conference on Earthquake Engineering, Beijing, China, October 2008.
- (288) Bruneau, M., Cimellaro, G.C., Fumo, C., Reinhorn, A.M., (2008). *Invited Speaker*, “Quantitative Disaster Resilience”, International Disaster and Risk Conference, Davos, Switzerland, August 2008.
- (289) Qu, B., Bruneau, M., *Invited Speaker*, “Behavior and Design of Intermediate HBE in Steel Plate Shear Walls”, ASCE Structures Congress, Vancouver, B.C., Canada, April 2008.
- (290) Berman, J.W., Lowes, L.N., Okazaki, T., Bruneau, M., Tsai, K.C., Driver, R.G., Sabelli, R., “Research Needs and Future Directions for Steel Plate Shear Walls”, ASCE Structures Congress, Vancouver, B.C., Canada, April 2008.
- (291) Sabelli, R., Bruneau, M., Driver, R.G., “Steel Plate Shear Walls in the Upcoming 2010 AISC Seismic Provisions and 2009 Canadian Standard S16”, ASCE Structures Congress, Vancouver, B.C., Canada, April 2008.
- (292) Bruneau, M., Qu, B., Warn, G., *Invited Speaker*, “Recent Development from Research on Steel Plate Shear Walls”, North American Steel Construction Conference, Nashville, Tennessee, April 2008.
- (293) Bruneau, M., *Invited Keynote Speaker*, “Recent Developments in Ductile Steel Design Concepts”, Mexican XVI National Conference on Earthquake Engineering, Ixtapa, Mexico, October 2007.
- (294) Bruneau, M., *Invited Speaker*, “Experimental and Analytical Research on Behavior of Steel Plate Shear Walls”, SEAOC Convention 2007, Tahoe, California, September 2007.
- (295) Bruneau, M., *Invited Keynote Speaker*, “Innovations in Earthquake Resistant Steel Structures”, 9th Canadian Conference on Earthquake Engineering, Ottawa, June 2007 - CD-ROM.
- (296) Qu, B., Bruneau, M., Lin, C.H., Tsai, K.C., Lin, Y.C., “Full Scale Steel Plate Shear Wall: NCREE/MCEER Phase II Tests”, 9th Canadian Conference on Earthquake Engineering, Ottawa, June 2007 - CD-ROM.
- (297) Lin, C.H., Tsai, K.C., Lin, Y.C., Wang, K.J., Qu, B., Bruneau, M., “Full Scale Steel Plate Shear Wall: NCREE/MCEER Phase I Tests”, 9th Canadian Conference on Earthquake Engineering, Ottawa, June 2007 - CD-ROM.
- (298) Bruneau, M., *Invited Keynote Speaker*, “Emerging Hysteretic-Based Seismic Systems: Convergence of Ideas in Ductile Steel Design”, 10th World Conference on Seismic Isolation, Energy Dissipation and Vibration Control of Structures, Istanbul, May 2007.

- (299) Qu, B., Bruneau, M., “Analytical Study on Steel Plate Shear Walls using Dual Strip Model and 3D FE Model”, Workshop of the Asian-Pacific Network of Center in Earthquake Engineering Research, Hong Kong, May 2007.
- (300) Cui, S., Bruneau, M., “Preliminary Analysis of Isolated Raised Floors”, Workshop of the Asian-Pacific Network of Center in Earthquake Engineering Research, Hong Kong, May 2007.
- (301) Cimellaro, G.P., Reinhorn, A., Bruneau, M., “Seismic Resilience of Health Care Facilities - An MCEER Vision”, Proceedings of ANIDIS 2007- XII Convegno Nazionale “L'Ingegneria Sismica in Italia”, Italian National Association of Earthquake Engineering, paper 405, 10-14 June 2007, Pisa, Italy.
- (302) Pollino, M. and Bruneau, M. (2007). “Experimental Study of the Controlled Rocking Response of Steel Braced Frames”, 2007 ASCE Structures Congress, Long Beach, CA, May 2007.
- (303) Berman, J. and Bruneau, M. (2007). “Development of Self-stabilizing Links for Eccentrically Braced Frames”, 2007 ASCE Structures Congress, Long Beach, CA, May 2007.
- (304) Sabelli, R., Bruneau, M., “Design of Steel Plate Shear Walls”, North American Steel Construction Conference, New Orleans, April 2007.
- (305) Berman, J., Bruneau, *Invited Paper*, “Proof-of-concept Testing and Finite Element Modeling of Self-Stabilizing Tubular Links for Eccentrically Braced Frames”, 4th International Symposium on Steel Structures, Seoul, Korea, November 2006.
- (306) Vian, D., Bruneau, M., “Testing of LYS Steel Plate Shear Walls”, 4th International Conference on Earthquake Engineering, Taipei October 2006 - CD ROM.
- (307) Lin, C.H., Tsai, K.C., Lin, Y.C., Wang, K.J., Weng, Y.T., Hsieh, W.D., Qu, B., Bruneau, M., “The Sub-Structural Pseudo-Dynamic Tests of a Full-Scale Two Story Steel Plate Shear Wall: Part I: Phase I Test”, 4th International Conference on Earthquake Engineering, Taipei October 2006 - CD ROM.
- (308) Bruneau, M., Reinhorn, A., “Exploring the Concept of Seismic Resilience for Acute Care Facilities”, First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, September 2006.
- (309) Celik, O., Berman, J., Bruneau, M., “Hysteretic Energy Dissipation in Laterally Restrained Steel Tube and Solid Bar Braces”, First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, September 2006.
- (310) Vargas, R., Bruneau, M., “Seismic Response and Design of Buildings with Metallic Structural Fuses”, Fifth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2006, Yokohama, Japan, August 2006.
- (311) Celik, O., Berman, J., Bruneau, M., “Ductile Design and Testing of Steel Bracing having Moveable Bracing Infills”, Fifth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2006, Yokohama, Japan, August 2006.
- (312) Bruneau, M., Lopez-Garcia, D., Fujikura, S., *Invited Speaker*, “Multihazard-Resistant Highway Bridge Bent”, 2006 ASCE Structures Congress, St-Louis, May 2006 - also 5th National Seismic Conference on Bridges and Highways, San Francisco, September 2006.
- (313) Pollino, J., Bruneau, M., “Bi-directional Seismic Analysis and Design of Bridge Steel Truss Piers Allowing a Controlled Rocking Response”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 1954 - also 7th International Conference on Short & Medium Span Bridges, Montreal August 2006 - also Proceedings of the 21st U.S. Japan Bridge Engineering Workshop, Tsukuba, Japan, October 2005, pp.351-362.
- (314) Lopez-Garcia, D., Bruneau, “Seismic Behavior of Intermediate Beams in Steel Plate Shear Walls”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 1089.
- (315) Berman, J., Bruneau, M., “Proof-of-concept Testing and Finite Element Modeling of Self-stabilizing Hybrid Rectangular Links for Eccentrically Braced Frames”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 239 - also First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, September 2006 - also 5th National Seismic Conference on Bridges and Highways, San Francisco, September 2006.
- (316) Filiatrault, A., Bruneau, M., Alesch, D., Constantinou, M., Dargush, D., Grigoriu, M., Lee, G., Maragakis, E., Mosqueda, G., Petak, W., Reinhorn, A., von Winterfeldt, D., “Enhancing the

- Resilience of Acute Care Facilities: An Overview of Mceer Research”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 2034.
- (317) Bruneau, M., Reinhorn, A., “Overview of the Resilience Concept”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 2040.
- (318) Vargas, R., Bruneau, M., “Seismic Design of Multi-Story Buildings with Metallic Structural Fuses”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 280.
- (319) Cimellaro, G.P., Reinhorn, A., Bruneau, M., “Quantification of Seismic Resilience”, 8th National Seismic Conference, San Francisco, April 2006 - CD-ROM Paper No. 1094.
- (320) Bruneau, M., *Invited Speaker*, "Enhancing the Resilience of Communities against Extreme Events from an Earthquake Engineering Perspective", Proceedings of the ASCE Metropolitan Section Infrastructure Group Seminar – Infrastructure Safety & Security 2006, New York, March 2006.
- (321) Pollino, M., Bruneau, M., “Controlled Rocking System for Seismic Retrofit of Steel Truss Bridge Piers”, Workshop of the Asian-Pacific Network of Center in Earthquake Engineering Research, Jeju, Korea, November 2005.
- (322) Cimellaro, G.P., Reinhorn, A., Bruneau, M., “Seismic Resilience of a Health Care Facility”, Workshop of the Asian-Pacific Network of Center in Earthquake Engineering Research, Jeju, Korea, November 2005.
- (323) Bruneau, M., Lopez-Garcia, D., Fujikura, S., “Earthquake and Multiple Hazard Protection of Highway Bridges”, Proceedings of the 21st U.S. Japan Bridge Engineering Workshop, Tsukuba, Japan, October 2005, pp.363-366.
- (324) Berman, J., Bruneau, M., “Considering Overturning In Braced Steel Bridge Pier Retrofit”, 2005 New York City Bridge Conference, September 2005, on CD-ROM.
- (325) Bruneau, M., “Enhancing the Resilience of Communities against Extreme Events from an Earthquake Engineering Perspective”, IABSE Symposium on Structures and Extreme Events, Lisbon, Portugal, September, 2005, on CD-ROM.
- (326) Bruneau, M., *Invited Keynote Speaker*, “Seismic Design and Retrofit of Steel Structures”, 1st Canadian Conference on Effective Design of Structures, Hamilton, Ontario, July, 2005.
- (327) Bruneau, M., Berman, J., Lopez Garcia, D., Vian, D., *Invited Speaker*, “Steel Plate Shear Wall Buildings: Design Requirements and Research”, North American Steel Construction Conference, Montreal, Canada, April 2005 - CD-ROM paper #075.
- (328) Sarraf, M, Bruneau, M., “Innovative Design and Testing of a Seismically Retrofitted Deck-Truss Bridges”, North American Steel Construction Conference, Montreal, Canada, April 2005 - CD-ROM paper #175.
- (329) Bruneau, M., *Invited Speaker*, “Seismic Risk - Why it should be Considered and Impediments to Implementation - An Earthquake Center Perspective”, ASCE 2005 Structures Congress, New York, April 2005.
- (330) Bruneau, M., Berman, J., Vian, D., *Invited Speaker*, “Steel Plate Shear Walls - From Research to Codification”, ASCE 2005 Structures Congress, New York, April 2005.
- (331) Berman, J., Bruneau, M., “Proof-of-Concept Testing of a Laterally Stable Eccentrically Braced Frame for Steel Bridge Piers”, Proceedings of 20th US-Japan Bridge Engineering Workshop, Washington, D.C., October 2004, pp.217-228 - also 3rd US-PRC Workshop on Bridges, Shanghai, October, 2004.
- (332) Filiatrault, A., Aref, A., Bruneau, M., Constantinou, M., Lee, G., Reinhorn, A., Whittaker, A., *Invited Speaker (Bruneau)*, “MCEER's Integrated Research on the Seismic Response Modification of Structural and Non-Structural Systems and Components in Hospitals”, International Conference in Commemoration of 5th Anniversary of the 1999 Chi-Chi Taiwan Earthquake, Taipei, September 2004 - on CD-ROM - also presented/published in Structural Engineers Association of California 2004 Convention, Monterey, California, August 2004, pp.73-81
- (333) Bruneau, M., *Invited Keynote Speaker*, “Seismic Retrofit of Steel Structures”, VIII Mexican Symposium on Earthquake Engineering, Tlaxcala, Mexico, September 2004.
- (334) Vian, D., Bruneau, M., “MCEER’s Experimental Research on Steel Plate Walls”, Structural Engineers Association of California 2004 Convention, Monterey, California, August 2004, pp.211-215.

- (335) Bruneau, M., Chang, S., Eguchi, R., Lee, G., O'Rourke, T., Reinhorn, A., Shinozuka, M., Tierney, K., Wallace, W., von Winterfelt, D., "A Framework to Quantitatively Assess and Enhance the Seismic Resilience of Communities", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #2575.
- (336) Sarraf, M., Bruneau, M., "Performance Tests Of Innovative Ductile Steel Seismically Retrofitted Deck-Truss Bridges", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #1803.
- (337) Paquette, J., Bruneau, M., "Seismic Testing of Unreinforced Masonry Buildings with Flexible Diaphragm", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #2609.
- (338) Bruneau, M., Reinhorn, A., Constantinou, M., Whittaker, A., Thevanayagam, S., "The UB-NEES Versatile High Performance Testing Facility", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #1577.
- (339) Vargas, R., Bruneau, M., "Seismic Response of Single Degree (SDOF) Structural Fuse Systems", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #3277.
- (340) Berman, J., Bruneau, M., "Plastic Design and Testing of Light-Gauge Steel Plate Shear Walls", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #3323.
- (341) Pollino, M., Bruneau, M., "Seismic Retrofit of Bridge Steel Truss Pier Anchorage Connections", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #3303.
- (342) Vian, D., Bruneau, M., "Testing of Special LYS Steel Plate Shear Walls", 13th World Conference on Earthquake Engineering, Vancouver, Canada, August 2004 - CD-ROM paper #978.
- (343) Vargas, R., Bruneau, M., "Investigation of the Structural Fuse Concept", Workshop of the Asian-Pacific Network of Center in Earthquake Engineering Research, Honolulu, July 2004 - CD-ROM.
- (344) Bruneau, M., Reinhorn, A., *Invited Speaker*, "Seismic Resilience of Communities - Conceptualization and Operationalization", Workshop on Seismic Design Methodologies for the Next Generation of Codes, Bled, Slovenia, July 2004 (proceedings in press).
- (345) Bruneau, M., Reinhorn, A., Whittaker, A., Constantinou, M., Thevanayagam, S., Sivaselvan, M., Shao, X., Hanley, J., Pitman, M.C., Albrechcinski, T., *Invited paper*, "The new UB-NEES Versatile Earthquake Engineering Facility for Real-Time Dynamic Hybrid Testing (RTDHT)", ASCE 17th Engineering Mechanics Conference, Delaware, June 2004.
- (346) Filiatrault, A., Lee, G., Aref, A., Bruneau, M., Constantinou, M., Reinhorn, A., Whittaker, A., "Recent Progress Towards the Seismic Control of Structural and Non-structural Systems in Hospitals", Proceedings of the US-Japan 36th Technical Meeting of Panel on Wind and Seismic Effects, Washington, D.C., May 2004, pp.101-125.
- (347) Paquette, J., Bruneau, M., *Invited Speaker*, "Testing of Full-Scale Single-Story Unreinforced Masonry Buildings Subjected to Simulated Earthquake Excitations", Proceedings of the US-Portugal Workshop on Seismic Behavior of Masonry Structures, Guimaraes, Portugal, April 2004, pp.41-56.
- (348) Bruneau, M., Reinhorn, A., Whittaker, A., Constantinou, M., Thevanayagam, S., Sivaselvan, M., Shao, X., Hanley, J., Pitman, M.C., Albrechcinski, T., *Invited Speaker*, "The new UB-NEES Versatile Earthquake Engineering Hybrid Testing Facility", Proceedings of the ASCE Seminar on Performance Based Earthquake Engineering - Seismic Retrofit of Structures, Brooklyn, New York, March 2004, pp.81-88
- (349) Bruneau, M., "Seismic Resistance of Unreinforced Masonry Buildings", *Invited Speaker*, Proceedings of the ASCE Seminar on Performance Based Earthquake Engineering - Seismic Retrofit of Structures, Brooklyn, New York, March 2004, pp.126-134.
- (350) Bruneau, M., *Invited Keynote Speaker*, "Overview of the Multidisciplinary Center for Earthquake Engineering Research (MCEER)", Proceedings of the First International Conference on Urban Earthquake Engineering, Tokyo, March 2004 - also presented/published in Proceedings of the

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- (351) Bruneau, M., Lee, K., “Cyclic Testing of Steel Latticed Members”, Proceedings of the 4th National Seismic Conference & Workshop on Bridges and Highways, Memphis, Tennessee, February 2004.
- (352) Pollino, M., Bruneau, M., “Controlled Rocking System for Seismic Retrofit of Steel Truss Bridge Piers”, Proceedings of the 4th National Seismic Conference & Workshop on Bridges and Highways, Memphis, Tennessee, February 2004 - also presented/published to the 2nd US-PRC Workshop, Buffalo, Dec. 2003, on CD-ROM.
- (353) Vian, D., Lin, Y.C., Bruneau, M., Tsai, K.C., “Cyclic Performance of Low Yield Strength Steel Panel Shear Walls”, Proc.of the 16th KKCNN Conference, Korea, Dec. 2003, pp.379-384.
- (354) Bruneau, M., Reinhorn, A., Whittaker, A., Constantinou, M., Thevanayagam, S., Sivaselvan, M., Shao, X., Hanley, J., Pitman, M.C., Albrechcinski, T., *Invited Speaker*, “The New UB-NEES Versatile Earthquake Engineering Hybrid Testing Facility”, Proceedings of Joint NCREE/JRC Workshop on International Collaboration on Earthquake Disaster Mitigation Research, Taipei, Taiwan, Nov. 2003, on CD-ROM.
- (355) Marson, J., Bruneau, M., “Seismic Design of Concrete-Filled Circular Steel Bridge Piers”, Proceedings of International Workshop on Steel and Concrete Composite Construction, Report NCREE-03-026, National Center for Research on Earthquake Engineering, Taipei, Taiwan, Nov. 2003, pp.57-66.
- (356) Bruneau, M., Chang, S., Eguchi, R., Lee, G., O’Rourke, T., Reinhorn, A., Shinozuka, M., Tierney, K., Wallace, W., von Winterfelt, D., “A Framework to Quantitatively Assess and Enhance the Seismic Resilience of Communities”, Proceedings of ATC-29-2 - Seminar on Seismic Design, Performance, and Retrofit of Nonstructural Components in Critical Facilities, Redwood City, California, October 2003, on CD-ROM.
- (357) Pollino, M., Bruneau, M., “Seismic Retrofit of Bridge Steel Truss Pier Anchorage Connections”, Proceedings of the Second New York City Bridge Conference, New York City, October 2003.
- (358) Berman, J., Bruneau, M., “Cyclic Testing of Special Steel Shear Walls and Modular Infill Panels”, Fourth International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2003, Naples, Italy, June 2003.
- (359) Reinhorn, A., Bruneau, M., Chu, S., Shao, X., Pitman, M., “Large Scale Real Time Dynamic Hybrid Testing Technique - Shake Tables Substructure Testing”, Proceedings of ASCE Structures Congress, Seattle, Washington, May 2003, on CD-ROM (Paper 587).
- (360) Bruneau, M., Whittaker, A., Reinhorn, A., Berman, J., Warn, G., Huyck, C., Adams, B., *Invited keynote lecture*, “Engineering and Organizational Issues Related to the World Trade Centre Terrorist Attack”, Proc. of Int. Conf. on Protection of Structures Against Hazards, Singapore, November 2002, pp. 1-10.
- (361) Zahrai, S.M., Bruneau, M., “Effect of Rust on Cyclic Ductility of Steel Members”, Proc. of Int. Conf. on Protection of Structures Against Hazards, Singapore, November 2002, pp. 363-370.
- (362) Bruneau, M., Vian, D., “Experimental Investigation of P- Δ Effects to Collapse During Earthquakes”, 12th European Conference on Earthquake Engineering, London, UK, September 2002, on CD-ROM.
- (363) Bruneau, M., Reinhorn, A.M., Constantinou, M.C., Thevanayagam, S., Whittaker, A.S., Chu, S.Y., Pitman, M.C., Winter, K., “The UB-Node of the NEES Network - A Versatile High-Performance Testing Facility Towards Read-Time Hybrid Testing”, 12th European Conference on Earthquake Engineering, London, UK, September 2002, on CD-ROM (Paper Reference No.823).
- (364) Bruneau, M., Lee, K., Mander, J., “Ultimate Seismic Behavior of Latticed Steel Members in Bridge Piers”, 6th International Conference on Short & Medium Span Bridges, Vancouver, Canada, July 2002, on CD-ROM.
- (365) Bruneau, M., “MCEER Research to Integrate Multidisciplinary Aspects of Resilience”, Proc. of KEERC-MCEER Joint Seminar on Contributions to Earthquake Engineering., Buffalo, NY, July 2002, pp.20-24; - also included (in PowerPoint format) in Proc. of the MCEER Workshop: Lessons from the World Trade Center Terrorist Attack, MCEER Special Report - MCEER-02-SP08, New York City, June 2002, on CD-ROM.

- (366) Lee, K., Bruneau, M., “Seismic Performance of Steel Bridge Latticed Brace Members”, Proc. of KEERC-MCEER Joint Seminar on Contributions to Earthquake Engineering,, Buffalo, NY, July 2002, pp.91-101 - also published in the Proc. of the 3rd International Workshop on Performance-based Seismic Design and Retrofit of Rransportation Facilities, Tokyo, Japan, July 2002, on CD-ROM.
- (367) Berman, J., Bruneau, M., “Experimental Investigation of Light-Gauge Steel Plate Shear Walls”, Proc. of KEERC-MCEER Joint Seminar on Contributions to Earthquake Engineering, Buffalo, NY, July 2002, pp.136-142.
- (368) Paquette, J., Bruneau, M., “Pseudo-dynamic Testing of Unreinforced Masonry Buildings with Flexible Diaphragm”, 7th National Conference on Earthquake Engineering, Boston, July 2002, on CD-ROM.
- (369) Vian, D., Bruneau, M., “Tests to Collapse of Simple Structures - Comparison with Existing Codified Procedures”, 7th National Conference on Earthquake Engineering, Boston, July 2002, on CD-ROM.
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- (371) Sarraf, M., Bruneau, M., “Seismic Performance of a Ductile Retrofitted Deck-Truss Bridge”, 7th National Conference on Earthquake Engineering, Boston, July 2002, on CD-ROM.
- (372) Bruneau, M., Lee, K., Mander, J., “Cyclic Testing of Truss Pier Braced Latticed Members”, Proc. Third National Seismic Conference and Workshop on Bridges and Highways, Portland, Oregon, May 2002, pp.479-484.
- (373) Sarraf, M., Bruneau, M., “Behaviour of Ductile Steel Retrofitted Deck-Truss Bridges”, Proc. Third National Seismic Conference and Workshop on Bridges and Highways, Portland, Oregon, May 2002, pp.581-589.
- (374) Mayes, R., Friedland, I., Anderson, D., Bruneau, M., Fenves, G., Kulicki, J., Mander, J., Marsh, L., Martin, G., Nutt, R., Power, M., Reinhorn, A., “Recommended LRFD Guidelines for the Seismic Design of Highway Bridges”, Proc. Third National Seismic Conference and Workshop on Bridges and Highways, Portland, Oregon, May 2002, pp.425-436.
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- (376) Lee, G., Bruneau, M., Whittaker, A., Reinhorn, A., Berman, J., Warn, G., “Damage to Buildings at Ground Zero Area and Ancillary Benefits of Earthquake-Resistant Design with Regard to Human-Made Disasters”, *Invited Lecture*, Proc. of the Urban Hazards Forum, John Jay College of Criminal Justice, January 2002 (CD-ROM).
- (377) Warn, G., Berman, J., Whittaker, A. Bruneau, M., *Invited paper*, “Forensic Engineering Study of 130 Liberty Plaza”, Proc. of Learning from Urban Disasters; National Science Foundation Response and Opportunities for Future Research Hazards Forum Workshop, New York University, Dec. 2001, Natural Hazards Center report, (in press).
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- (379) Bruneau, M., Lee, K., Mander, J., “Seismic Behavior of Steel Bridge Truss Pier Members”, Proc. 5th NSF Workshop on Bridge Research in Progress, Minneapolis, October 2001, pp.439-444.
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- (383) Chessman, K., Bruneau, M., “Analytical Study of Buildings Constructed with Riveted Semi-Rigid Connections,” Third International Conference on Behavior of Steel Structures in Seismic Areas - STESSA 2000, Montreal, Canada, August 2000, pp.471-478.
- (384) Bruneau, M., *Invited Lecture*, “Performance, évaluation et réhabilitation séismique des ponts d’acier”, 7^e Colloque sur la progression de la recherche québécoise sur les ouvrages d’art, Québec, Canada, May 2000.
- (385) Sarraf, M., Bruneau, M., “Ductile Seismic Retrofits of Steel Deck-Truss Bridges”, ASCE Structural Engineering Congress, Philadelphia, May 2000.
- (386) Bruneau, M., Marson, J., “Cyclic Testing of Concrete-Filled Steel Pipe Column Base Detail”, 6th Association for International Cooperation and Research in Steel-Concrete Composite Structures (ASCCS) International Conference on Steel and Concrete Composite Structures, Los Angeles, March 2000.
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- (388) Sarraf, M., Bruneau, M., “Design and Performance of Deck-trusses Retrofitted using Passive Energy Dissipating Devices”, 12th World Conference on Earthquake Engineering, Auckland, New Zealand, January 2000, on CD-ROM.
- (389) Zahrai, S.M., Bruneau, M., “Seismic Performance of Diaphragms in Slab-on-Girder Steel Bridges”, 12th World Conference on Earthquake Engineering, Auckland, New Zealand, January 2000, on CD-ROM.
- (390) Bruneau, M., Marson, J., “Cyclic Testing of Concrete-Filled Steel Tubes and Foundation Detail”, 15th U.S.-Japan Bridge Engineering Workshop, Tsukuba, Japan, November 1999.
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- (398) Bruneau, M., Bisson, M., “Seismic Retrofit of Concrete-Encased Riveted Stiffened Seat Angle Connections”, 11th European Conference on Earthquake Engineering, Paris, September 1998, on CD-ROM.
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- (400) Zahrai, S.M., Bruneau, M., “Impact of Diaphragms on Seismic Performance of Slab-on-girder Steel Bridges”, 6th U.S. National Conference on Earthquake Engineering, Seattle, June 1998, on CD-ROM.
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- (402) Mitchell, D., Bruneau, M., Buckle, I., Bagnariol, D., Zhu, S., McCammon, N., *Invited keynote lecture*, “Seismic Design Provisions - The Canadian Highway Bridge Design Code”, 5th International Conference on Short and Medium Span Bridges, Calgary, July 1998, on CD-ROM.
- (403) Bruneau, M., Zahrai, S.M., Sarraf, M., “Ductile End-Diaphragms to Seismically Retrofit Short and Medium Span Steel Bridges”, 5th International Conference on Short and Medium Span Bridges, Calgary, July 1998, on CD-ROM, also presented at the 14th U.S.-Japan Bridge Engineering Workshop, Pittsburgh, November 1998.
- (404) Bruneau, M., “Strategies to Monitor and Enhance the Well-Being of the Civil Engineering Profession”, Structural Engineers World Congress, San Francisco, July 1998, on CD-ROM.
- (405) Bruneau, M., Zahrai, S.M., “Special Ductile End-Diaphragms for the Seismic Retrofit (Substructure Protection) of Slab-on-Girder Steel Bridges”, Structural Engineers World Congress, San Francisco, July 1998, on CD-ROM.
- (406) Bruneau, M., “Experimental Facilities of the Ottawa Carleton Earthquake Engineering Research Centre”, 26th Canadian Society for Civil Engineering Annual Conference, Halifax, June 1998.
- (407) Bruneau, M., Zahrai, S.M., “Energy Dissipating Stiff Diaphragms for Steel Bridges in Seismic Regions”, 2nd World Conference on Constructional Steel Design, San Sebastian, Spain, May 1998, on CD-ROM (abstract also published in Journal of Constructional Steel Research, Vol.46, No.1-3, pp.42-43, 1998, with CD-ROM attached) .
- (408) Bruneau, M., *Invited Lecture*, “Seismic Performance of Unreinforced Masonry Buildings”, Eastern North American Section Annual Meeting of the American Concrete Institute, Montreal, December 1997, and Ottawa, April 1998.
- (409) Bruneau, M., *Invited Lecture*, “Earthquake-Resistant Steel Bridges: Canadian Design, Research and Expectations based on Observations from the 1995 Kobe Earthquake”, V Symposium Internacional de Estructuras de Acero, Guadalajara, Mexico, October 1997, pp.16-1 to 16-20.
- (410) Bruneau, M., “Seismic Performance of Masonry Structures and Relevant Seismological Parameters”, 69th Annual Meeting of the Eastern Section of the Seismological Society of America, Ottawa, October 1997.
- (411) Bruneau, M., *Invited Keynote Lecture*, “Seismic Design, Evaluation and Retrofit of bridges in Canada”, 2nd National Seismic Conference on Bridges and Highways, Sacramento, California, July 1997, 15 pages.
- (412) Dicleli, M., Bruneau, M., “Quantitative Approach for Rapid Vulnerability Assessment of Steel Highway Bridges”, 2nd National Seismic Conference on Bridges and Highways, Sacramento, California, July 1997, 12 pages.
- (413) Bruneau, M., Sarraf, M., “Seismic Retrofit Solutions for Deck-Trusses”, 2nd National Seismic Conference on Bridges and Highways, Sacramento, California, July 1997, 12 pages.
- (414) Bruneau, M., Bisson, M., Sarraf, M., “Seismic Retrofit of Riveted Stiffened Seat Angle Connections”, International Conference on Behavior of Steel Structures in Seismic Areas, Kyoto, Japan, August, 1997, pp.917-924.
- (415) Bruneau, M., Zahrai, S.M., “Alternating Plasticity Resistance of Corroded Steel Members”, International Conference on Behavior of Steel Structures in Seismic Areas, Kyoto, Japan, August, 1997, pp.130-137.
- (416) Bruneau, M., Zahrai, S.M., “Ductile End-Diaphragms to Seismically Protect Substructures of Slab-on-Girder Steel Bridges”, Fifth International Colloquium on Stability and Ductility of Steel Structures, Nagoya, Japan, July, 1997, pp.989-994.
- (417) Bruneau, M., Zahrai, S.M., “Some Observations on the Effect of Corrosion on the Ductility of Steel Members and Components”, Structural Stability Research Council Annual Technical Session, Toronto, Canada, June, 1997, pp.239-251.

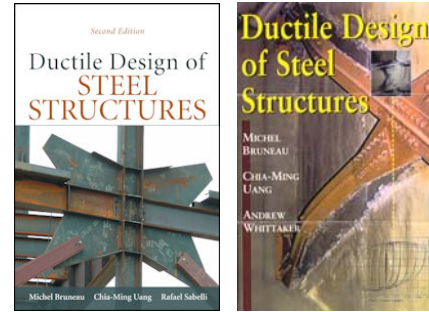
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- (419) Zahrai, S.M., Bruneau, M., “Innovative Ductile Seismic Retrofit of Slab-on-Girder Steel Bridges”, 4th International Conference on Civil Engineering, Tehran, Iran, May 1997, Vol.1, pp.280-289.
- (420) Bruneau, M., Zahrai, S.M., “Effect of Corrosion on the Ductility of Steel Members and Components”, International Conference on Advances in Steel Structures, Hong Kong, Dec. 1996, pp.1121-1126.
- (421) Bruneau, M., “Performance of Steel Bridges during the 1995 Hyogoken-Nanbu (Kobe, Japan) Earthquake - A North American Perspective”, International Conference on Advances in Steel Structures, Hong Kong, December 1996, pp.547-552.
- (422) Sarraf, M.H.K., Bruneau, M., “Modeling and Behavior of Riveted Stiffened Seat Angle Connections”, 11th World Conference on Earthquake Engineering, Acapulco, Mexico, June 1996, on CD-ROM.
- (423) Bruneau, M., Dicleli, M., “Seismic Resistance of a Class of Slab-on-Girder Steel Highway Bridges”, 11th World Conference on Earthquake Engineering, Acapulco, Mexico, June 1996, on CD-ROM.
- (424) Bruneau, M., Zahrai, S.M., “Substructure Protection by Ductile End-Diaphragms in Steel Bridges”, 4th National Workshop on Bridge Research in Progress, Buffalo, N.Y., June 1996, pp.275-280.
- (425) Sarraf, M.H.K., Bruneau, M., “Cyclic Behavior of Existing and Retrofitted Riveted Stiffened Seat Angle Connections”, 7th Canadian Conference on Earthquake Engineering, Montreal, June 1995, pp.887-894.
- (426) Dicleli, M., Bruneau, M., “Non-Linear Seismic Response of Single Span Simply Supported Slab-on-Girder Steel Highway Bridges with Damaged Bearings”, 7th Canadian Conference on Earthquake Engineering, Montreal, June 1995, pp.729-737.
- (427) Bruneau, M., Sarraf, M.H.K., “Seismic Retrofit of Riveted Stiffened Seat Angle Connections”, ASCE 1995 Structures Congress, Boston, April 1995, pp.791-806.
- (428) Bruneau, M., “Damage to Masonry Buildings from the 1995 Hanshin-Awaji (Kobe, Japan) Earthquake”, Seventh Canadian Masonry Symposium, Hamilton, pp.84-98, June 1995.
- (429) Bruneau, M., Wang, N., “Normalization of Energy-Based Methods to Predict Ductile Response of SDOF Structures”, Tenth European Conference on Earthquake Engineering, Vienna, Austria, August 1994, Vol.2, pp.919-926.
- (430) Saatcioglu, M., Bruneau, M., “Performance of Reinforced Concrete Structures During the 1992 Erzincan Earthquake in Turkey”, Tenth European Conference on Earthquake Engineering, Vienna, Austria, August 1994, Vol.1, pp.805-812.
- (431) Bruneau, M., Saatcioglu, M., “Behavior of Unreinforced Masonry Structures during the 1992 Erzincan, Turkey, Earthquake”, Fifth U.S. National Conference on Earthquake Engineering, Chicago, U.S.A., July 1994, Vol.3, pp.409-417.
- (432) Bruneau, M., Dicleli, M., “Cumulative Impact of Heavy Permit-Trucks on Steel Bridges”, ASCE 1994 Structures Congress, Atlanta, April 1994, Vol.1, pp.97-102.
- (433) Bruneau, M., Boussabah, L., “Predicting the Seismic Performance of Unreinforced Masonry Buildings - A Case Study”, 25th Anniversary Conference of the Association for Preservation Technology International, Ottawa, October 1993.
- (434) Bruneau, M., Tinawi, R., “The Eastern Canadian Experience in Seismic Risk Mitigation”, 1993 National Earthquake Conference, Memphis, Tennessee, May 1993, Vol. II, pp.31-40.
- (435) Bruneau, M., *Invited*, “Assessing the Seismic Performance of Existing Masonry Buildings in Canada”, technical session sponsored by the Masonry Subcommittee of ASCE-ACI Committee 442: Response of Concrete Buildings to Lateral Forces, Fall Convention of the American Concrete Institute, Puerto Rico, October 1992 (Part of the ACI Masonry in the Americas Project).
- (436) Bruneau, M., *Invited*, “Earthquake-Resistant Design of Masonry in Canada”, National Earthquake Training Conference and Seismic Products Exhibit, Jackson, Tennessee, November 1992 (Part of the ACI Masonry in the Americas Project).

- (437) Bruneau, M., *Invited*, “Selected Examples of Unreinforced Masonry Building Failures from Past Canadian Earthquakes” as part of Special Theme Session, Tenth World Conference on Earthquake Engineering, Madrid, Spain, July 1992, Post-Conference Volume, pp.6901-6902.
- (438) Boussabah, L. and Bruneau, M., “Review of the Seismic Performance of Unreinforced Masonry Walls”, Tenth World Conference on Earthquake Engineering, Madrid, Spain, July 1992, Vol.8, 4537-4540.
- (439) Bruneau, M., “A proposed Simple Model for the Study of Seismic Inelastic Torsional Coupling”, Tenth World Conference on Earthquake Engineering, Madrid, Spain, July 1992, Vol.7, pp.3875-3880.
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- (441) Bruneau, M., “Myths and Realities of Earthquake Resistant Design in Quebec (In French)”, 1992 CSCE Annual Conference, Quebec City, Quebec, May 1992, Vol. IV, pp.225-234.
- (442) Bruneau, M., Liebich, L.J., “Analysis of Guyed Towers, Current Practice”, IASS-CSCE International Congress 1992 - Innovative Large Span Structures, Toronto, Ontario, July 1992, Vol.3, pp.303-314.
- (443) Bruneau, M., Magued, M.H., Dryburgh, R.B., *Invited* by the IASS Working Group for Masts and Towers to present “A Reliability Based Simple Procedure for the Upgrading of Existing Guyed-Towers Designed to Canadian Standards”, Meeting of the IASS Working Group for Masts and Towers, Stockholm, Sweden, September 1991.
- (444) Bruneau, M., Mahin, S.A., “Seismic Response of Symmetric Structures Having Unbalanced Yield Strengths in Plan”, Sixth Canadian Conference on Earthquake Engineering, Toronto, Canada, June 1991, pp.109-116.
- (445) Bruneau, M., “Canadian Perspective on Some Lessons Learned from the 1989 Loma Prieta (San Francisco) Earthquake”, 1991 CSCE Annual Conference, Vancouver, Canada, May 1991, Vol.3, pp.277-286.
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- (449) Bruneau, M., Mahin, S.A., “A Method to Achieve Parametric Independence on the Seismic Inelastic Response of Torsionally Coupled Systems”, Ninth European Conference on Earthquake Engineering, Moscow, September 1990.
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- (454) Bruneau, M., Uang, C.M., Sabelli, R. (2011). “Ductile Design of Steel Structures - 2nd Edition”, McGraw-Hill, New York, NY, 921p.
- (455) Sabelli, R., Bruneau, M., (2007). “Steel Plate Shear Walls (AISC Design Guide)”, American Institute of Steel Construction, Chicago, Illinois, 144 p.
- (456) Bruneau, M., Uang, C.M., Whittaker, A. (1998). “Ductile Design of Steel Structures”, McGraw-Hill, New York, NY, 480 p.



Book Chapters and Special Publications (9)

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- (457) Bruneau, M., Reinhorn, A., (2018). *Invited*, “Chapter 5: Structural Engineering Dilemmas, Resilient EPCOT, and other Perspectives on the Road to Engineering Resilience,” as part of a Section on “Situating and Motivating Sustainability and Resilience” in the book “Sustainable and Resilient Infrastructure”, Routledge (Taylor Francis), pp.70-93.
- (458) Bruneau, M., MacRae, G., (2017). “Reconstructing Christchurch: A Seismic Shift in Building Structural Systems”, Quake Center, University of Canterbury, New Zealand, 170 p. [and Preface to Chinese Translated Edition (2019), China Architecture and Building Press.]
- (459) Cimellaro, G.P., Renschler, C., Bruneau, M., (2015). “Introduction to Resilience-Based Design (RBD)”, Chapter in “Computational Methods, Seismic Protection, Hybrid Testing and Resilience in Earthquake Engineering A Tribute to the Research Contributions of Prof. Andrei Reinhorn”, G.P. Cimellaro, S. Nagarajaiah, S.K. Kunnath Editors, Springer, pp. 151-183.
- (460) Uang, C.M., Bruneau, M., K.C. Tsai, (2014). “Seismic Design of Steel Bridges”, Chapter in “The CRC Handbook of Bridge Engineering - Seismic Design”, CRC Press, Boca Raton, Florida, pp.301-336.
- (461) Cimellaro, G. P., Reinhorn, A. M., and Bruneau, M. (2014). "Metamodel Assisted Performance-Based Optimization for Hospital Systems - Chapter 9." *New Trends in Seismic Design of Structures*, N.D. Lagaros, Y. Tsompanakis and M. Papadrakakis, (Editors), Saxe-Coburg Publications, Stirlingshire, Scotland, 241-288
- (462) Warn, G., Berman, J., Whittaker, A., and Bruneau, M., (2003). “Investigation of a Damaged High-Rise Building Near Ground Zero”, Chapter in “Beyond September 11th: An Account of Post-disaster Research”, Special Publication #39, Natural Hazards Research and Applications Information Center, University of Colorado, Boulder, CO, pp.199-240.
- (463) Uang, C.M., Bruneau, M., Whittaker, A., Tsai, K.C., (2001). “Seismic Design of Steel Structures”, Chapter in “The Seismic Design Handbook - 2nd edition”, Kluwer Academic Publishers, Boston, pp.411-462.
- (464) Uang, C.M., K.C. Tsai, Bruneau, M., (1999). “Seismic Design of Steel Bridges”, Chapter in “The CRC Handbook of Bridge Engineering”, CRC Press, Boca Raton, Florida, pp.39-1, 39-34
- (465) AIJ (Nakashima, M., Bruneau, M., Editors of English Edition). (1995). “Preliminary Reconnaissance Report of the 1995 Hyogoken-Nanbu Earthquake” by the Architectural Institute of Japan.

Slide-Sets (3)

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- (467) Bruneau, M. (1994). Chapter “Assessing the Seismic Performance of Existing Masonry Buildings in Canada”, in “Masonry in the Americas” ACI Special Publication #147, pp.171-203.
- (468) Lamontagne, M., Bruneau, M. (1993). “Impact of the Eastern Canadian Earthquakes of 1925, 1929, 1935, 1944”, Annotated Slide-Set (27 slides), Earthquake Engineering Research Institute, Oakland, California.

Earthquake (or other Disaster) Reconnaissance Report Chapters (10)

- (469) Bruneau, M., Whittaker, A., Reinhorn, A., (2002). "Engineering and Organizational Issues Related to the World Trade Center Attack, Volume 1, Overview of Damage to Buildings Near Ground Zero", MCEER Special Report - MCEER-02-SP02, April 2002, 46 pages.
- (470) Berman, J., Warn, G., Whittaker, A., and Bruneau, M., (2002). "Engineering and Organizational Issues Related to the World Trade Center Attack, Volume 2, Reconnaissance and Preliminary Assessment of a Damaged Building Near Ground Zero.", MCEER Special Report - MCEER-02-SP03, May 2002, 40 pages.
- (471) Contributor to chapter on Performance of Buildings, Earthquake Spectra Special Issue: Izmit Earthquake Reconnaissance Report, Earthquake Engineering Research Institute Special Publication, Supplement to Volume 17.
- (472) Bruneau, M., Tsai, K.C. (1999). "Damage to Buildings from the September 21 1999 Taiwan Earthquake", Chapter in "Report on the Taiwan Earthquake of September 21, 1999", Multidisciplinary Center for Earthquake Engineering Research, State University of New York, Buffalo, NY, September 2000.
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- (476) Tremblay, R., Bruneau, M., Prion, H.G.L., Filiatrault, M., DeVall, R. (1995). "Preliminary Observations on the Performance of Steel Buildings during the 1995 Hanshin-Awaji (Kobe, Japan) Earthquake", Chapter in same CAEE report as previous reference.
- (477) Bruneau, M. (1994). "Performance of Masonry Structures during the Northridge (L.A.) Earthquake", Chapter in "Preliminary Report on the Northridge, California, Earthquake of January 17, 1994", Canadian Association for Earthquake Engineering, Vancouver, Canada.
- (478) Contributor to chapter on Performance of Buildings, Earthquake Spectra Special Issue: Erzincan Earthquake Reconnaissance Report, Earthquake Engineering Research Institute Special Publication, Supplement to Volume 9, July 1993.

Technical Reports - Public Domain (64)

- (479) Panteli, M., Bruneau, M., (2023). "White Paper on Resiliency", CEATI Project No. T213700-33138 Report, CEATI International, Montreal, Transmission Overhead Line Design and Extreme Event Mitigation (TODEM), Canada, 292p.
- (480) Carrion-Cabrera, H., Bruneau, M., (2022). "Achieving Resilient Multi-Span Bridges by using Buckling-Restrained Braces", Final Report for NCHRP IDEA Project 215, Transportation Research Board, Washington, D.C., 70p., <https://www.trb.org/Main/Blurbs/182968.aspx>
- (481) Kazemian, A., Angelopoulos, K., Sett, K., Wu, T., Bruneau, M., (2021). "Development of Vulnerability Assessment for Line Components and Line Exposures to Extreme Events", CEATI Project No. T193700-33128 Report, CEATI International, Montreal, Transmission Overhead Line Design and Extreme Event Mitigation (TODEM), Canada, 292p.
- (482) Salado Castillo, J.V., Elhami-Khorasani, N., Bruneau, M., (2020). "Seismic Resilience Quantification for a Set of Buildings", Technical Report, Department of Civil, Structural and Environmental Engineering, November 2020, 388 pages, <http://hdl.handle.net/10477/84287>
- (483) Kenarangi, H., Kizilarlan, E., Polat, E., Bruneau, M., (2020). "Cyclic Inelastic Behavior of C-Shaped Composite Plate Shear Walls-Concrete Filled (C-PSW/CF) Walls", Charles Pankow Foundation Report CPF#06-16, McLean, Virginia, 419pp.
- (484) Bruneau, M., Varma, A.H., Kizilarlan, E., Broberg, M., Shafaei, S., Seo, J., (2019). "R-Factors for Coupled Composite Plate Shear Walls / Concrete Filled (CC-PSW/CF)", Charles Pankow

- Foundation Report CPF#05-17, McLean, Virginia, 419pp. Accessed from: <https://www.pankowfoundation.org/05-17-r-factors-for-coupled-composite-plate-shear-wallsconcrete-filled-coupled-cpsw/cf?rq=05-17>
- (485) Bruneau, M., Kenarangi, H., Murphy, T.P., (2018) “Contribution of Steel Casing to Single Shaft Foundation Structural Resistance”, National Cooperative Highway Research Program, NCHRP Research Report 872, Transportation Research Board; National Academies of Sciences, Engineering, and Medicine, Washington, D.C., 178 pages (plus 287 pages of Appendices available online at <https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3406>)
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- (487) Qureshi, R.K., Bruneau, M., (2017) Behavior of Steel Plate Shear Walls subjected to Long Duration Earthquakes”, Technical Report MCEER-17-0002, MCEER, University at Buffalo, Buffalo, NY, 228 pages
- (488) Fu, Y., Wang,., Bruneau, M., (2017) “Diagonal Tension Field Inclination Angle in Steel Plate Shear Wall”, Technical Report MCEER-17-0001, MCEER, University at Buffalo, Buffalo, NY, 156 pages
- (489) Wei, X., Bruneau, M., (2016) “Buckling Restrained Braces Applications for Superstructure and Substructure Protection in Bridges”, Technical Report MCEER-16-0009, MCEER, University at Buffalo, Buffalo, NY, 740 pages
- (490) Shrestha, L., Bruneau, M., (2016). “Seismic Demand in Columns of Steel Frames,” Technical Report MCEER-16-0002, MCEER, University at Buffalo, Buffalo, NY, 773 pages.
- (491) Wei, X., Bruneau, M., (2015). "NCHRP IDEA Program Bidirectional Ductile End Diaphragms for Seismic Performance and Substructure Protection" Final Report for NCHRP IDEA Project 172, Transportation Research Board, Washington, D.C., 40p.
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