

# **BRIAN J. MEACHAM, PhD, PE, FSFPE, CEng, FIFireE**

Meacham Associates  
4 Woodchuck Hill Road  
Shrewsbury, MA 01545, USA  
T: +1 508 685 9311  
E: [brian@meachamassociates.com](mailto:brian@meachamassociates.com)

## **EDUCATION**

Ph.D., Risk and Public Policy, Clark University, Worcester, MA  
M.S., Fire Protection Engineering, Worcester Polytechnic Institute, Worcester, MA  
B.S., Electrical Engineering, Worcester Polytechnic Institute, Worcester, MA

## **PROFESSIONAL REGISTRATION / CERTIFICATION**

Professional Engineer (2007), Massachusetts, License No. 47238 (Fire Protection)  
Chartered Engineer (2002), Engineering Council Division, Institution of Fire Engineers (UK)  
Professional Engineer (1993), Connecticut, License No. 17906

## **PROFESSIONAL EXPERIENCE**

**Meacham Associates**, Shrewsbury, MA (previously of Worcester, MA and Westborough, MA)

*Managing Principal* (1992-present). Founder of this fire protection engineering, risk and public policy, and management consulting firm. Fire protection engineering focus on: risk-informed performance-based approaches to fire safety analysis and design; egress and evacuation assessment and planning. Risk and public policy focus on: risk and building regulatory policy; risk-informed building and fire regulation; building regulatory capacity assessment. Management consulting focus on: assessment, characterization, communication and management of risk; business continuity and organizational resilience planning.

**Worcester Polytechnic Institute (WPI)**, Worcester, MA

*Associate Professor* (with tenure, 2014 – 2017; untenured, 2008 - 2014). Taught and conducted research in areas of performance-based analysis and design for fire; post-earthquake fire performance of buildings; risk and building regulatory policy; fire risk assessment; human behavior and evacuation analysis; detection, alarm and smoke control.

**Arup Americas, Inc. (Arup)**, Cambridge and Westborough, MA

*Principal* (2005-2007). Led the global Risk Consulting Practice, coordinating business, project and technical efforts across the Americas, European and Asia-Pacific regions for this 10,000 person firm, led the Risk & Security Practice and led the Corporate Consulting Business for the Americas region. Served on the Consulting Sector Executive of the Americas Board, which oversaw the \$30M consulting practice in North America, and served on the Global Management Consulting Executive, which oversaw the Management Business sector worldwide. Led and undertook risk consulting and fire consulting projects.

*Associate Principal* (2004). Led the global Risk Consulting Practice for this 10,000 person firm, coordinating business, project and technical efforts across the Americas, European and Asia-Pacific regions, and led the Risk Consulting Practice for the Americas region. Led and undertook risk consulting and fire engineering and consulting projects.

*Principal Consultant* (2000-2003). Developed and led risk consulting business in Americas. Led and undertook risk consulting and fire engineering and consulting projects.

**Clark University**, Worcester, MA, USA

*Research Scientist*, (2007-2013), George Perkins Marsh Institute

*Research Associate Professor and Director*, (2004 – 2007), Center for Risk and Security

**Society of Fire Protection Engineers**, Boston, MA and Bethesda, MD

*Research Director* (1998-2000). Responsibilities included identifying grant opportunities; developing and managing research program; undertaking research on risk-informed performance-based regulations and on performance-based fire safety analysis and design methods; identifying emerging fire protection engineering methodologies and tools; developing and implementing programs to integrate methodologies and tools into engineering practice; liaison with engineering and research organizations; publications and presentations.

*Technical Director* (1995-97). Served as catalyst in identifying, evaluating and implementing into practice emerging fire protection engineering methodologies. Responsibilities included identifying emerging fire protection engineering methodologies and tools; developing and implementing programs to integrate methodologies and tools into engineering practice; coordinating the activities of SFPE engineering committees; providing liaison with engineering and research organizations input to key SFPE publications; oral and written presentations.

**FireTech**, Meilen, Switzerland

*Principal Fire Protection Engineer* (1994-95). Co-founder. Provided a wide range of fire protection consulting services including analyses of existing fire and life safety conditions; performance-based fire hazard analysis and design using the principles of fire dynamics; computer fire simulations; fire related research; fire protection system design, evaluation and diagnostics; and building and fire code consultation. Also undertook business development, project acquisition and management, personnel supervision and business management functions.

**Cerberus AG**, Männedorf, Switzerland

*Principal Fire Protection Engineer* (1993). Fire protection consulting services, including fire and life safety analyses; fire hazard analysis; computer fire simulations; fire protection system design, evaluation and diagnostics; and building and fire code consultation.

**FP&C Consultants, Inc.**, Newton, MA

*Senior Associate, Fire Protection Engineer* (1989-1992). Responsible for a variety of fire protection consulting functions including fire detection and alarm system design; fire suppression system design; detection and alarm system diagnostics; hazard, risk, fire and life safety analyses; building, fire and life safety code consulting; and fire investigation and reconstruction, as well as project acquisition and management.

**Firepro Incorporated**, Wellesley Hills, MA

*Associate, Manager of the Detection and Alarm Group* (1989). Developed consultation business pertaining to fire detection, alarm and emergency voice communication systems.

**The Gamewell Corporation**, Medway, MA and Franklin, MA.

*Manager of the Systems Engineering Group* (1988-89), responsible for Systems Engineering, Applications Engineering and Field Service for all detection and alarm system products.

*Product Marketing Manager* (1987), responsible for microprocessor-based FACP product.

*Systems Engineering Manager* (1986), responsible for multiplex and addressable fire alarm control panel product lines.

*Systems Engineer* (1985), responsible for fire detection and alarm system layout / design using addressable detector and multiplex control panel (microprocessor based) product line.

*Applications Engineer* (1984), responsible for fire detection and alarm system layout / design.

## INTERNATIONAL APPOINTMENTS AND COMMISSIONS

Appointed Member, *International Review Panel, Building Standards (Fire Safety) in Scotland*, October 2017 -

Appointed Member, Project Technical Panel, FPRF Project – *High Rise Buildings with Combustible Exterior Wall Assemblies: Fire Risk Assessment Tool*, FPRF, July 2017 -

Appointed Member, Blue Ribbon Panel for Review of the *ASCE/SEI Manual of Practice: Structural Fire Engineering*, ASCE, July – August 2017

Appointed as Advisor, World Bank project, *Building Regulation for Resilience*, to increase the implementation of building regulatory systems in low income countries, May - November 2016

Appointed as Chair, United States Technical Advisory Group (US TAG) to the *International Organization for Standardization (ISO), Technical Committee (TC) 92, Sub-committee (SC) 4, Fire Safety Engineering*, December 2014 - .

Appointed as Chair, Fire Protection Research Foundation (FPRF), *Research Advisory Committee (RAC)*, August 2016. Member of the RAC, 2014 – present.

Appointed by the Singapore Minister of Economic Development to a team of International Experts charged to assist the Singapore Building and Construction Authority with a review of the building control system with a focus on structural safety, 2007.

Elected Chair, Inter-jurisdictional Regulatory Collaboration Committee (IRCC), a committee of the lead building regulatory agencies of thirteen countries who develop and promulgate performance-based building regulations ([www.ircc.info](http://www.ircc.info)), 2007-2010.

Appointed Chair, Risk and Security Advisory Committee, New York City Department of Buildings, New York, NY, 2003-2007.

Appointed to National Research Council Committee on *Developing a Performance-based Approach for Security-related Design of Federal Facilities*, Board on Infrastructure in the Constructed Environment (BICE), BICE project number BICE-J-00-02-A, 2000-2002.

Commissioned by the Australian Department of Industry, Science and Tourism to participate in an international review of the Australian Building Codes Board (April 1999).

Commissioned by the Australian Fire Code Reform Centre, Ltd. to participate in an international review of the Fire Code Reform Centre's research, product, scope and direction (1996 and 1998).

## HONORS, AWARDS AND CERTIFICATES

*ICC 2017 Global Award* - Given by the ICC Global Membership Council to individuals or organizations with outstanding performance in promoting building safety in the world and supporting ICC carry its global mission. The award is in recognition of the contributions to building safety done through your research and publication of scholarly papers on Performance Codes and in innovative Fire Protection systems, thus furthering the Code Council's global mission and vision.

*The Society of Fire Protection Engineers (SFPE) Harold E. Nelson Service Award* – The SFPE Board of Directors created the Harold E. Nelson Service Award in 1987 to recognize dedicated and inspired service to the ideals and goals of the Society. The award is named after Harold E. "Bud" Nelson, P.E., whose unparalleled fire protection engineering and Society careers are truly worthy of emulation. July 2016.

*Fulbright Global Scholar* – Awarded one of 19 prestigious, inaugural, Fulbright Global Scholar Awards by the Institute of International Education, Council for International Exchange of Scholars (CIES). This program supports scholars to conduct research and/or teach in from one to three countries, over a period of one to three years (see <http://www.cies.org/program/fulbright-global-scholar-award> and <http://www.cies.org/fulbright-global-scholars>), June 2016.

*Fellow – Institution of Fire Engineers (IFE) – Elected “in recognition of your significant and sustained contributions to the field of fire engineering and the fire service,” February 2014.*

*2011 SFPE Education and Scientific Foundation Student Scholar Award given to former student **Kurt Schebel** for his research into flame spread modeling for in rail vehicles as part of the DHS sponsored research, *Rail Vehicle Fire Hazard Guidance*, DHS Award 2009-ST-108-000013.*

*SFPE “Hat’s Off” Award – “For your efforts and service to the Society of Fire Protection Engineers,” October 18, 2009.*

*Certificate of Appreciation – Asociación de Profesionales de Ingeniería de Protección contra Incendios (APICI), for “many years of service and dedication to the support of the Spanish fire safety engineering community,” February 2009.*

*Certificate of Appreciation – Inter-jurisdictional Regulatory Collaboration Committee (IRCC), for “dedication to the global advancement of performance-based building codes,” Nov. 2003.*

*Honorary Member – Salamander Fire Protection Engineering Honorary Society, November 2001.*

*Fellow – Society of Fire Protection Engineers – Elected “in recognition of significant accomplishment and stature in engineering,” May 2000.*

*NCSBCS Best Paper Award – “A Performance-Based Building Regulatory System: Providing a Means to Streamline the Building Regulatory Process, Promote Innovation in the Construction Industry, and Improve International Economic Competitiveness,” *The NCSBCS/NIST/HUD Joint Technical and Research Conference: Innovations in the Construction Industry and Building Regulatory Process*, December 1998.*

## REPRESENTATIVE CONSULTING PROJECTS

### Meacham Associates (2008 – )

*Port Authority of New York and New Jersey, (New York, NY).* Contracted to provide peer-review services for a performance-based design of a high-hazard facility (March 2018 – )

*International Code Council (Washington, DC).* Development of a document on the benefit of building codes for increasing community resiliency (March – September 2018).

*Scottish Government, Building Standards Division (Edinburgh, Scotland).* Contracted to conduct research into the options for a centralized hub for verification of fire engineering designs (February – June 2018).

*CECSI (A Coruna, Spain).* Contracted to assist in the development of the 3<sup>rd</sup> International Conference on Safety in Ports, 8-9 May 2018, A Coruna, Spain (February – May 2018).

*Scottish Government, Building Standards Division (Edinburgh, Scotland).* Contracted to conduct research on the suitability of select standardized fire test methods as cited in the Building Standards and Technical Handbooks (February – April 2018).

*Scottish Government, Building Standards Division (Edinburgh, Scotland).* Contracted to serve as International Expert on Review Panel for Building Regulations (Fire) following the Grenfell Tower fire (January – October 2018).

*APICI (Madrid, Spain).* Assistance with program for 9<sup>th</sup> International Conference on Performance-Based Fire Safety Engineering (August – October 2017).

*Australian Building Codes Board (Canberra, ACT, Australia).* Contracted to develop report on threshold tolerable risk levels for inclusion into the National Construction Code (August 2017).

*Scottish Government, Building Standards Division (Edinburgh, Scotland).* Contracted to make recommendations on a professional qualification system for verifiers (February 2017 – ).

*World Bank (Washington, DC).* Engaged as Senior Consultant to the World Bank, *Building Regulation for Resiliency* project, to develop building regulatory capacity assessment approach for low- and middle-income countries (December 2016 – ).

*SP Fire Research (Trondheim, Norway).* Contracted to review draft Nordic risk-based fire safety engineering standard (August 2016).

*Scottish Government, Building Standards Division (Edinburgh, Scotland).* Contracted to review fire safety provisions in the building regulations and to review and make recommendations on a professional qualification system for fire safety engineers (June – August 2016).

*Australian Building Codes Board (Canberra, ACT, Australia).* Contracted to research and develop discussion paper on establishment of tolerable risk levels (individual and societal) for inclusion into the National Construction Code of Australia (January – March 2016).

*Ministry of Business, Innovation and Employment, Buildings Housing and Information Division (Wellington, NZ).* Contracted to provide research and expert input on the next generation fire engineering compliance document, quantification of risk and performance, and next generation framework for performance-based Building Code of New Zealand (January – May 2016).

*Parsons Brinckerhoff, Inc. (New York / Atlanta).* Contracted to review the CFD modeling methodology report; prepare a review report summarizing findings arising from the review; provide technical support to PB with FHRR profile (January – December 2016).

*Ministry of Business, Innovation and Employment, Buildings Housing and Information Division (Wellington, NZ).* Contracted to provide external review of fire Verification Methods and Acceptable Solutions in the New Zealand Building Code (October 2014 – June 2015).

*APICI (Madrid, Spain)*. Assistance with program for 8<sup>th</sup> International Conference on Performance-Based Fire Safety Engineering (January – February 2015).

*Fire Protection Research Foundation (Quincy, MA)*. Contracted to co-author a chapter as part of the NIST Research Roadmap for SMART Firefighting (July – December 2014).

*Australian Building Codes Board (Canberra, ACT, Australia)*. Contracted to review risk approach in WaterMark plumbing products approval scheme (April – June 2014).

*Ministry of Business, Innovation and Employment, Buildings Housing and Information Division (formerly Department of Building and Housing) (Wellington, NZ)*. Contracted to provide input and review on risk-based building code provisions (April – June 2014).

*Adventis Ingeniria / AFITI / APICI (Madrid, Spain)*. Assistance with program for 7<sup>th</sup> International Conferences on Performance-Based Fire Safety Engineering (2013).

*Ministry of Land, Infrastructure, Transportation and Tourism (Tokyo, Japan)* Expert Panel Member - input on the next generation performance-based building code for Japan (2013).

*Studio di Architettura (Milan, Italy)* and *Novartis (East Hannover, NJ)*. Code consulting and fire engineering alternatives analysis for parking garage. (2012).

*Department of Building and Housing (Wellington, NZ)*. Review of risk-informed performance-based building regulatory approach for earthquake design (August – September 2012).

*Ministry of Land, Infrastructure, Transportation and Tourism (Tokyo, Japan)* Expert Panel Member, providing input on the next generation performance-based code for Japan (2011).

*Adventis Ingeniria / AFITI / APICI (Madrid, Spain)*. Assistance with program for 6<sup>th</sup> International Conferences on Performance-Based Fire Safety Engineering (2011).

*TNO (the Netherlands)*. Expert consultant for development of approach to next-generation building regulations and testing of concepts within a TNO workshop on sustainability (2010).

*International Code Council (Washington, DC)*. Expert consultant on development of *Performance-Based Guidelines for the Design and Construction of UNDG Common Premises Office Buildings* for the United Nations Development Group (2010-2012).

*SNIP Register, Inc. (Chicago, IL)*. Expert Consultant for review of Guidelines for Eurocode Adoption in Kazakhstan (2010).

*Department of Building and Housing (Wellington, NZ)*. Contracted to conduct a strategic assessment of the strengths and weaknesses of the New Zealand building control regulatory system (2009).

*Department of Building and Housing (Wellington, NZ)*. Contracted to draft and edit international summary document on performance-based building regulations (2009).

*Australian Building Codes Board (Canberra, ACT, Australia)*. Contracted to provide a review / comparison of risk/safety levels of buildings constructed to AS3959-1999 and -2009 (2009).

*Adventis Ingeniria / AFITI / APICI (Madrid, Spain)*. Assistance with program for 5<sup>th</sup> International Conferences on Performance-Based Fire Safety Engineering (2009).

*Tyco Fire Suppression and Building Products (Cranston, RI)*. Appointed member of expert panel to provide input on next generation fire suppression systems (2009).

*National Institute of Building Sciences (Washington, DC)*. Peer review of approach to fire ignition frequency following earthquakes (2009).

*Ministry of Land, Infrastructure, Transportation and Tourism (Tokyo, Japan)* Expert Consultant, developer and editor of international summary document on the principles of, and experience with, performance-based building regulations (2008-2009).

*National Research Council, Institute for Research in Construction (Ottawa, Canada).* Expert Consultant, developer and editor of international summary document on the principles of, and experience with, performance-based building regulations (2008-2009).

*Applied Technology Council (Redwood City, CA).* Member of Project Steering Committee on FEMA-funded project to develop performance-based seismic design guidelines (2008 - 2012).

*Department of Building and Housing (Wellington, NZ).* Consultant for review of performance-based Building Regulations of New Zealand, with a particular focus on use of risk as a basis for establishing performance levels and establishment of performance criteria for fire (2008).

*Arup (Westborough, MA).* Expert Consultant for FRA of an electrical power utility (2008).

### **Representative Projects Conducted While Employee of Arup (2000 – 2007)**

*Confidential Client.* Principal-in-Charge for a call-in risk and security consulting / advisory services contract for a major regional government agency in the Northeast USA, whose holdings include airports, rail, ports, bridges, tunnels, stations and buildings. (2007)

*Aedas / Marina Bay Sands (Singapore).* Project Director and Principal Risk Consultant leading a comprehensive threat, vulnerability and risk assessment for the design of the Marina Bay Sands Integrated Resort in Singapore. (2006-2007)

*Confidential Client.* Security, Terrorism, Fire and Life Safety advisor for a design team which is developing the design for a super-tall building. Advise on issues of structural response to extreme events and strategies for fire and life safety in super-tall buildings. (2006-2007)

*Transurban (Australia and USA).* Principal-in-Charge for risk consulting project aimed at identifying and understanding natural hazards, technological hazards, deliberate events, and operational risks associated with operation of a toll highway, for the purpose of estimating PML and MFL, mitigating and controlling risk, and advising on insurance. (2006-2007)

*SonoSite (Bothell, WA).* Project Director for this effort to assess and update the Business Continuity Plan and to develop Emergency Response and Recovery and Crisis Communication and Management plans for this manufacturing facility. (2006)

*Department of Building and Housing (Wellington, NZ).* Expert Consultant on the review of performance-based Building Regulations of New Zealand, with a particular focus on use of risk as a basis for establishing performance levels and establishment of performance criteria. (2006)

*Australian Building Codes Board (Canberra, Australia).* Expert Consultant on the review of Building Code of Australia (BCA) with a focus on use of risk as a basis for establishing performance levels, and establishment of performance criteria for fire and life safety. (2006)

*Public Utilities Commission (San Francisco, CA).* Technical Advisor on project to review, consolidate and expand emergency response and recovery plans for a large water utility. (2006)

*Confidential Client.* Project Director for a comprehensive review of hazards and risks associated with the design of a new corporate headquarters building, and for the development of a report on risk mitigation. (2006)

*Valley Metro RPTA (Phoenix, AZ).* Project Director, Regional Safety and Security Plan for Valley Metro Regional Public Transportation Authority. Development of agency and public involvement plans, review of past threat, risk and vulnerability analyses, review of transit operation, and development of a regional safety and security plan for all operations. (2006)

*VTT (Espoo, Finland).* Serve as Senior Advisor on risk and security issues in buildings. Conducted research on sheltering for CBRN threat scenarios. (2006)

*University of Massachusetts (Amherst, MA).* Project Director for a campus-wide security review, which encompassed the identification and review of current campus security systems, procedures and staffing, and provided options to enhance effectiveness of security systems, procedures and organization. (2006)

*Valley Metro RTPA (Phoenix, AZ).* Project Director for a threat and vulnerability assessment (TVA) of specific Valley Metro facilities in the Phoenix area. (2005)

*Bay Area Rapid Transit, (San Francisco, CA).* Principal Risk Consultant for review of BART Security Criteria for systems and stations. (2005)

*New York City Transit, (New York, NY).* Principal Risk Consultant for a comprehensive Threat and Risk Assessment (TARA) for the South Ferry Terminal redesign project. (2003-2006)

*New York City Transit, (New York, NY).* Principal Risk Consultant for the design of the \$750 Million Fulton Street Transit Center in lower Manhattan. Led Threat and Risk Assessment (TARA) and project risk assessment and management effort, including developing a Risk and Opportunities register for estimating and tracking project financial risks. (2003-2006)

*Port Authority of New York and New Jersey, (New York, NY).* Principal Risk Consultant for a proposed facility in lower Manhattan. Led a Threat and Risk Assessment (TARA) for defined areas. (2002-2004)

*Confidential Client.* Principal Risk and Fire Consultant for an effort which developed a stochastic fire loss prediction model. (2004)

*Tappan Zee Bridge Replacement Options Assessment, NY State Thruway Authority (Albany, NY).* Principal Risk Consultant for this \$15 Million effort aimed at assessing options for maintaining, rehabilitating, modifying and/or replacing the Tappan Zee Bridge. Risk analysis responsibilities include co-development of a FMECA to determine risk-significant factors, and a risk-cost decision model for assisting in decision-making for options considered. (2002-2006)

*American Institute of Steel Construction, Inc. (Chicago, IL).* Project Director for effort to help the AISC develop a long-term strategic plan for the integration of structural and fire protection engineering for the performance-based fire design of steel structures. Responsibilities include overall strategy development, research oversight, and review of reports. (2003-2004)

*Miami International Airport, Rental Car Facility, (Miami, FL).* Principal Risk & Fire Consultant for this \$40 Million project to design and construct a consolidated rental car facility at the Miami International Airport. System safety assessment and performance-based fire and life safety analysis of facility with 120 interior fuel-dispensing stations. (2000-2008)

*Briggs & Morgan (Minneapolis, MN).* Testifying expert in litigation involving a natural gas explosion and subsequent deaths. (2003)

*Buildings Department (Hong Kong, SAR, China).* Principal Risk & Policy Consultant / Principal Fire Engineering Consultant for this \$1.2 Million project to study and recommend a fire engineering approach and PB fire safety objectives for the HK Building Code. (2000-2003)

*NYCT, 2<sup>nd</sup> Avenue Subway (New York, NY).* Principal Risk Consultant for this estimated \$16 Billion project to design and construct 8 miles of new subway, with 16 new stations, under 2<sup>nd</sup> Avenue in New York City. Included supporting the design and project management teams on system safety management planning, hazard, risk and reliability assessments, and project management risk management. (2001-2003)

*Bay Area Rapid Transit, (San Francisco, CA).* Principal Fire Consultant on this research and analysis project to determine egress criteria and methods for use in the performance-based fire and life safety analyses of underground and above ground transit stations. (2001)

*San Mateo Transportation District (San Mateo, CA).* Principal Risk Consultant for assessment of critical exposures to help the District identify appropriate insurance coverage. (2001)



*SLC International Airport, (Salt Lake City, Utah).* Assisted in the development of the performance-based fire safety strategy for planned expansion. (2000)

*JFK International Airport, (New York, NY).* Reviewed PB fire safety analyses. (2000)

*Pennsylvania Station, (New York, NY).* Reviewed performance-based fire safety analysis and design concepts for this historically significant central rail station. (2000)

*Dobson Ice Arena, (Vail, CO).* Reviewed the performance-based analyses of smoke control, egress, passive fire protection, fire detection, and fire suppression systems. (2000)

*Dia Gallery, (New York, NY).* Review performance-based fire safety analysis and design concepts for this culturally significant museum. (1999)

### **Representative Projects with FireTech and Cerberus, Switzerland (1992 – 1995)**

*Sandoz (Switzerland).* Recommended modifications to fire safety standards and procedures for chemical warehouse facilities. The focus was to identify a performance-based approach as an alternative to prescriptive requirements in force at the time. (1994-1995)

*ITT Sheraton (Italy, United States).* Undertook fire and life safety evaluations of several ITT Sheraton hotels in Florence, Rome, and Venice Italy and developed conceptual design requirements and planning budgets. (1994-1995)

*Beznau Nuclear Power Plant (Switzerland).* Undertook fire hazard and qualitative risk analyses of non-nuclear parts of a nuclear power plant and developed a fire safety master plan to address hazards and risks. Analysis included evaluation of basic defense in depth strategies, prevention, detection and suppression, and containment, as well as programmatic issue such as training, maintenance and fire brigade capability. (1993-1994)

*Tungsram / G.E. Lighting (Hungary).* Undertook fire hazard and qualitative risk analyses of five light bulb manufacturing facilities and developed a fire safety master plan to address hazards and risks. Conceptual design strategies were developed. (1993-1994)

### **Representative Projects Conducted as Employee of FP&C Consultants and FirePro (1989-1992)**

*Westover Air National Guard Base (United States).* Provided fire detection analysis and design services for fuel pump house at Air National Guard base. (1992)

*National Research Council Canada (Canada).* Provided analysis and recommendations on fire detection features for use with fine water mist systems for computer rooms. (1992)

*U.S. Department of Veterans Affairs (United States).* Provided analysis and design services for fire detection and alarm system requirements at the Manchester, NH, Bedford, MA, and Providence, RI, DVA medical facilities. FSES for Brockton, MA, DVA facility. (1989-1992)

*U.S. General Services Administration (United States).* Provided fire safety evaluations of federally owned and leased buildings, using the NFPA 101M FSES approach, throughout GSA Region 7. This involved evaluation of buildings in CO, LA, OK, SD, and TX. (1989-1992)

*G.E. Plastics (United States).* Provided fire detection and alarm system consulting services for large plastics manufacturing facility in Indiana. (1989-1991)

*National Archives (Canada).* Provided fire detection and alarm system consulting services for historically and culturally significant property. (1989)

*ITT Sheraton (United States).* Developed, ITT Sheraton Guidelines for Fire Detection, Alarm and Signaling Systems (1989-1990)

---

## MEMBERSHIPS AND OFFICES HELD IN PROFESSIONAL SOCIETIES

### Current Professional Society Membership and Offices

*American Society of Testing and Materials (ASTM)*

- Chair, ASTM E05, Subcommittee E05.44, Fire Safety Engineering

*International Association for Fire Safety Science (IAFSS), Member*

- Management Committee Member (2014 – 2020)
- Honorary Secretary, Member of Executive Committee (2017 – 2020)

*Institution of Fire Engineers (IFireE), Chartered Engineer (CEng), Fellow*

*Society of Fire Protection Engineers (SFPE), Fellow*

- Board of Directors (2009-2015; 2018-2020)
  - Immediate Past-President (2020)
  - President (2019)
  - President-Elect (2018)
  - Vice President (2015)
  - Member, Executive Committee (President's Appointee, 2010-2014)
  - Member, Finance Committee (2010-2011, 2013)
  - Member, Compensation Committee (2010-2014)
  - Board Liaison to European Chapters (2011-2014)
  - Member, Higher Education Task Group (2009-2014)
  - Chair, Search Committee for Executive Director (2009)
  - Member, Search Committee for Executive Director (2013)
  - Chair, Task Group on International Professional Recognition and Training (2012-2014)

### Past Professional Society Membership and Offices

*American Society of Safety Engineers, Professional Member*

*Institute of Electrical and Electronics Engineers, Member*

*Institute of Management Consultants (IMC), Member*

*Society for Risk Analysis (SRA), Member*

## ENGINEERING GUIDANCE, CODES AND STANDARDS DEVELOPMENT COMMITTEES

### Current Committees

*American Society of Civil Engineers (ASCE)*

- ASCE 7, Standards Committee, Sub-Committee 1 – General Requirements, Member

*American Society of Testing and Materials (ASTM)*

- ASTM E0.5, Fire Standards, Member; Chair, Subcommittee E05.44, Fire Safety Engineering

*International Organization for Standardization (ISO)*

- ISO TC 92 SC 4, Fire Safety Engineering, U.S. Technical Advisory Group, Chair

*National Fire Protection Association (NFPA)*

- NFPA Technical Committee on Fire Risk Assessment, Chair

---

## Previous Engineering Guidance, Codes and Standards Development Committees

### *American Institute of Steel Construction (AISC)*

- AISC Fire Safety Engineering Committee, Member
- AISC Specifications Committee – Sub-Committee on Thermal Effects (TC 8), Member

### *American Society for Testing and Materials (ASTM)*

- ASTM E05 Fire Standards, Member
- ASTM E06 Performance of Buildings, Member
- ASTM E54 Homeland Security Applications, Member

### *International Council for Research and Innovation in Buildings (CIB)*

- CIB Working Commission 14 – Fire, Member
- CIB Task Group 37 – Performance-Based Building Regulatory Systems, Member
- CIB Task Group 50 – Tall Buildings, Member
- CIB Task Group 11 – Performance-Based Codes, Member
- CIB W14 – Task Group on Identification of Uncertainties in Fire Safety Engineering, Chair

### *International Code Council (ICC)*

- ICC Industry Advisory Committee, Member
- ICC Performance Code Development Committee, Member
- ICC Code Technology Committee – Member

### *National Fire Protection Association (NFPA)*

- NFPA 101, Correlating Committee Task Group on Performance-Based Design, Member
- NFPA 101A, Task Group on Engineering Evaluation of Building Fire Safety, Member
- NFPA 72 Committee on Protected Premises Signaling Systems, Member
- NFPA 72 Committee on Testing and Maintenance of Signaling Systems, Member
- NFPA 72 Committee on Initiating Devices for Protective Signaling Systems, Member
- NFPA Committee on Atomic Energy, Member
- NFPA Committee on Alternative Protection Options to Halon, Member
- NFPA Task Group on High Voltage DC Converter Station Fire Protection, Member
- NFPA Member Advisory Council, Member

### *Society of Fire Protection Engineers (SFPE)*

- Chair, Committee on Research, Technology and Methods (RTM) (2016-2018)
- SFPE Standards Making Committee on Calculating Fire Exposures to Structures, Member
- SFPE Engineering Task Group on Computer Model Evaluation, Staff Liaison
- SFPE Engineering Task Group on Engineering Practices, Staff Liaison
- SFPE Engineering Task Group on Performance-Based Design, Staff Liaison
- SFPE Engineering Task Group on Building Code Liaison, Staff Liaison
- SFPE Education Committee, Member
- SFPE Research Committee, Member

**EDITORIAL APPOINTMENTS**

Member, *Springer Editorial Advisory Board for Fire Publications*, June 2016 –  
Editor, *Handbook of Environmental Impacts of Fire*, Springer, December 2016 –  
Editor, *Case Studies in Fire Safety*, August 2015 – December 2016.  
Guest Editor, Special Edition: Fire Safety Engineering, *Journal of Building Engineering*, 2015-16  
Editorial Board, *Fire Technology* (G. Rein, Editor), 2014 –  
Editorial Board, *Journal of Fire Protection Engineering* (R. Alpert, Editor), 2008-2013.  
Editorial Board, *Fire Science Reviews* (C. Beyler, Editor), 2011 – 2017  
Editorial Board, *Fire Protection Engineering – European Edition*, Society of Fire Protection Engineers (J. Jonsson, Editor), 2016 –

**GRANT AND JOURNAL REFEREE SERVICES****Referee / Reviewer for Grant Proposals (Numbers for reviews while at WPI)**

*Department of Homeland Security* (DHS), Washington, DC (2 proposals)  
*Ministry of Science + Innovation* (MSI), New Zealand (5 proposals)  
*Maryland Industrial Partnerships*, Maryland, USA (1 proposal)  
*John Jay College of Criminal Justice*, NY, USA (1 proposal)

**Referee / Reviewer for Peer-Review Journal Articles (Numbers for reviews while at WPI)**

*Automation in Construction* (1 paper)  
*Case Studies in Fire Safety* (3 papers plus 15 as Editor)  
*Building and Environment* (1 paper)  
*Building Research & Information* (6 papers)  
*Facilities* (1 paper)  
*Fire and Materials* (7 papers)  
*Fire Safety Journal* (14 papers)  
*Fire Science Reviews* (1 paper)  
*Fire Technology* (10 papers)  
*International Journal of Law and the Built Environment* (1 paper)  
*International Journal of Lifecycle Performance Engineering* (2 papers)  
*Journal of Building Engineering* (2 papers plus 8 as Special Edition Editor)  
*Journal of Critical Incident Analysis* (1 paper)  
*Journal of Engineering* (1 paper)  
*Journal of Fire Protection Engineering* (4 papers)  
*Journal of Infrastructure Systems* (1 paper)  
*Risk Analysis* (1 paper)  
*Smart and Sustainable Built Environment* (2 papers)  
*Sustainable Cities and Society* (1 paper)  
*Sustainability: Science, Practice, & Policy* (1 paper)  
*Transportation Research* (1 paper)

**PUBLICATIONS (275)****Books and Monographs (10)**

1. Fitzgerald, R.W. and Meacham, B.J., *Fire Performance Analysis for Buildings*, John Wiley & Sons, New York, April 2017.
2. Amon, F., Gehandler, J., Stahl, S., Tomida, M. and Meacham, B., *Development of an Environmental and Economic Assessment Tool (Enveco Tool) for Fire Events*, Springer Briefs in Fire, ISBN 978-1-4939-6559-5 (eBook), J. Milke, Series Editor, Springer, 2016.
3. Meacham, B., Poole, B., Echeverria, J. Cheng, R., *Fire Safety Challenges of Green Buildings*, Springer Briefs in Fire, DOI:10.1007/978-1-4614-8142-3, J. Milke, Series Editor, Springer, 2013.
4. Tubbs, J. and Meacham, B.J., *Egress Design Solutions: A Guide to Evacuation and Crowd Management Planning*, John Wiley & Sons, New York, April 2007.
5. Meacham, B.J., Editor, and Johann, M., Associate Editor, *Extreme Event Mitigation in Buildings: Analysis and Design*, National Fire Protection Association, Quincy, MA, April 2006.
6. Meacham, B.J., Editor, *Performance-Based Building Design Concepts*, International Code Council, Falls Church, VA, July 2004.
7. Custer, R.L.P. and Meacham, B.J., *Introduction to Performance-Based Fire Safety*, NFPA, Quincy, MA, June 1997.
8. Meacham, B.J., *The Evolution of Performance-Based Codes and Fire Safety Design Methods*, SFPE, Boston, MA, August 1996.
9. Schifiliti, R.P., Meacham, B.J., Drouin, J., Parsons, D., Moore, W.D. and Wilson, D.K., *Fire Alarm Systems Workbook*, NFPA Fire Alarm Systems Seminar, NFPA, 1993.
10. *ITT Sheraton Guidelines for Fire Detection and Emergency Voice Alarm Communication Systems*, ITT Sheraton Corporation, Boston, MA, USA, 1993.

**Book / Handbook Chapters (16)**

1. Meacham, B.J., "Sustainability and resiliency objectives in performance building regulations," in *Building Governance and Climate Change Regulation and Related Policies*, edited by Richard Lorch, Jacques Laubscher, Edwin Hon-wan Chan, Henk Visscher, Routledge, London, 2018.
2. Meacham, B.J., Johnson, P.J., Charters, D. and Salisbury, M., "Building Fire Risk Analysis," Chapter 75, *SFPE Handbook of Fire Protection Engineering*, 5th Ed., Springer, USA, 2015.
3. Schifiliti, R.P., Custer, R.L.P. and Meacham, B.J., "Design of Detection Systems," *SFPE Handbook of Fire Protection Engineering*, 5th Ed., Springer, USA, 2015.
4. Meacham, B.J., "A Brief Overview of the Building Regulatory System in the United States," Chapter 9, in Stollard, P., Ed., *Fire from First Principles*, 4th Edition, Routledge, London, 2014.
5. Custer, R.L.P., Meacham, B.J., and Schifiliti, R.P., "Design of Detection Systems," Section 4, Chapter 1, *SFPE Handbook of Fire Protection Engineering*, 4th Ed., National Fire Protection Association, Quincy, MA, USA, 2008.
6. Meacham, B.J., Johnson, P.J., Charters, D. and Salisbury, M., "Building Fire Risk Analysis," Section 5, Chapter 12, *SFPE Handbook of Fire Protection Engineering*, 4th Ed., National Fire Protection Association, Quincy, MA, USA, 2008.
7. Meacham, B.J. and Galioto, C., "Protecting Against Extreme Events," Chapter 1.07, *Fire Protection Handbook*, 20th Edition, National Fire Protection Association, Quincy, MA, 2008.

8. Meacham, B.J., “Building Regulations Around the World,” Chapter 5, *Building Department Administration*, 3<sup>rd</sup> Edition, ICC, Falls Church, VA, 2007.
9. Meacham, B.J., “Extreme Event Mitigation through Risk-Informed Performance-Based Analysis and Design,” Chapter 2, in Meacham, B., Ed. and Johann, M., Co-Ed., *Extreme Event Mitigation in Buildings: Analysis and Design*, National Fire Protection Association, Quincy, MA, 2006.
10. Meacham, B.J., “Threat, Risk and Vulnerability Assessment,” in Meacham, B.J., Ed., and Johann, M., Co-Ed., *Extreme Event Mitigation in Buildings: Analysis and Design*, NFPA, Quincy, 2006.
11. Meacham, B.J., “Performance-Based Building Regulations Around the World: History and Overview,” Chapter 1, in Meacham, B.J., Ed., *Performance-Based Building Design Concepts*, International Code Council (ICC), Falls Church, VA, 2004, pp.1-1 – 1-52.
12. Meacham, B.J., “Risk Characterization and Performance Concepts,” Chapter 4, in *Performance-Based Building Design Concepts*, ICC, Falls Church, VA, 2004, pp.4-1 – 4-34.
13. Meacham, B.J., “Setting Risk Management Goals,” Chapter 2, *Fire Protection of Storage Facilities*, NFPA, Quincy, MA, 2004, pp.57-75.
14. Meacham, B.J., “Building Fire Risk Analysis,” *SFPE Handbook of Fire Protection Engineering*, 3<sup>rd</sup> Ed., NFPA, Quincy, MA, USA, 2002, pp.5-153 – 5-175.
15. Schifiliti, R.P., Meacham, B.J. and Custer, R.L.P., “Design of Detection Systems,” Section 4, Chapter 1, *SFPE Handbook of Fire Protection Engineering*, 3<sup>rd</sup> Ed., NFPA, 2002, pp.4-1–4-43.
16. Schifiliti, R.P., Meacham, B.J. and Custer, R.L.P., “Design of Detection Systems,” Section 4, Chapter 1, *SFPE Handbook of Fire Protection Engineering*, 2<sup>nd</sup> Ed., NFPA, 1995, pp.4-1–4-29.

#### **Journal Articles – Peer-Reviewed Full Manuscripts (38)**

1. Hoehler, M., Smith, C., Hutchinson, T., Wang, X., Meacham, B. and Kamath, P. “Experimental Assessment of the Lateral Load Capacity of Steel sheathed Cold-Formed Steel Shear Walls Subjected to Fire,” *Fire Safety Journal*, <http://dx.doi.org/10.1016/j.firesaf.2017.03.021>, available online 15 April 2017.
2. Meacham, B.J. and van Straalen, I., “A Socio-Technical System Framework for Risk-Informed Performance-Based Building Regulation,” *Building Research & Information*, DOI 10.1080/09613218.2017.1299525, published on line 30 March 2017.
3. Almejaj, M., Skorinko, J. and Meacham, B.J., “The Effects of Cultural Differences between the US and Saudi Arabia on Emergency Evacuation – Analysis of Surveys on Fire Alarm Perception and Fire Safety Training,” *Case Studies in Fire Safety*, available on line 15 December 2016, <http://dx.doi.org/10.1016/j.csfs.2016.12.002>.
4. Jutras, I. and Meacham, B.J., “Development of objective-criteria-scenario triplets and design fires for performance-based Fire Safety Design,” *Journal of Building Engineering*, available online 4 September 2016, <http://dx.doi.org/10.1016/j.job.2016.09.002>.
5. Martin, D., Tomida, M. and Meacham, B.J., “Environmental Impact of Fire,” *Fire Science Reviews*, 5:5, DOI 10.1186/s40038-016-0014-1, published on-line 8 September 2016.
6. Meacham, B.J., “Towards a Risk-Informed Performance-Based Approach for Post-Earthquake Fire Protection Design of Buildings,” Proceedings 10<sup>th</sup> Asia-Oceania Symposium Fire Science & Technology, *Fire Science and Technology 2015*, IBSN978-981-10-0375-2, May 2016.
7. Meacham, B.J., “Sustainability and Resiliency Issues and Objectives in Performance Building Regulations,” Special Edition – Building Governance and Climate Change: Regulation and Related Policies, *Building Research and Information*, Volume 44, Issue 5-6, DOI:10.1080/09613218.2016.1142330, published on-line 9 March 2016.

8. Gorbett, G.E., Meacham, B.J., Wood, C.B. and Dembsey, N.A., "Structure and Evaluation of the Process for Origin Determination (POD) in Compartment Fires," *Fire Technology*, DOI: 10.1007/s10694-015-0553-3, published on-line 23 December 2015.
9. Meacham, B.J., "Post-Earthquake Fire Performance of Buildings: Summary of a Large-Scale Experiment and Conceptual Framework for Integrated Performance-Based Seismic and Fire Design," *Fire Technology*, Volume 52, Issue 4, pp 1133–1157, DOI: 10.1007/s10694-015-0523-9, 30 July 2015.
10. Gorbett, G., Meacham, B.J., Wood, C. and Dembsey, N.A., "Use of Damage in Fire Investigation: A Review of Fire Patterns Analysis, Research, and Future Direction," *Fire Science Reviews*, Vol. 4, No. 4, DOI:10.1186/s40038-015-0008-4, published on-line 28 May 2015.
11. Gorbett, G., Adkins, S., Meacham, B., Wood, C., "A New Method for the Characterization of the Degree of Fire Damage to Gypsum Wallboard for Use in Fire Investigations," *Journal of Forensic Sciences*, DOI: 10.1111/1556-4029.12616, published on-line 20 November 2014.
12. Park, H., Meacham, B.J., Dembsey, N.A. and Goulthorpe, M., "Improved incorporation of fire safety performance into building design process," *Building Research and Information*, DOI:10.1080/09613218.2014.913452, published on-line 16 May 2014, print January 2015.
13. Berardi, U., Meacham, B.J. and Dembsey, N.A., "Fire performance assessment of a fiber reinforced polymer wall panel used in a single family dwelling," *Fire Technology*, DOI 10.1007/s10694-014-0403-8, published on-line 18 April 2014, print January 2015.
14. Almejmaj, M. and Meacham, B.J., "The Effects of Cultural Differences between the West and Saudi Arabia on Emergency Evacuation – Overview of Problem and Analysis of Clothing on Walking Speed," *Fire & Materials*, Volume 39, Issue 4, pp353–370, DOI: 10.1002/fam.2227.
15. Park, H., Meacham, B.J., Dembsey, N.A., and Goulthorpe, M., "Conceptual Models for Holistic Building Fire Safety Performance Analysis," *Fire Technology*, DOI:10.1007/s10694-013-0374-1, Volume 51, Issue 1, pp 173–193, 2015.
16. Alvarez, A., Meacham, B.J., Dembsey, N.A. and Thomas, J.R., "A Framework For Risk-Informed Performance-Based Fire Protection Design For The Built Environment," *Fire Technology*, DOI 10.1007/s10694-013-0366-1, Vol. 50, pp161-181, 2014.
17. Park, H., Meacham, B.J., Dembsey, N.A., and Goulthorpe, M. "Enhancing Communication with Architects: A Key Player in Building Fire Safety," *Fire Technology*, DOI: 10.1007/s10694-013-0365-2, Vol. 50, No. 2, pp183-203, 2014.
18. Meacham, B.J., "Fire Safety Engineering at a Crossroad," *Case Studies in Fire Safety*, <http://dx.doi.org/10.1016/j.csfs.2013.11.001>, published on-line 19 November 2013.
19. Alvarez, A., Meacham, B.J., Dembsey, N.A. and Thomas, J.R., "20 Years of Performance-Based Fire Protection Design: Challenges Faced and a Look Ahead," *Journal of Fire Protection Engineering*, DOI: 10.1177/1042391513484911, Vol. 23, No. 4, 2013.
20. Schebel, K., Meacham, B.J., Dembsey, N.A., Johann, M., Alston, J. and Tubbs, J., "Fire Growth Simulation in Passenger Rail Vehicles Using a Simplified Flame Spread Model Coupled with a CFD Fire Model," *Journal of Fire Protection Engineering*, Vol. 22, Issue 3, pp. 197 – 225, 2012.
21. Meacham, B.J., Dembsey, N., Johann, M., Schebel, K., Tubbs, J., "Use of Small-Scale Test Data to Enhance Fire-Related Threat, Vulnerability, Consequence and Risk Assessment for Passenger Rail Vehicles," *Journal of Homeland Security and Emergency Management*, Vol. 9, Iss. 1, 2012.
22. Meacham, B.J., Dembsey, N.A., Tubbs, J., Johann, M. and Schebel, K., "A Simplified Approach for Assessing Initial Fire Development and Spread in Passenger Rail Vehicles," *Transportation Research Record*, DOI 10.3141/2261-07, Transportation Research Board, Vol. 2261, 2011.

23. Meacham, B.J., "Accommodating Innovation in Building Regulation: Lessons and Challenges," *Building Research & Information*, Vol.38, No. 6, 2010.
24. Meacham, B.J. "A Risk-Informed Performance-Based Approach to Building Regulation," *Journal of Risk Research*, Vol.13, Issue 7, 2010.
25. Ratick, S., Meacham, B.J., and Aoyama, Y., "Locating Backup Facilities to Enhance Supply Chain Disaster Resilience," *Growth and Change*, Volume 39, Issue 4, December 2008.
26. Johann, M.A., Albano, L.D., Fitzgerald, R.W., Meacham, B.J., "Performance-Based Structural Fire Safety," *Journal of Performance of Constructed Facilities*, Vol. 20, No. 1, 45-53, 2006.
27. Meacham, B.J., Moore, A., Bowen, R. and Traw, J., "Performance-Based Building Regulation: Current Situation and Future Needs," *Building Research & Information*, Vol.33, No.1, 91-106, 2005.
28. Meacham, B.J., "Understanding Risk: Quantification, Perception and Characterization," *Journal of Fire Protection Engineering*, Vol. 14, No. 3, pp.199-228, 2004.
29. Meacham, B.J., "Performance-Based Building Regulatory Systems: Structure, Hierarchy and Linkages," *Journal of Structural Engineering Society of New Zealand*, Vol.17, No.1, 37-51, 2004.
30. Meacham, B.J., "Decision-Making for Fire Risk Problems: A Review of Challenges and Tools," *Journal of Fire Protection Engineering*, Vol. 14, No 2, 149-168, 2004.
31. Wolski, A., Dembsey, N. and Meacham, B.J., "Accommodating Perceptions of Risk in Performance-Based Building Fire Safety Code Development," *Fire Safety Journal*, Vol. 34, No. 3, 297-310, 2000.
32. Meacham, B.J., "Integrating Human Factors Issues into Engineered Fire Safety Design," *Fire and Materials*, Vol. 23, Issue 6, 273-280, Wiley, 1999.
33. Meacham, B.J., "Integrating Human Behavior and Response Issues into Fire Safety Management of Facilities," *Facilities*, Vol. 17, Number 9/10, ISSN 0263-2772, 303-312, MCB Press, 1999.
34. Meacham, B.J. and Custer, R.L.P., "Performance-Based Fire Safety Engineering: An Introduction of Basic Concepts," *Journal of Fire Protection Engineering*, Vol. 7, No. 2, 35-54, 1995.
35. Meacham, B.J., "The Use of Artificial Intelligence Techniques for Signal Discrimination in Fire Detection Systems," *Journal of Fire Protection Engineering*, Vol. 6, No. 3, 125-136, 1994.
36. Meacham, B.J., "International Developments in Fire Sensor Technology," *Journal of Fire Protection Engineering*, Vol. 6, No. 2, 89-98, 1994.
37. Meacham, Brian J., "Factors Affecting the Early Detection of Fire in Electronic Equipment and Cable Installations," *Fire Technology*, Vol. 29, No. 1, 34-59, February 1993.
38. Meacham, B.J. and Motevalli, V., "Characterization of Smoke from Smoldering Combustion for the Evaluation of Light Scattering Type Smoke Detector Response," *JFPE*, Vol. 4, No. 1, 17-28, 1992.

#### **Conference Proceedings – Peer-Reviewed Full Manuscripts (31)**

1. Hutchinson, T.C., Wang, X., Hegemier, G., Meacham, B., and Kamath, P. (2018). "Earthquake and post-earthquake fire performance of a mid-rise cold-formed steel framed building: characterizing component-level physical damage," *11<sup>th</sup> National Conference on Earthquake Engineering – Integrating Science, Engineering & Policy*, Los Angeles, CA, 26-29 June 2018.
2. Kamath, P., Meacham, B.J., Matsuyama, K., "Fire Performance of a Full-Scale Loaded Cold-Formed Steel Framed Assembly in a Large Scale Furnace Test," *Fire Safety 2017, International Conference, Research and Advanced Technology in Fire Safety*, Santander, Spain, 20 Oct. 2017.



3. Kamath, P., Meacham, B.J., Hutchinson, T. and Wang, X. (2017). "Full-Scale Fire Tests on a Cold-Formed Steel Frame in Fire Following Earthquake," *IFireSS – International Fire Safety Symposium*, Naples, Italy, 7-9 June 2017.
4. Martin, D., You, Y-G., Meacham, B.J., Dembsey, N., Gollner, M., "Fire Performance of Select 'Green' Building Features and Technologies," *Proceedings, IFireSS 2015*, University of Coimbra, Portugal, 20-22 April 2015.
5. Jutras, I., Meacham, B.J. and Tubbs, B., "A Framework for Systematic Development of Fire Scenarios and Quantified Design Basis Fires," *Proceedings, IFireSS 2015*, University of Coimbra, Portugal, 20-22 April 2015.
6. Sánchez-Ostiz, A., Meacham, B.J., Domingo-Irigoyen, S. and Echeverria, J.B., "Application of Ecodesign Concepts to Building Energy Retrofits to Reduce Environmental Impacts," *Proceedings of the 40<sup>th</sup> IAHS World Congress on Housing: Sustainable Housing Construction*, 16-19 December 2014, Funchal, Portugal.
7. Meacham, B.J., "Responding to Climate Change Impacts on the Built Environment: New Objectives for Performance-Based Building Regulation," Paper 213, *Proceedings of WSB14 - World Sustainable Building Conference*, Barcelona, Spain, 28-30 October 2014.
8. Sanchez-Ostiz, A., Meacham, B.J., Echeverria, J. B and Pietroforte, R., "Towards a Risk-Informed Decision Approach for Optimizing Retrofit of Existing Buildings for Energy Performance," Paper 259, *Proceedings of WSB14 - World Sustainable Building Conference*, Barcelona, Spain, 28-30 October 2014.
9. Park, H., Meacham, B.J. and Kim, J.K., "Fire Performance of Full-Scale Building Subjected to Earthquake Ground Motion: Fire Test Program and Outcomes," *Proceedings, 11<sup>th</sup> International Symposium on Fire Safety Science*, International Association for Fire Safety Science, University of Canterbury, Christchurch, New Zealand, February 2014.
10. Kim, J.K., Meacham, B.J., Park, H., Hutchinson, T. and Pantoli, E., "Fire Performance of Full-Scale Building Subjected to Earthquake Ground Motion: Test Specimen, Ground Motions and Seismic Performance of Fire Protection Systems," *Proceedings, 11<sup>th</sup> International Symposium on Fire Safety Science*, International Association for Fire Safety Science, February 2014.
11. Fitzgerald, R.W. and Meacham, B.J., "Risk Management Based on Fire Performance Analysis," *Proceedings: 2<sup>nd</sup> CILASCI Conference*, University of Coimbra, Portugal, June 2013.
12. Fitzgerald, R.W., Meacham, B.J., Till, R. C. and Toomey, S.P. "Fire Extinguishment Analysis for Unsprinklered Buildings," *Proceedings: 2<sup>nd</sup> CILASCI Conference*, University of Coimbra, Portugal, June 2013.
13. Tubbs, J., Alston, J., Johann, M., Meacham, B.J., Dembsey, N.A. and Schebel, K., "A New Approach to Determining Passenger Rail Vehicle Design Fires," *ASHRAE Transactions, Volume 118*, January 2012.
14. Meacham, B.J., "Summary of the IRCC Workshop on International Perspectives on the Role of Building Regulation in Responding to the Challenges of Climate Change," *Proceedings of SB11 Helsinki World Sustainable Building Conference*, Helsinki, Finland, 18-21 October 2011.
15. Magnone, Z.L., Accosta Jr., R.F., Dembsey, N. and Meacham, B.J. "The Effects of Sprinkler Sprays on the Transport of Toxic Products, Comparison of Experimental and Numerical Results," *Proceedings, 10<sup>th</sup> IAFSS Symposium*, International Association for Fire Safety Science, Jul 2011.
16. Meacham, B.J., "Fire Safety Engineering: Current State and Possible Futures," Invited Keynote Paper, *Proceedings, International Conference on Fire Safety Engineering, FSE11, Raising the Bar*," Society of Fire Safety, Sydney, Australia, March 2011.

17. Meacham, B.J., Dembsey, N.A., Tubbs, J., Johann, M. and Schebel, K., "A Simplified Approach for Assessing Initial Fire Development and Spread in Passenger Rail Vehicles," *Compendium of Papers, Transportation Research Board Annual Meeting*, Paper 11-1513, January 2011.
18. Tubbs, J., Meacham, B.J., and Kimball, A., "Evacuation Design Strategies and Considerations for Tall Buildings: Suggested Best Practices," *ASHRAE Transactions, Volume 115*, January 2009.
19. Meacham, B.J., Sarkis, J. and Dembsey, "Adaptive Management in Fire Regulation and Emergency Response," *Proceedings of the 2008 International Fire Safety Science Symposium*, International Association for Fire Safety Science, September 2008, pp.317-328.
20. Siu, N., Mosleh, A. and Meacham, B.J., "September 11, Columbia, Davis-Besse and PRA: Business as Usual?" *Proceedings of PSAM 7, International Conference on Probabilistic Safety Assessment and Management*, June 2004.
21. Meacham, B.J., "A Risk-Informed Performance-Based Approach to Tall Building Design," *Proceedings of the CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, CIB/CTBUH, Oct. 2003, pp.279-286.
22. Meacham, B.J., Tubbs, B., Bergeron, D., and Szigeti, F., "Performance System Model – A Framework for Describing the Totality of Building Performance," *Proceedings, CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, CIB and CTBUH, October 2003, pp.361-372.
23. Beller, D., Foliente, G. and Meacham, B.J., "Qualitative Versus Quantitative Aspects of Performance-Based Regulation" *Proceedings, CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, CIB and CTBUH, October 2003, pp.383-394.
24. Meacham, B.J., "Identifying and Regulating for Multiple Levels of Performance," *Proceedings of the International Council for Building Research and Innovation, World Congress - Wellington, NZ*, CIB, the Netherlands, April 2001 (published on CD).
25. Meacham, B.J., "Characterizing Risk for Performance-Based Building Regulations," *Proceedings of the International Conference on Safety and Risk in Engineering*, International Association for Bridge and Structural Engineering, Zurich, Switzerland, March 2001, pp.525-530.
26. Meacham, B.J., "Use of a Decision-Support Tool for Addressing Risk Concepts in Performance-Based Building Fire Safety Regulation Development," *Proceedings of PSAM5, Conference on Probabilistic Safety Assessment and Management*, Osaka, Japan, UAP, Nov 2001, pp.1757-1764.
27. Meacham, B.J., "Risk-Based and Risk-Informed Systems Approaches to Fire Safety Engineering: Historical Review and Current Trends," *Proceedings of PSAM5, Conference on Probabilistic Safety Assessment and Management*, Osaka, Japan, UAP, Nov 2001, pp.1737-1742.
28. Meacham, B.J., "Incorporating Risk Concepts into Performance-Based Building and Fire Regulation Development," in Boccio, J.L., Ed., *Safety Engineering and Risk Analysis*, SERA Volume 9, ISBN 0-7918-1657-5, ASME, New York, Nov 2000, pp.63-70.
29. Meacham, B.J., "International Experience in the Development and Use of Performance-Based Fire Safety Design Methods: Evolution, Current Situation, and Thoughts for the Future," Invited Paper, *Proceedings, 6<sup>th</sup> IAFSS International Symposium*, IAFSS, Poitiers, July 1999, pp.59-76.
30. Sheppard, D. and Meacham, B.J., "Acquisition, Analysis, and Reporting of Fire Plume Data for Fire Safety Engineering," *6<sup>th</sup> IAFSS International Symposium*, IAFSS, ISBN 0-925-223-25-5, July 1999, pp.195-206.
31. Meacham, B.J., "Concepts of a Performance-Based Regulatory System for the United States," *Proceedings of the IAFSS 5th Symposium*, Melbourne, Australia, March 1997, pp.701-712.

**Conference Proceedings – Peer-Reviewed Abstracts (103)**

1. Meacham, B.J., “Situation with Performance-Based Codes and Fire Safety Design in Seven Countries.” Invited Keynote Paper, *12<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Gaithersburg, MD, April 2018.
2. Meacham, B.J. and van Straalen, I.J.J.. “A Roadmap for Quantification of Risk as a Basis for Performance Objectives in Building Regulation,” *SFPE 12<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Gaithersburg, MD, April 2018.
3. van Straalen, I.J.J. and Meacham, B.J. “A Quantified Risk-Based Framework for Life Safety,” *SFPE 12<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Gaithersburg, MD, April 2018.
4. Meacham, B.J., “Framework for Facilitating Next Generation Performance-Based Building Regulations” *Fire Safety Asia Conference 2017*, Singapore, 15-17 Nov. 2017.
5. Hutchinson, T.C., Wang, X., Hegemier, G., Meacham, B., Kamath, P., Sesma, F., and Holcomb, K., “Earthquake and post-earthquake fire performance of a mid-rise cold-formed steel framed building,” *SEAOC 2017 Convention*, San Diego, CA, 13-15 September 2017.
6. Meacham, B.J., “Risk-Informed Performance-Based Design: Concepts and Applications to High-Challenge Facilities,” *2<sup>nd</sup> International Congress of Industrial Safety in Ports*, A Coruña, Spain, 13-14 October 2016.
7. Meacham, B.J., “Toward Next Generation Performance-Based Building Regulatory Systems,” *SFPE 11<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Warsaw, Poland, 23-25 May 2016, SFPE, Bethesda, MD, May 2016.
8. Almejmaj, M., Skorinko, J. and Meacham, B.J., “The Effects of Cultural Differences between Teachers and Pupils in the USA and Saudi Arabia on Emergency Evacuation – Analysis of Fire Alarm Recognition and Training,” *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, Sep. 2015.
9. Martin, D., Long, M.A. and Meacham, B.J., “Impact of Smoke Compartment Size on Horizontal Evacuation Time in Healthcare Facilities,” *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications, London, Sep. 2015.
10. Levy, C., Pierce, J., Porter, A., Da Vitorio, A. and Meacham, B.J., “Experimental Observations of People Movement on Stairs,” *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, Sep. 2015.
11. Almejmaj, M., Meacham, B.J., Dembsey, N.A., Radzicki, M. and Skorinko, J., “Standardizing “Agent” Characteristics in Pedestrian Agent Based Modeling,” *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications, London, Sep. 2015.
12. Jutras, I., Meacham, B.J., Tubbs, B. and Hurley, M., “Proposed Design Fires and Scenarios for Regulation and Design,” *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, Nov. 2014.
13. Alvarez-Rodriguez, A., Meacham, B.J. and Almejmaj, M., “A Parametric Multi-Tool Study to Assess Smoke Management System Performance for an Atrium,” *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Nov. 2014.
14. Park, H., Meacham, B.J., Dembsey, N.A. and Goulthorpe, M., “Development of Conceptual Building Fire Safety Performance Analysis Tool Incorporating Building Design Features,” *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, Nov. 2014.

15. Martin, D., You, Y-G., Yin, M., Meacham, B., Dembsey, N., Gollner, M., Marshall, A., Ahrens, M., Grant, C., Rodrigue, T., "Quantification of Green Building Features on Firefighter Safety: Problem Definition, Data Collection, Preliminary Analysis and Experimental Plan," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Nov. 2014.
16. Almejmaj, M., Meacham, B.J. and Skorinko, J., "The Effects of Culture-Specific Walking Speed Data on Egress Modeling in Shopping Malls- A Comparative Analysis," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Nov. 2014.
17. Albrecht, C. and Meacham, B.J., "Risk-Informed and Performance-Based Life Safety Design for Atria Buildings," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, Nov. 2014.
18. Meacham, B.J., "Risk-Informed Performance-Based Design: Concepts and Applications to High-Challenge Facilities," *2014 SFPE Saudi Arabian Chapter Annual Conference*, Khobar, Saudi Arabia, 15-18 Sep. 2014 (in English and Arabic).
19. Meacham, B.J., "New SFPE Guidance on Fire Safety in Very Tall Buildings," *2<sup>nd</sup> International Tall Buildings Fire Safety Conference*, CMS Press, University of Greenwich, Greenwich, England, June 2014.
20. Alvarez, A., Ferreira, M.A. and Meacham, B.J., "The VULCAN INITIATIVE: a web platform for the next generation of performance-based fire protection design," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013.
21. Kim, J.K., Meacham, B.J. and Park, H., "Fire Performance of Earthquake-Damaged Buildings: Overview and Preliminary Analysis of Full-Building Earthquake and Fire Tests," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013.
22. Meacham, B.J., "Fire Safety Challenges of Green Buildings," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013.
23. Meacham, B.J., Kim, J.K. and Park, H., "Shake Table Testing of a Full-Scale Five-Story Building: Post-Earthquake Fire Performance," *2013 Structures Congress*, ASCE, Reston, VA.
24. Hutchinson, T., Restrepo J., Conte J. and Meacham, B.J., "Overview of the Building Nonstructural Components and Systems Project," *2013 ASCE Structures Congress*, ASCE.
25. Pantoli, E., Chen, M., Wang, X., Hutchinson, T., Meacham, B. and Park, H., "Shake Table Testing of a Full-Scale Five-Story Building: Seismic Performance of the Major Nonstructural Components: Egress Systems, Facades," *2013 ASCE Structures Congress*, ASCE, Reston VA.
26. Engelhardt, M.D., Meacham, B.J., Kodur, V., Kirk, A., Park, H., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K. (2013). "Observations from the Fire and Collapse of the Faculty of Architecture Building, Delft University of Technology," *Proceedings, 2013 ASCE Structures Congress*, ASCE, Reston, VA.
27. Almejmaj, M. and Meacham, B.J., "The Effects of Cultural and Social Differences between the West and Saudi Arabia on Emergency Evacuation," *5<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, September 2012.
28. Almejmaj, M. and Meacham, B.J., "Observations from Student Exercises and Proposed Experimental Scenarios for Human Behavior Data Collection," *Pedestrian and Evacuation Dynamics 2012*, ETH, Zurich, Switzerland, June 2012.
29. Alvarez, A. and Meacham, B.J., "'Test bed' Environment Process for Assessing the Appropriateness of Engineering Tools to be Used in Performance-Based Design Applications," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, June 2012.

30. Park, H., Meacham, B.J., and Dembsey, N., "Increasing Fire Safety by Bridging the Gap between Architects and Fire Safety Engineers," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes & Fire Safety Design Methods*, SFPE, June 2012.
31. Meacham, B.J. and Echeverria, J., "Development of a Performance-Based Approach to Addressing Fire Safety in Existing Buildings," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*, Hong Kong, June 2012.
32. Chen, M., Pantoli, E., Wang, X., Espino, E., Mintz, S., Conte, J., Hutchinson, T., Marin, C., Meacham, B., Restrepo, J., Walsh, K., Englekirk, R., Faghihi, M., Hoehler, M., "Design and Construction of a Full-scale 5-story Base Isolated Building outfitted with Nonstructural Components for Earthquake Testing at the UCSD-NEES Facility," *2012 ASCE Structures Congress*, ASCE, March 2012.
33. Alston, J., Schebel, K., Meacham, B., and Coles, A., "Assessing Fire Development Risk in Rail Vehicles and the Impacts on Tunnel Infrastructure," in Lonnermark, A. & Ingason, H., eds. *5<sup>th</sup> International Symposium on Safety and Security in Tunnels*, SP, Stockholm, Sweden, Jan. 2012.
34. Meacham, B.J., "Delivering Better Fire Safety Performance – How New Zealand is Championing Change Worldwide," Invited Keynote Paper, *Fire NZ2011*, Auckland, New Zealand, 15 September 2011 (copy of presentation published in proceedings).
35. Alvarez, A. and Meacham, B.J., "'Ready-to-Use' Building Layouts and Combustible Packages for 3-D Fire Simulations," *Fire and Evacuation Modeling Technical Conference*, Baltimore, MD, 16 August 2011.
36. Meacham, B.J., Park, H., Engelhardt, M., Kodur, V., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K., "Fire and Collapse, Faculty of Architecture Building, Delft University of Technology: Implications for Performance-Based Design," *6<sup>th</sup> Biennial Conference on Fire Protection Engineering*, Mapfre Foundation, Madrid, Spain, 23 February 2011.
37. Meacham, B.J., "Fire Safety Engineering: Current State and Possible Futures," Invited Paper, *6<sup>th</sup> Biennial Conference on Fire Protection Engineering*, Mapfre Foundation, Madrid, Spain, 23 February 2011.
38. Meacham, B.J., "Benefits of a Performance-Based Approach to Building Regulations," *International Conference on Building Quality and Safety: Modern Regulatory Principles and Introduction of Innovation*, Almaty, Kazakhstan, October 2010.
39. Gorbett, G.E., Meacham, B.J. and Wood, C.B., "Development and Assessment of a Decision Support Framework for Enhancing the Forensic Analysis and Interpretation of Fire Patterns," *2010 International Symposium on Fire Investigation and Technology*, Sep. 2010.
40. Meacham, B.J., "Performance-Based Design and Regulation: Challenges Faced, Lessons Learned, and a Look to the Future," *Interflam 2010*, Interscience Communication, Ltd., London, July 2010.
41. Alvarez, A. and Meacham, B.J., "Towards an Integrated Performance-Based Design Approach for Life Safety across Different Building Use Groups," *Interflam 2010*, Interscience Communication, Ltd., London, July 2010.
42. Accosta, R., Xiao, B., Crocker, J., Magnone, Z., Dembsey, N, and Meacham, B.J., "The Effects of Sprinkler Sprays on the Transport of Toxic Products: Comparison of Experimental and Computer Model Results," *Interflam 2010*, Interscience Communication, London, July 2010.
43. Meacham, B.J., Park, H., Engelhardt, M., Kodur, V., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K., "Fire and Collapse, Faculty of Architecture Building, Delft University of Technology: Implications for Performance-Based Design," *8<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, June 2010.

44. Meacham, B.J., "Facilitating Innovation without Compromising Performance: Challenges Faced, Lessons Learned, and a Look to the Future," *2009 Building Australia's Future Conference and Workshops*, ABCB, Canberra, ACT, Australia, November 2009.
45. Meacham, B.J., "Application of Adaptive Management to Building Evacuation and Emergency Response," *4<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications, Ltd., London, 459-470, July 2009.
46. Tubbs, J. and Meacham, B.J., "Selecting Appropriate Evacuation Strategies for Super Tall Buildings: Current Challenges and Needs," *4<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications, Ltd., London, 41-50, July 2009.
47. Alvarez, A. and Meacham, B.J., "Assessment of Human Behavior Parameters Used in Performance-Based Fire Design Approaches for Different Building Use Groups," *4<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications, Ltd., 585-590, 2009.
48. Meacham, B.J., Engelhardt, M., Kodur, V., "Collection of Data on Fire and Collapse, Faculty of Architecture Building, Delft University of Technology," *2009 CMMI Engineering Research and Innovation Conference*, National Science Foundation, June 2009.
49. Meacham, B.J. "A Risk-Informed Performance-Based Approach to Building Regulation," *7<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, 3-14, April 2008.
50. Meacham, B.J., "Quantification of Performance in Building Codes: Principles," *Australian Building Code Board 5<sup>th</sup> National Conference, Building Australia's Future 2007*, Australian Building Codes Board, Canberra, ACT, Australia, September 2007.
51. Meacham, B.J. "Using Risk as a Basis for Establishing Tolerable Performance: An Approach for Building Regulation," *Workshop on Risk Acceptance and Risk Communication*, Stanford University, Stanford, CA, 26-27 March 2007.
52. Meacham, B.J., "Using Risk as a Basis for Establishing Tolerable Performance: An Approach for Building Regulation," *Australian Building Code Board 4<sup>th</sup> National Conference, Building Australia's Future 2005*, ABCB, Canberra, ACT, Australia, Sep. 2005.
53. Meacham, B.J., "A Consultant's Perspective on the Role of Risk Analysis in Fire Engineering," *APEC TG3 Standards and Conformance Committee Seminar on Fire Performance of Timber Construction – Building Confidence in Timber*, 24-26 May 2005, Wellington, New Zealand
54. Moore, A.E., Albano, L.D., Fitzgerald, R.W. and Meacham, B.J., "Defining Design Fires for Structural Performance," *2005 ASCE Structures Congress*, ASCE, Reston, VA.
55. Meacham, B. J., "Building Codes and Fire Safety Design in the post September 11, 2001 Environment: How Have Things Changed?" *5<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, October 2004.
56. Lord, J., Meacham, B.J., Proulx, G., and Fahy, R., "Uncertainty in Egress Models and Data: Investigation of Dominant Parameters and Extent of Their Impact on Predicted Outcomes – Initial Findings," *5<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, October 2004, 342-353.
57. Meacham, B.J., Notarianni, K., Lord, J., Proulx, G. and Fahy, R., "Investigation of Uncertainty in Egress Models," *3<sup>rd</sup> International Symposium on Human Behaviour in Fire*, Interscience Communications Ltd., September 2004, 419-430.
58. Tubbs, J.S., Meacham, B.J., Moore, A., McLaughlin, B., Johann, M. and Woodward, A. (2004). "Fire and Life Safety Assessment of US Egress and Sprinkler Requirements within Nightclubs," *Interflam 2004*, Interscience Communications, London, 1139-1154.

59. Meacham, B.J., "A Risk-Informed Performance-Based Approach to Tall Building Design," *CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, Kuala Lumpur, Malaysia, 22 October 2003.
60. Johann, M.A., Albano, L.D., Fitzgerald, R.W. and Meacham, B.J., "Fire-Robust Structural Engineering: A Framework for Integration of Structural Fire Safety into Structural Design Practice," *Designing Structures for Fire*, SFPE and SEI, Bethesda, MD, Sep. 2003, 317-322.
61. Meacham, B.J., "Risk and Data Needs for Performance-based Codes," Workshop Papers of the Report, *Making the Nation Safe from Fire – A Path Forward in Research*, NAP, August 2003 (CD).
62. Meacham, B.J., "Challenges in Decision-Making for Fire Risk Problems," *SFPE Symposium on Issues in Fire Risk Assessment*, SFPE, Bethesda, MD, Dec 2002, 149-166.
63. Meacham, B.J., "Understanding Risk: Quantification, Perception and Characterization," *SFPE Symposium on Issues in Fire Risk Assessment*, SFPE, Bethesda, MD, Dec. 2002, pp.1-18.
64. Bressington, P., Lane, B., Meacham, B., Quiter, J. "High Rise Steel Frame Buildings in Fire – Is Performance-Based Design the Way Forward?" *ASCE Structures Conference*, April 2002.
65. Meacham, B.J., Tubbs, B., Bergeron, D., and Szigeti, F., "Performance System Model – A Framework for Describing the Totality of Building Performance," *4<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design*, SFPE, Bethesda, MD, pp.63-77.
66. Beller, D., Foliente, G. and Meacham, B.J., "Qualitative Versus Quantitative Aspects of Performance-Based Regulation" *4<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design*, SFPE, March 2002.
67. Tubbs, J., Wood, C. and Meacham, B.J., "Using a Performance-Based Approach to Interface Rail Facilities with Large Mixed-Use Structures," *4<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design*, SFPE, March 2002.
68. Little, R., Meacham, B.J. and Smilowitz, R., "A Performance-Based Multi-Objective Decision Framework for Security and Natural Hazard Mitigation," *National Symposium on Comprehensive Force Protection*, Society of American Military Engineers, Charleston, SC, Nov. 2001 (CD).
69. Meacham, B.J., "Application of Risk Concepts in Performance-Based Fire Protection Engineering," *International Conference on Engineered Fire Safety Design*, San Francisco, CA, 11-15 June 2001, SFPE, Bethesda, MD, pp.122-131.
70. Meacham, B.J., "Understanding Risk Assessment and its Use in Performance-Based Codes and Fire Safety Design," *Building Tomorrow's Future – International and National Partners*, Australian Building Codes Board, Canberra, ACT, Australia, April 2001.
71. Meacham, B.J., "Application of a Decision-Support Tool for Comparing and Ranking Risk Factors for Incorporation into Performance-Based Building Regulations," *3<sup>rd</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, 2000, pp.59-70.
72. Meacham, B.J., "The Role of Risk in Development of Performance-Based Regulations," *International Workshop: An Introduction to Performance Based Design for Fire Safety*, 17-18 February 2000, Global Window, Inc., Vancouver, BC, Canada (papers on CD).
73. Meacham, B.J., "Risk-Related Policy Issues in Performance-Based Building and Fire Code Development," *Interflam: 8<sup>th</sup> International Conference on Fire Science and Engineering*, Interscience Communications, Ltd, Greenwich, UK, pp.305-318.
74. Wolski, A., Dembsey, N. and Meacham, B.J., "Accommodating Perceptions of Risk in Performance-Based Building Fire Safety Codes," *Interflam: 8<sup>th</sup> International Conference on Fire Science and Engineering*, Interscience Communications, Ltd, Greenwich, UK, pp.489-500.

75. Meacham, B.J., "Incorporating Risk Concepts into Performance-Based Building and Fire Code Development," Lucht, D.A., Ed., *Second Conference on Firesafety Design in the 21<sup>st</sup> Century*, WPI and SFPE, Worcester, MA, 2000, 115-129.
76. Meacham, B.J., "Incorporating Risk Concepts into Performance-Based Building and Fire Code Development," *SFPE Symposium on Risk, Uncertainty, and Reliability in Fire Protection Engineering, and the SFPE/Clark University/NSF Workshop Encouraging the Use of Risk Concepts in Performance-Based Building and Fire Regulation Development*, SFPE, May 1999, 222-236.
77. Meacham, B.J., "Fire Safety Analysis and Design in a Performance-Based Regulatory System," *International Convention on Global Building Model in the Next Millennium*, Victoria Building Control Commission, Melbourne, Australia, 187-201, April 1999.
78. Meacham, B.J., "A Performance-Based Building Regulatory System: Providing a Means to Streamline the Building Regulatory Process, Promote Innovation in the Construction Industry, and Improve International Economic Competitiveness," *NCSBCS/NIST/HUD Joint Technical and Research Conference*, NCSBCS, Dana Point, CA, 4-7 Nov. 1998 (**Best Paper Award**).
79. Meacham, B.J., "Integrating Human Factors Issues Into Engineered Fire Safety Design," *1st International Symposium on Human Behaviour in Fire*, University of Ulster, Antrim, Northern Ireland, 31 August - 2 September 1998.
80. Meacham, B.J., "Risk-Informed Decision-Making in Performance-Based Building and Fire Code Development," *NFPRF Fire Risk and Hazard Assessment Research Application Symposium*, Fire Protection Research Foundation, Quincy, MA, 24-26 June 1998.
81. Wolski, A., Dembsey, N., and Meacham, B., "Application of Acceptable Risk Principles to the Development of Performance-Based Building Fire Safety Regulations," *2nd International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, May 1998.
82. Meacham, B.J., "Performance-Based Codes and Fire Safety Design Methods: Current Situation & Future Needs," *AIA Center for Building Performance & Regulations Conference, Performance Codes: How Will They Happen*, AIA, Washington, October 1997.
83. Meacham, B.J., "Assessment of the Technological Requirements for Realization of Performance-Based Fire Safety Design in the United States: Phase I - Fundamental Requirements," *2<sup>nd</sup> International Conference on Fire Research and Engineering*, SFPE, Bethesda, MD, Aug. 1997.
84. Meacham, B.J., "Identifying and Addressing Uncertainty in Fire Protection Engineering," *2<sup>nd</sup> International Conference on Fire Research and Engineering*, SFPE, Bethesda, MD, August 1997.
85. Meacham, B.J., "SFPE Perspectives on Performance-Based Fire Safety Design," U.S./Japan Government Cooperative Program on Natural Resources (UJNR). *Fire Research and Safety. 13<sup>th</sup> Joint Panel Meeting. Volume 1.*, Beall, K. A., Editor, National Institute of Standards and Technology, Gaithersburg, MD NISTIR 6030; June 1997, pp. 19-25.
86. Meacham, B.J., "Concepts of a Performance-Based Regulatory System for the United States," *AIA Center for Building Performance & Regulations Conference, Building Performance: What Is It?* Washington, DC, USA, 18-19 April 1997.
87. Meacham, B.J., "Uncertainty in Fire Safety Engineering," *VUT CESARE and SFPE Workshop on Performance-Based Fire Safety Design*, Victoria University of Technology, Melbourne, Victoria, Australia, 28 February 1997.
88. Meacham, B.J., "An Introduction to Performance-Based Fire Safety Design with Applications to Structural Fire Safety Analysis and Design," *ASCE Structures Conference*, Portland, OR, Apr 1997.
89. Meacham, B.J., "Concepts of a Performance-Based System for the United States," *Proceedings of the Fire Safety Conference on Performance Concepts*, Zurich, Switzerland, 15-17 Oct 1996.



90. Meacham, B.J., "An Introduction to Performance-Based Fire Safety Design," *Proceedings of the National Fire Protection Research Foundation Fire Risk and Hazard Assessment Symposium, San Francisco, CA*, 26-28 June 1996.
91. Meacham, B.J., "Performance-Based Fire Safety Codes and Engineering Methods: Projects and Perspectives of the SFPE," *Interflam '96*, St. Johns College, Cambridge University, Cambridge, England, 26-28 March 1996.
92. Meacham, B.J., Capaul, T. and Custer, R.L.P., "Engineering Fire Protection in Large Enclosed Spaces: A Performance-Based Approach," *First International Conference on Fire Safety and Security of Large Enclosed Spaces*, ITC, Ltd., UK, September 1995.
93. Capaul, T., Meacham, B.J. and Fontana, M., "The Application of a Performance-Based Evaluation and Design Approach to a Structural Fire Resistance Problem," *IAFSS First European Symposium on Fire Safety Science*, ETH, Zurich, 21-23 August 1995.
94. Meacham, B.J. and Lucht, D.A., "Performance-Based Fire Safety Design in the United States: An Update From the Society of Fire Protection Engineers," *International Conference, Fire Safety by Design*, University of Sunderland, Newcastle upon Tyne, England, 10-12 July 1995.
95. Meacham, B.J., "Application of Fire Dynamics to Fire Detection System Design," *SFPE Technical Symposium on Applications of Fire Dynamics*, SFPE, Boston, MA, July 1995.
96. Meacham, B.J., "Fire Safety in Nuclear Facilities: A Performance-Based Approach," *Post SMiRT Conference No. 6 on Fire Safety in Nuclear Facilities*, Heidelberg, Germany, August 1993.
97. Custer, R.L.P., Meacham, B.J. and Wood, C.B., "Performance-Based Design Techniques for Detection and Special Suppression Applications," *SFPE Engineering Seminars on Advances in Detection and Suppression*, SFPE, Boston, MA, USA, 1994.
98. Meacham, B.J., "Benefits of Emergency Voice Communication in Hotels," *The Confederation of Fire Protection Associations (Europe) Symposium on Hotel Fire Safety*, 1-2 March 1994, Conference Centre of The European Commission, Luxembourg.
99. Meacham, B.J., "Challenges in Computer Simulation of Low Energy Fires for Smoke Detector Activation Modeling," *EUSAS Workshop on Simulation Techniques as a Background for Fire Detection*, University of Duisburg, Germany, 13-14 Jan 1994.
100. Capaul, T. and Meacham, B.J., "Structural Fire Resistance Analysis of a Diesel Engine Driven Power Generating Plant: A Performance-Based Approach," *SFPE Engineering Seminars on Performance-Based Fire Safety Engineering*, SFPE, Boston, MA, 1994.
101. Meacham, B.J., "Fire Protection in Cable and Service Tunnels: A Goal Oriented Approach," *International Conference on Safety in Cable and Service Tunnels*, Independent Technical Conferences Ltd, Kempston, Beds., UK, 1993.
102. Meacham, B.J., "International Issues and Developments in Fire Detection and Signaling Systems," *SFPE Engineering Seminars on Issues in International Fire Protection Engineering Practice*, SFPE, Boston, MA, USA, May 1993.
103. Meacham, B.J., "Factors Affecting the Early Detection of Fire in Electronic Equipment and Cable Installations," *International Telecommunications Fire Protection Symposium*, NFPA, Quincy, MA, May 1992.

## Theses (2)

1. Meacham, B.J., *A Process for Identifying, Characterizing, and Incorporating Risk Concepts into Performance-Based Building and Fire Regulation Development*, Ph.D. Dissertation, Clark University, Worcester, MA, April 2000.

2. Meacham, Brian J., *Characterization of Smoke from Burning Materials for the Evaluation of Light Scattering Type Smoke Detector Response*, MS Thesis, WPI, May 1991.

### **Contract, Grant, Workshop & Committee Reports (48)**

1. *Building Community Resilience through Modern Building Codes*, publication developed for the International Code Council, Washington, DC, December 2018.
2. *Review of Oxygen Reduction Systems for Warehouse Storage Applications*, Fire Protection Research Foundation, October 2018 (with van Hees, Barton, and Nilsson, van Hees lead author).
3. Meacham, B.J., *Feasibility of a Centralised Hub for Verification of Complex Fire Engineered Solutions in Scotland*, research report prepared for Scottish Government, Building Standards Division, Livingston, Scotland, May 2018 (available at <http://www.gov.scot/Topics/Built-Environment/Building/Building-standards/publications/pubresearch/researchfire>, 25 July 2017).
4. Meacham, B.J., *Research on Regulatory Appropriateness of Currently Cited Reaction to Fire Tests in Technical Handbook – Section 2: Fire – Standards 2.4 – 2.7*, prepared for Scottish Government, Building Standards Division, Livingston, Scotland, March 2018 (available for download at <http://www.gov.scot/Topics/Built-Environment/Building/Building-standards/publications/pubresearch/researchfire>, last accessed 25 July 2017).
5. Kamath, P., Meacham, B.J., Dembsey, N.A., Martin, D., Gollner, M., Marshall, A. and Maisto, P., *Quantification of Green Building Features on Firefighter Safety: FINAL Report*, DHS Award EMW-2012-FP-01336, October 2017.
6. Meacham, B.J., *Benchmark Tolerable Levels of Individual and Societal Risk for Use in the National Construction Code (NCC)*, prepared for the Australian Building Codes Board, Canberra, ACT, Australia, September 2017.
7. Park, W-J. and Meacham, B.J., *Marina Risk Reduction*, Fire Protection Research Foundation, Aug. 2017 (available for download at <https://www.nfpa.org/-/media/Files/News-and-Research/Resources/Research-Foundation/Research-Foundation-reports/Electrical/RFMarinaRiskReduction.pdf>, last accessed 27 July 2018).
8. World Bank, *Building Regulatory Capacity Assessment – Level 1*, World Bank, Washington, DC, July 2017 (contributing author – publication available for download from <https://www.gfdrr.org/sites/default/files/publication/building-regulatory-capacity-assessment-level-1-2017.pdf>).
9. World Bank, *Building Regulatory Capacity Assessment – Level 2*, World Bank, Washington, July 2017 (contributing author, <https://openknowledge.worldbank.org/handle/10986/27656>).
10. Meacham, B.J., *Competency Criteria for Local Authority Verifiers When Checking Fire Engineered Solutions for Compliance with Building Standards*, prepared for Scottish Government, Building Standards Division, Livingston, Scotland, March 2017 (available for download from <http://www.gov.scot/Topics/Built-Environment/Building/Building-standards/publications/pubresearch/researchfire/resfirdvfes>, last accessed 27 July 2018).
11. Meacham, B.J., *Observations on the Situation with Performance-Based Building Regulation and Fire Safety Engineering Design in Sweden and the Potential for Incorporation of More Risk-Based Concepts*, Report from Fulbright Global Scholar research, Sweden, March 2017 (<http://www.boverket.se/sv/byggande/sakerhet/brandskydd/riskbaserade-byggregler/>).
12. Wang, X., Hutchinson, T.C., Hegemier, G., Gunisetty, S., Kamath, P., and Meacham, B., “Earthquake and fire performance of a mid-rise cold-formed steel framed building – test program and test results: Final Report – Part II,” SSRP-2016/08, Dept. of Structural Engineering, Univ. of California, San Diego, La Jolla, CA (in review – will be available in April 2017 for download at <http://cfs-research.ucsd.edu/documentation.html>)

13. Wang, X., Hutchinson, T.C., Hegemier, G., Gunisetty, S., Kamath, P., and Meacham, B., "Earthquake and fire performance of a mid-rise cold-formed steel framed building – supplemental materials: Final Report – Part I," SSRP-2016/09, Dept. of Structural Engineering, Univ. of California, San Diego, La Jolla, CA. (<http://cfs-research.ucsd.edu/documentation.html>)
14. Wang, X., Hutchinson, T.C., Hegemier, G., Gunisetty, S., Kamath, P., and Meacham, B., "Earthquake and fire performance of a mid-rise cold-formed steel framed building – test program and test results: Rapid Release Report." SSRP-2016/07, Dept. of Structural Engineering, Univ. of California, San Diego, La Jolla, CA, December 2016 (available for download at [http://cfs-research.ucsd.edu/resources/CFS\\_Report1-Final.pdf](http://cfs-research.ucsd.edu/resources/CFS_Report1-Final.pdf)).
15. Meacham, B.J., *Research to Support the Improvement of the Design Verification of Fire Engineered Solutions as Part of the Scottish Building Regulatory System*, prepared for Scottish Government, Building Standards Division, Livingston, Scotland, July 2016 (available for download from <http://www.gov.scot/Topics/Built-Environment/Building/Building-standards/publications/pubresearch/researchfire/resfirdvfes>, last accessed 27 July 2018).
16. Meacham, B.J., *New Zealand Fire Regulatory System Review*, prepared for the Ministry of Business, Innovation and Employment, Building Standards Division, Wellington, New Zealand, April 2016.
17. Meacham, B.J., *Ultimate Health & Safety (UHS) Quantification: Individual and Societal Risk Quantification for Use in National Construction Code (NCC)*, prepared for the Australian Building Codes Board, Canberra, ACT, Australia, March 2016.
18. Kamath, P., Meacham, B.J., Dembsey, N.A., Martin, D., Gollner, M., Marshall, A. and Maisto, P., *Quantification of Green Building Features on Firefighter Safety: Year 2 Report*, DHS Award EMW-2012-FP-01336, January 2016.
19. Long, M. and Martin, D., *Impact of Smoke Compartment Size on Horizontal Evacuation Time in Healthcare Facilities.*, ISG Report, Worcester Polytechnic Institute, July 2015.
20. Martin, D., Tomida, M. and Meacham, B.J., *The Environmental Impacts of Fire*, Final Project Report, Fire Protection Research Foundation (FPRF), 30 April 2015.
21. Meacham, B.J., *Risk-Informed Performance-Based Design for Fire: Concepts and Framework*, Final Report, NIST GCR 15-1000, dx.doi.org/10.6028/NIST.GCR.15-1000, Gaithersburg, MD, March 2015.
22. Chen, M.C., Pantoli, E., Astroza, R., Ebrahimian, H., Mintz, S., Wang, X., Hutchinson, T., Conte, J., Restrepo, J., Meacham, B., Kim, J., and Park, H., *BNCS Report #1: Full-scale structural and nonstructural building system performance during earthquakes and post-earthquake fire - specimen design, construction and test protocol. Structural Systems Research Project Report Series, SSRP 13/09*. UCSD, La Jolla, CA, Jan 2014.
23. Pantoli, E., Chen, M.C., Astroza, R., Ebrahimian, H., Mintz, S., Wang, X., Hutchinson, T., Conte, J., Restrepo, J., Meacham, B., Kim, J., and Park, H., *BNCS Report #2: Full-scale structural and nonstructural building system performance during earthquakes and post-earthquake fire - test results. Structural Systems Research Project Report Series, SSRP 13/10*. UCSD, La Jolla, CA, January 2014.
24. Meacham, B.J., Dembsey, N.A., You, Y-G., Martin, D., Gollner, M., Marshall, A. and Maisto, P., "Quantification of Green Building Features on Firefighter Safety: Year 1 Report, DHS Award EMW-2012-FP-01336, September 2014.
25. Kim, J.K., Meacham, B.J. and Park, H., *Full-Scale Structural and Nonstructural Building System Performance during Earthquakes and Post-Earthquake Fire: Fire Test Program and Preliminary Outcomes*, <http://www.wpi.edu/academics/fpe/earthq90.html>, Jan 2013.

26. Meacham, B.J. and Boutin, V., *Comparison of the IFEG, SFPE Engineering Guide on Performance-Based Fire Protection, BS7974 – Application of Fire Safety Engineering Principles to the Design of Buildings and ISO 13387 - Fire Safety Engineering – Part 1*, WPI, Worcester, MA, January 2013.
27. Meacham, B., Poole, B., Echeverria, J. Cheng, R., *Fire Safety Challenges of Green Buildings*, prepared under contract for the Fire Protection Research Foundation, November 2012 (<http://www.nfpa.org/assets/files/Research%20Foundation/RFFireSafetyGreenBuildings.pdf>).
28. Meacham, B.J., *Building Regulatory and Control System in the United States*, Ministry of Land, Infrastructure, Transportation and Tourism, Institute for International Harmonization of Building & Housing and Architectural Institute of Japan Workshop on PB Building Regulation, Tokyo, 2011.
29. Meacham, B.J. and Alvarez, A., *Quantification of Fire Risk, Performance Levels, Design Fires and Acceptance Criteria for Use in Performance-Based Codes and Fire Safety Design*, Annual Report, NIST Award 60NANB10D228, NIST, Gaithersburg, MD, December 2011.
30. Park, H., Meacham, B.J. and Dembsey, N., *Research in Support of Performance-Based Fire Safety Design*, Final Report, Korea Institute of Construction Technology, December 2010.
31. Meacham, B., Dembsey, N., Schebel, K., Tubbs, J., Johann, M., Kimbal, A. and Neviackas, A., *Rail Vehicle Fire Hazard Guidance*, Final Report, DHS Grant 2009-ST-108-000013, July 2010.
32. Meacham, B.J., Ed., *Performance-Based Building Regulatory Systems: Principles and Experiences*, IRCC, January 2010 (available at [www.ircc.info](http://www.ircc.info)).
33. Meacham, B.J., *Strengths and Weaknesses of the New Zealand Building Control Regulatory System and Recommendations for Reform: A Strategic Assessment*, prepared for the New Zealand Department of Building and Housing, September 2009.
34. Meacham, B.J. and Traw, J., *Review and Comparison of Risk/Safety Levels Associated with Buildings Constructed to AS3959-1999 and AS3959-2009*, prepared for the Australian Building Codes Board for the 2009 Victorian Bushfires Royal Commission, Melbourne, Australia.
35. Meacham, B.J., Ed., *Performance Requirements and Acceptance Criteria for Safety in Case of Fire*, IRCC Workshop Report, Vienna, Austria, Arup / IRCC, Aug. 2008 ([www.ircc.info](http://www.ircc.info)).
36. Meacham, B.J., *The Use of Risk Concepts in Regulation – Report of the IRCC Workshop, San Francisco, CA, 17-18 October 2006*, Arup / IRCC, March 2007 (available at [www.ircc.info](http://www.ircc.info)).
37. Lord, J., Meacham, B.J., Moore, A., Fahy, R. and Proulx, G., *Guide for Evaluating the Predictive Capability of Computer Egress Models*, NIST GCR 06-886, National Institute of Standards and Technology, BFRL, Gaithersburg, MD, December 2005.
38. Katzman, G. and Meacham, B.J., *Risk and Security for New York City Buildings: Corporate Planning for Extreme Events, Report on a Roundtable Discussion*, Arup, September 2005.
39. Katzman, G. and Meacham, B.J., *Risk & Security in New York City Buildings, A Report of the Roundtable Discussion*, Arup, NY, New York, 2004.
40. Meacham, B. J., Editor, *Global Policy Summit on the Role of Performance-Based Building Regulations in Addressing Societal Expectations, International Policy, and Local Needs: Summit Report*, National Research Council, Washington, DC and IRCC, February 2004.
41. National Research Council, *ISC Security Design Criteria for New Federal Office Buildings and Major Modernization Projects: A Review and Commentary*, Committee for the Review of the Interagency Security Committee Security Criteria, NAP, Washington, DC, 2003.
42. Meacham, B.J., Thomas, R., and Traw, J., *International Review of the Australian Building Codes Board*, for the Australian Department of Industry, Science and Tourism, May 1999.

43. Kokkala, M., Beyler, C., and Meacham, B.J., *International Review of the Fire Code Reform Centre, Limited*, for the Australian Building Codes Board, May 1998.
44. Meacham, B.J., "Assessment of the Technological Requirements for Realization of Performance-Based Fire Safety Design in the United States," GCR 98-761, NIST, Gaithersburg, MD, 1998.
45. Meacham, B.J., "Concepts of a Performance-Based Building Regulatory System for the United States," GCR 98-762, NIST, Gaithersburg, MD, 1998.
46. Meacham, B.J., "The Evolution of Performance-Based Codes and Fire Safety Design Methods," GCR 98-763, NIST, Gaithersburg, MD, 1998.
47. Meacham, B.J., "Report of the 1996 Activities of the SFPE Focus Group on Concepts of a Performance-Based Regulatory System for the United States," SFPE, Boston, MA, USA, 1997.
48. Meacham, B.J., "Assessment of the Technological Requirements for Realization of Performance-Based Fire Safety Design in the United States: Fundamental Requirements," SFPE, Boston, 1997.

### **Magazine Articles and Similar Publications (29)**

1. Meacham, B.J., "International Situation with Performance-Based Codes and Design for Fire," *Fire Protection Engineering Magazine*, Society of Fire Protection Engineers, September 2018.
2. Meacham, B.J., "A conceptual approach using risk as a basis of building performance design," *Risk Frontiers Newsletter*, Volume 16, Issue 2, December 2016 (available on-line at <https://riskfrontiers.wordpress.com/2016/12/05/newsletter-volume-16-issue-2-december-2016/>)
3. Meacham, B.J., "Environmental Impacts of Fire," *Fire Protection Engineering Magazine*, Society of Fire Protection Engineers, March 2016.
4. Meacham, B.J., "Performance-based building regulations – a global perspective," *Building Safety Journal*, International Code Council, Washington, DC, Fall 2015.
5. Meacham, B.J., Kim, J.K. and Park, H., "Earthquake and Post-Earthquake Fire Performance," *Fire Protection Engineering*, Penton / Society of Fire Protection Engineers, Issue 82, March 2014.
6. Meacham, B.J., "An Overview of Approaches and Resources for Building Fire Risk Assessment," *Fire Protection Engineering*, Penton / Society of Fire Protection Engineers, August 2013.
7. Dembsey, N.A., Meacham, B.J., Schebel, K., Johann, M., Tubbs, J. and Alston, J. (2012). "Fire Spread: How a simplified flame spread model, integrated with CFD tools, can enable a go/no-go screening approach for assessing material flame spread potential," *Marine Technology*, July 2012.
8. Tubbs, J. and Meacham, B.J., "Selecting Appropriate Egress Strategies," *Consulting and Specifying Engineer*, Reed Elsevier, 2008.
9. Meacham, B.J., "Lessons to be Learned from Building Codes in Other Countries," *Building Safety Journal*, March 2008, 20-23.
10. Hadden, J.D., Johann, M. and Meacham, B.J., "Building Design for Extreme Events: Blast Events," *Structure*, Vol. 14, No.1, January 2007.
11. Johann, M. and Meacham, B.J., "Building Design for Extreme Events: Fire Events," *Structure*, Vol. 13, No.7, September 2006.
12. Johann, M. and Meacham, B.J., "Building Design for Extreme Events," *Structure*, Vol. 13, No. 6, June 2006, 36-39.
13. Meacham, B.J., "Global Policy Summit on Performance-Based Building Regulatory Systems," *Building Safety Journal*, Volume 2, Number 3, May-June 2004, 29-34.

14. Meacham, B. J., "Etter World Trade Center: Hva betyr erfaringene for byggereglene og brannteknikk (World Trade Center Collapse: Potential Impacts on Building Codes and Fire Engineering)," *Bedagene Nytt*, Statens Bygningstekniske Etat, Oslo, Norway, April 2003, 28-29.
15. Meacham, B.J., "Addressing Risk and Uncertainty in Performance-Based Fire Protection Engineering," *Fire Protection Engineering*, Spring 2001, 16-25.
16. Meacham, B.J., "Analyzing Fire Risks Building by Building," *Architectural Record*, McGraw-Hill, NY, May, 2000, 293-304.
17. Meacham, B.J., "Update on SFPE Engineering Task Group Activities," *SFPE Bulletin*, SFPE, Boston, MA, Fall 1997.
18. Meacham, B.J., "Concepts of a Performance-Based System for the United States," *SFPE Bulletin*, SFPE, Boston, MA, Fall 1997.
19. Meacham, B.J., "Performance-Based Building and Fire Regulatory Development Activities in the United States," *Face Au Risque*, Paris, France, October 1997.
20. Meacham, B.J., "Update of SFPE Task Groups," *SFPE Bulletin*, SFPE, Boston, Winter '96-'97.
21. Meacham, B.J. and Richardson, J.K., "How the Society of Fire Protection Engineers is Addressing International Issues in Fire Safety Engineering," *SFPE Bulletin*, SFPE, Boston, MA, Fall 1996.
22. Capaul, T., Meacham, B.J. and Sica, G., "Un nuovo metodo per la protezione degli edifici storici (A New Method for the Protection of Historical Structures)," *Antincendio*, No. 7, Ministero dell'Interno, Rome, Italy, July 1996.
23. Capaul, T., Meacham, B.J. and Sica, G., "Un nuovo metodo per la protezione degli edifici storici (A New Method for the Protection of Historical Structures)," *anti furto*, Rome, Italy, June 1996.
24. Meacham, B.J. and Lucht, D.A., "Performance-Based Fire Safety Design: An Update from the Society of Fire Protection Engineers," *Plant Services*, Vol. 17, No. 1, January 1996.
25. Meacham, B.J. and Lucht, D.A., "Performance-Based Fire Safety Design in the United States: An Update from the Society of Fire Protection Engineers," *SFPE Bulletin*, SFPE, 1995.
26. Meacham, B.J., "International Development and Use of Performance-Based Building Codes and Fire Safety Design Methods," *SFPE Bulletin*, SFPE, March/April 1995.
27. Meacham, Brian J., "Fire Research in Europe: A Look at European Fire Safety Seminars, Conferences and Workshops in 1993," *SFPE Bulletin*, SFPE, March/April 1994.
28. Capaul, T., Meacham, B.J. and Sica, G., "Resistenza Antincendio di Un Impianto di Generalazione con Motore Diesel (Structural Fire Resistance Analysis of a Diesel Engine Driven Power Generating Plant)," *Antincendio*, No. 2, Ministero dell'Interno, Rome, Italy, Feb. 1994.
29. Meacham, Brian J., "Sounding the Alarm for Fire Detection," *Best's Review, Property -Casualty Insurance Edition*, Vol. 92, No. 10, February 1992.

## **PUBLICATIONS IN DEVELOPMENT**

### **Journal Articles in Development – Peer-Reviewed Full Manuscripts (9)**

1. Kamath, P., Dembsey, N. and Meacham, B.J., "Full-Scale Non-Standard Load-Bearing Fire tests on Gypsum-Sheathed Wood-Frame Systems," Manuscript no. FISJ\_2018\_255, submitted to *Fire Safety Journal*, July 2018.
2. Kamath, P., Dembsey, N. and Meacham, B.J., "Fire Performance of Structural Insulated Panel Frame Systems Compared with Traditional Dimensional Lumber Framing," in preparation for *Journal of Structural Fire Engineering*.

3. Stromgren, M., van Hees, P., Andersson, P. and Meacham, B.J., “Characteristics of dwellings affecting fire fatality risk – a scoping study for policy making”, for submittal to *Building Research & Information*.
4. Meacham, B.J. and van Straalen, I.J.J., “A Roadmap for Quantification of Risk as a Basis for Performance Objectives in Building Regulation,” manuscript in development, to be submitted to *Building Research & Information*.
5. Meacham, B.J. “Comparative Analysis of Performance-Based Building Regulatory Systems in Seven Countries,” for submittal to *Building Research and Information*.
6. Meacham, B.J. and van Straalen, I., “Criteria and Methods for Risk-Informed Performance-Based Fire Regulation and Design,” for submittal to *Fire Technology*.
7. Meacham, B.J. “Comparative Analysis of Fire Safety Engineering in Seven Countries,” for submittal to *Fire Safety Journal*.
8. Meacham, B.J., “Challenges with Enforcement of Performance-Based Building Regulations,” for submittal to *Building Research and Information*.
9. Almejmaj, M., Meacham, B.J., Dembsey, N.A., Radzicki, M. and Skorinko, J., “Integrating Cultural and Social Attributes into Agent-Based Models for Emergency Evacuation,” for submittal to *Automation in Construction*.

#### **Conference Papers in Development – Peer-Reviewed Abstracts (0)**

#### **Handbooks in Development**

1. *Handbook of Environmental Impacts of Fire*, Brian J. Meacham, Editor, Springer, planned publication, August 2020.

## FELLOWSHIPS, GRANTS AND GIFTS AWARDED

### Grants Summary

Awards	Year	Value	Comments
FPRF – Oxygen Reduction Systems	2018	\$25,000	Co-I with P. van Hees (LU) and M. Nilsson (Zurich Insurance, Sweden)
Brandforsk (Sweden) – Fire safety design of façade systems	2018	\$100,000	Co-I in multi-researcher effort led by P. van Hees (LU)
NIST - Data Collection with UAV Swarms, with UCSD, WPI PI	2017	\$200,000	Supports PhD student Wang..
TUS Structural Fire Engineering Joint Research Grant, PI	2017	\$20,000	Supports post-doc Kamath for structural fire testing at TUS in Japan
FPRF Award – Marina Risk Reduction, PI	2017	\$30,000	Supports PhD student Woojung Park for six-month stipend and tuition
TUS Structural Fire Engineering Joint Research Grant, PI	2016	\$17,000	Supports post-doc Kamath for structural fire testing at TUS in Japan
NASFM – Project FAIL-SAFE, Co-I	2016	\$102,000	Support PhD student Wang for one year
FPRF Award – Environmental Impacts of Fire, PI	2014-2015	\$25,000	Supports in part Drew Martin and Mai Tomida
DHS Award EMW-2012-FP-01336 - Green Building Fire Performance, PI	2013-2016	\$998,446	Supports PhD candidate Young-Geun You and MS students (Martin, Yin)
SFPE E&SF Award Post-Earthquake Fire Performance, PI	2012-2013	\$15,000	Supported MS candidate Jin Kyung Kim
FPRF Award - Safety Challenges of Green Buildings, PI	2012	\$15,000	Supported summer RA Brandon Poole
USDOE Award - Solar Decathlon China Competition, Co-I	2012	\$100,000	Supported various student projects
NIST Award 60NANB10D228 – Fire Risk and Design Fires, PI	2010-2013	\$341,602	Supports PhD candidate Alberto Alvarez and PI
KICT Contract – Advanced Research into PBFS Design Methods, PI	2010	\$87,727	Supported PhD candidate Haejun Park and PIs
NSF Award 0936505 – Earthquake Performance of Nonstruct. Sys., Co-I	2009	\$0*	Unfunded co-I (see Gifts for funding discussion)
DHS Award 2009-ST-108-000013 – Fire Hazards of Rail Vehicles, PI	2009	\$199,903	Supported ISG student Kurt Schebel and PIs
NSF Award 0840601 – Fire and Collapse at TUD, PI	2008	\$11,377	Supported PI travel
NSF Award 0322760 – Global Policy Summit on the Role of PB Building Regulations, PI	2003	\$40,000	Supported international workshop at NAS to identify future of performance-based building codes
NIST Grant 60NANB2D0138 – Uncertainty in Egress Models, PI	2002 - 2005	\$323,000	Research to improve the predictive capabilities of egress models
NSF Award 9730783 – Use of Risk in Performance Building Codes, Co-I (Kasperson, Clark University, PI)	1998 - 2000	\$266,000	Supported Meacham PhD. Research helped form basis of ICC Performance Code (performance building code)
National Fire Protection Association, PI	1997 - 1999	\$150,000	Supported development of the <i>SFPE Eng. Guide to PB Fire Protection</i>
NIST Grant 60NANB5D0138 – Performance Based Fire Design, PI	1995-1998	\$225,560	Conceptual basis for performance-based fire protection engineering for the US
<b>Total</b>		<b>\$3,300,615</b>	



\* *NEESR: Full-Scale Structural and Nonstructural Building System Performance during Earthquakes*, \$1,200,000, NSF Award 0936505 (to UCSD), with \$0 funding from NSF to WPI, 10/09–11/12. Overall funding valued at over \$5,000,000 with payload and industry support (cash and in-kind). PI Hutchinson (UCSD), co-Is Restrepo (UCSD), Conte (UCSD), Walsh (SDSU), Marin (Howard) and Meacham. Fire research led by Meacham. See project website for details (<http://bncs.ucsd.edu/index.html>).

### Research Gifts Facilitated – Summary

Gift/Donation	Value	Notes
IBHS	\$12,500	Cash donation to project on post-earthquake fire performance of CFS framed buildings (2016). Supports post-doc and equipment.
State Farm	\$25,000	Cash donation to project on post-earthquake fire performance of CFS framed buildings (2016). Supports post-doc and equipment.
CSSC	\$50,000	Cash donation to project on post-earthquake fire performance of CFS framed buildings (2016). Supports on-site needs (funds to stay in CA).
SFPE E&SF	10,000	Fellowship to Praveen Kamath to support project on post-earthquake fire performance of CFS framed buildings (2016).
FPRF	\$5,000	Gift / fellowship to Mai Tomida to support student research on environmental impacts of fire (2015).
SFPE E&SF	\$5,000	Gift / fellowship to Young-Geun You to help complete Building Fire Performance Analysis book by R.W. Fitzgerald and B.J. Meacham (2015)
FSNA	\$5,000	Gift to support Mary Long in evacuation modeling project (2015).
CSSC	\$50,000	Cash donation to support earthquake and fire project (2012). Supported equipment purchases for use on site at UCSD (funds had to stay in CA).
Arup	\$15,000	Cash donation to support earthquake and fire project (2011). Supported students Haejun Park and Jin Kyung Kim, as well as equipment and travel.
Hilti	\$15,000	Cash donation to support earthquake and fire project (2011). Supported students Haejun Park and Jin Kyung Kim, as well as equipment and travel.
SFPE E&SF	\$10,000	Cash donation to support earthquake and fire project (2011). Supported students Haejun Park and Jin Kyung Kim, as well as equipment and travel.
Tyco	\$5,000	Cash donation via FPE department to support ISG of Robert Accosta (2008)
<b>Total</b>	<b>\$207,500</b>	

### Other Research Funding (Service to Industry, Collaborations, etc.) – Summary

Source	Value	Comments
Parsons Brinckerhoff	\$90,000+	Service to industry for small (Cone calorimeter) and real-scale (compartment-scale) testing of lining materials of rail vehicles
University of Navarra	\$5,000	Funded travel and accommodation for collaboration on University of Navarra project on performance-based assessment protocol for energy performance of retrofit measures for social housing in Spain
CUREE	\$10,000	Grant to support workshop aimed at generating government and industry support for a large-scale research effort on post-earthquake fire.

**PRESENTATIONS AT CONFERENCES, SEMINARS, WORKSHOPS & COLLOQUIA (282)****Conference Presentations (199)**

1. “Earthquake and post-earthquake fire performance of a mid-rise cold-formed steel framed building: characterizing component-level physical damage,” to be presented at *11th National Conference on Earthquake Engineering – Integrating Science, Engineering & Policy*, Los Angeles, CA, 26-29 June 2018 (with Hutchinson, T.C., Wang, X., Hegemier, G., Kamath, P., presented by Hutchinson).
2. “Emerging Threats in Port Facilities,” *3<sup>rd</sup> International Conference on Safety in Ports (SIP)*, A Coruna, Spain, 7-8 May 2018.
3. “Situation with Performance-Based Codes and Fire Safety Design in Seven Countries,” Invited Keynote Presentation, *SFPE 12th International Conference on Performance-Based Codes and Fire Safety Design Methods*, Honolulu, HI, April 2018.
4. “Space Familiarity and Exit Familiarity for Emergency Egress,” *SFPE 12th International Conference on Performance-Based Codes and Fire Safety Design Methods*, Honolulu, HI, April 2018 (with Park, H.J., Haejun Park, Bang, C., Agnew, R., and Charter, V, presented by Park).
5. “A Quantified Risk-Based Framework for Life Safety,” *SFPE 12th International Conference on Performance-Based Codes and Fire Safety Design Methods*, Honolulu, HI, April 2018 (with I.J. van Straalen, presented by van Straalen).
6. “Roadmap for Incorporation of Risk Criteria and Analysis in Building Regulatory Decisions,” *SFPE 12th International Conference on Performance-Based Codes and Fire Safety Design Methods*, Honolulu, HI, April 2018 (with I.J. van Straalen, poster presentation).
7. “Emerging Issues in FSE: Research Roadmap and the Path Forward,” Invited Keynote Presentation, *2<sup>nd</sup> SFPE Europe Conference on Fire Safety Engineering*, Rotterdam, Netherlands, February 2018.
8. “International Situation with Performance-Based Regulation for Fire and Fire Safety Engineering.” *6<sup>th</sup> Asia FORUM for Advanced Fire Education / Research in Asia*, Tokyo University of Science / Agnes Hotel, Tokyo, Japan, 23 November 2017.
9. “Framework for Facilitating Next Generation Performance-Based Building Regulations” *Fire Safety Asia Conference 2017*, Singapore, 15-17 Nov. 2017.
10. “Fire Safety Design of Very Tall Buildings,” *5<sup>th</sup> Annual Workshop of the Group on Protection of Buildings from Fire*, University of Sao Paulo, Brazil, 31 October 2017.
11. “International Trends in Building Fire Regulation,” *5<sup>th</sup> Annual Workshop of the Group on Protection of Buildings from Fire*, University of Sao Paulo, Brazil, 31 Oct. 2017.
12. “Fire Safety Engineering Resilience” *9<sup>th</sup> Congreso Internacional de Ingeniería de Seguridad contra Incendios: Diseño Basado en Prestaciones*, Madrid, Spain, 23-25 October 2017.
13. “Fire Performance of a Full-Scale Loaded Cold-Formed Steel Framed Assembly in a Large Scale Furnace Test,” *Fire Safety 2017, International Conference, Research and Advanced Technology in Fire*, Santander, Spain, 20 Oct. 2017 (with Kamath, P. & Matsuyama, K., presented by Meacham).
14. “Earthquake and post-earthquake fire performance of a mid-rise cold-formed steel framed building,” *SEAOC 2017 Convention*, San Diego, CA, 13-15 September 2017 (with Hutchinson, T.C., Wang, X., Hegemier, G., and Kamath, P., to be presented by Hutchinson).
15. “Experimental Assessment of Steel Sheathed Shear Walls Subjected to Seismic Load and Fire,” *12<sup>th</sup> International Symposium on Fire Safety Science*, Lund, Sweden, June 2017 (with Hoehler, M., Smith, C., Hutchinson, T., Wang, X., Meacham, B. and Kamath, P., presented by Hoehler)

16. "Full-Scale Fire Tests on a Cold-Formed Steel Frame in Fire Following Earthquake," *IFireSS – International Fire Safety Symposium*, Naples, Italy, 7-9 June 2017 (with Kamath, P., Meacham, B.J., Hutchinson, T. and Wang, X., to be presented by Kamath)
17. "Marina Risk Reduction," *2017 NFPA Annual Meeting and Conference*, Boston, MA, USA, 4-6 June 2017 (with W. Park and C. Grant).
18. "Performance-Based Codes and Design – An International Perspective," *2017 NFPA Annual Meeting and Conference*, Boston, MA, USA, 4-6 June 2017.
19. "Fire Performance of Green Building Features: Experimental Outcomes," *2017 NFPA Annual Meeting and Conference*, Boston, MA, USA, 4 June 2017 (M. Gollner, P. Kamath, N. Dembsey).
20. "Post-Earthquake Fire Performance of a Cold-Formed Steel Frame Building," *2017 NFPA Annual Meeting and Conference*, Boston, MA, 4-6 June 2017 (with P. Kamath).
21. "Post-Earthquake Fire Performance of Buildings: Outcomes from Full-Scale Experiments," *GRIPS International Symposium on Preparing for Earthquakes and Cascading Hazards*, National Graduate Institute for Policy Studies, Tokyo, Japan, 11 November 2016.
22. "Performance-Based Building Regulations: Historical Perspective and Future Trends," *Instituto de Ciencias de la Construcción Eduardo Torroja Session on the 10<sup>th</sup> Anniversary of the Technical Building Code of Spain (CTE), CONSTRUTEC Congress*, Madrid, 27 October 2016.
23. "Risk-Informed Performance-Based Design: Concepts and Applications to High-Challenge Facilities," *2<sup>nd</sup> International Congress of Industrial Safety in Ports*, A Coruña, Spain, 13-14 October 2016
24. "Fire Safety Challenges with Sustainable Buildings, Materials & Systems," *Sustainable Fire Engineering 2016 Dublin*, Dublin, Ireland, 30 September 2016.
25. "Toward Next Generation Performance-Based Building Regulatory Systems," *SFPE 11<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Poland, 23-25 May 2016.
26. "Towards a Risk-Informed Performance-Based Approach for Post-Earthquake Fire Protection Design of Buildings," Invited Speaker, *10<sup>th</sup> Asia-Oceania Symposium on Fire Science and Technology*, Tsukuba, Japan, 5-7 October 2015.
27. "The Effects of Cultural Differences between Teachers and Pupils in the USA and Saudi Arabia on Emergency Evacuation – Analysis of Fire Alarm Recognition and Training," *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, September 2015 (with Almejmaj, M. and Skorinko, J., presented by Almejmaj).
28. "Impact of Smoke Compartment Size on Horizontal Evacuation Time in Healthcare Facilities," *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, September 2015 (with Martin, D. and Long, M.A., presented by Long and Martin).
29. "Experimental Observations of People Movement on Stairs," *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, Sep. 2015 (with Levy, C., Pierce, J., Porter, A., Da Vitorio, A., presented by Levy, Pierce and Da Vitorio).
30. "Standardizing "Agent" Characteristics in Pedestrian Agent Based Modeling," *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Interscience Communications Ltd., London, September 2015 (with Almejmaj, M., Dembsey, N.A., Radzicki, M. and Skorinko, J., presented by Almejmaj).
31. "Time and Information as Central Factors in Modeling Human Behavior in Emergencies," *6<sup>th</sup> International Symposium on Human Behavior in Fire*, Cambridge, England, September 2015 (panel discussion with Pauls, J., Groner, N. and Gwynne, S.).

32. "Human Behavior in Fire: Informing Practice," 6<sup>th</sup> *International Symposium on Human Behavior in Fire*, Cambridge, England, September 2015 (with Gwynne, S., Fahy, R., Thomas, I., Tavares, R.).
33. "Performance-Based Design - What's in it for me?" *2015 ABCB Building Australia's Future Conference*, Surfers Paradise, QSL, Australia, 14-16 September 2015.
34. "Quantification of Green Building Features on Firefighter Safety: Year 2 Report," DHS Award EMW-2012-FP-01336, *DHS 2015 Grantee Meeting*, August 2015, Washington, DC (with Dembsey, N.A., Martin, D., Yin, M., Figeroua, M., Kim, Y., Gollner, M., Marshall, A., Maisto, P.).
35. "Environmental Impacts of Fire," *2015 NFPA Annual Conference*, Chicago, IL, 22-25 June 2015 (with Martin, D. and Tomida, M., presented by Martin and Tomida).
36. "Impact of Green Building Features on Firefighter Safety," *2015 NFPA Annual Conference*, Chicago, IL, 22-25 June 2015 (with Martin, D., Gollner, M., presented by Martin & Gollner).
37. "Fire Performance of Select 'Green' Building Features and Technologies," *1<sup>st</sup> SFPE Europe Conference: Fire Safety Engineering*, Copenhagen, Denmark, 3-5 June 2015 (with Martin, D., presented by Martin).
38. "Assessing the Environmental Impact of Building and Wildland Fires," *1<sup>st</sup> SFPE Europe Conference: Fire Safety Engineering*, Copenhagen, Denmark, 3-5 June 2015 (with Martin, D., presented by Martin).
39. "Assessing Variability in Engineer Selection of Tenability Criteria," *1<sup>st</sup> SFPE Europe Conference: Fire Safety Engineering*, Copenhagen, Denmark, June 2015 (Levy, C. and Martin, D., presented by Levy).
40. "Impact of Smoke Compartment Size on Horizontal Evacuation Time in Healthcare Facilities," poster presented at the *1<sup>st</sup> SFPE Europe Conference: Fire Safety Engineering*, Copenhagen, Denmark, June 2015 (with Martin, D. and Long, M, presented by Martin and Long).
41. "Fire Performance of Select 'Green' Building Features and Technologies," *IFireSS 2015*, University of Coimbra, Portugal, 20-23 April 2015 (with Martin, D. and Dembsey, N., presented by Martin).
42. "A Framework for Systematic Development of Fire Scenarios and Quantified Design Basis Fires," *IFireSS 2015*, University of Coimbra, Portugal, 20-23 April 2015 (with Jutras, I. and Tubbs, B., presented by Meacham).
43. "Engineering a Fire Safe and Sustainable Future" 8<sup>th</sup> Congreso Internacional de Ingeniería de Seguridad contra Incendios: Diseño Basado en Prestaciones, Madrid, Spain, 11 February 2015.
44. "Protecting Cultural Resources from Fire: A Performance-Based Approach" 1<sup>st</sup> Congreso Internacional de Ingeniería de Seguridad contra Incendios: Seguridad contra Incendios en el Patrimonio y en Bienes de Interés Cultural, Ourense, Spain, 8 February 2015.
45. "A Parametric Multi-Tool Study to Assess Smoke Management System Performance for an Atrium," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Surfers Paradise, Australia, 12-14 Nov 2014 (Alvarez-Rodriguez, A. and Almejmaj, M.).
46. "Development of Conceptual Building Fire Safety Performance Analysis Tool Incorporating Building Design Features," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Surfers Paradise, Australia, 12-14 November 2014 (with Park, H., Dembsey, N.A. and Goulthorpe, M., presented by Meacham).
47. "Proposed Design Fires and Scenarios for Regulation and Design," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Surfers Paradise, Australia, 12-14 November 2014 (Jutras, I., Tubbs, B. & Hurley, M., presented by Meacham).

48. "Quantification of Green Building Features on Firefighter Safety: Problem Definition, Data Collection, Preliminary Analysis and Experimental Plan," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Australia, Nov 2014 (with You, Y-G., Yin, M., Martin, D., Dembsey, N., Gollner, M., Marshall, A., Ahrens, M., Grant, C and Rodrigue, T., presented by Martin).
49. "The Effects of Culture-Specific Walking Speed Data on Egress Modeling in Shopping Malls- A Comparative Analysis," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Surfers Paradise, Australia, 12-14 November 2014 (with Almejmaj, M. and Skorinko, J., presented by Almejmaj).
50. "Risk-Informed and Performance-Based Life Safety Design for Atria Buildings," *SFPE 10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Surfers Paradise, Australia, 12-14 Nov. 2014 (with Albrecht, C., presented by Meacham).
51. "Responding to Climate Change Impacts on the Built Environment: New Objectives for Performance-Based Building Regulation," Paper 213, *WSB14 - World Sustainable Building Conference*, Barcelona, Spain, 28-30 October 2014.
52. "Towards a Risk-Informed Decision Approach for Optimizing Retrofit of Existing Buildings for Energy Performance," *WSB14 - World Sustainable Building Conference*, Barcelona, Spain, 28-30 Oct. 2014 (with A. Sanchez, Echevarria, J., R. Pietroforte, R., presented by Echevarria).
53. "Post-Earthquake Fire Performance of Buildings," Invited Keynote Presentation, *2014 SFPE Technical Conference*, Long Beach, CA, 13-14 October 2014.
54. "Fire Safety Challenges of 'Green' Features and Systems in Buildings," *2014 ICC Annual Conference*, Educational Sessions, Ft. Lauderdale, FL, 29-30 September 2014.
55. "Risk-Informed Performance-Based Design: Concepts and Applications to High-Challenge Facilities," *SFPE Saudi Arabian Chapter Annual Conference*, Al-Khobar, Saudi Arabia, 15-18 September 2014.
56. "New SFPE Guidance on Fire Safety in Very Tall Buildings," *2<sup>nd</sup> International Tall Buildings Fire Safety Conference*, University of Greenwich, England, 17-19 June 2014
57. "Fire Alarms: Recognition and Perceived Urgency," *2014 NFPA Conference & Exposition*, Las Vegas, NV, 9-12 June 2014 (with M. Almejmaj, presented by Almejmaj).
58. "Addressing Green Building Features for Fire Fighter Safety," *2014 NFPA Conference & Exposition*, Las Vegas, NV, 9-12 June 2014.
59. "Overview of Building Regulatory System and Use of Performance-Based Design for Fire in the USA," CBMDF Seminar, Research and Innovation in Fire Prevention & Firefighting, Brasilia, Brazil, May 2014.
60. "Fire Performance of Full-Scale Building Subjected to Earthquake Ground Motion: Fire Test Program and Outcomes," *11<sup>th</sup> International Symposium on Fire Safety Science*, Christchurch, New Zealand, Feb. 2014 (with Park, H. and Kim, J.K., presented by Park).
61. "Fire Performance of Full-Scale Building Subjected to Earthquake Ground Motion: Test Specimen, Ground Motions and Seismic Performance of Fire Protection Systems," *11<sup>th</sup> International Symposium on Fire Safety Science*, Christchurch, NZ, Feb. 2014, (with Kim, J.K. and Park, H., presented by Park).
62. "Analysis and Prediction of Post-Earthquake Fire Performance of Buildings," *2013 SFPE Annual Professional Development Conference*, Austin, TX, Oct 2013 (with J.K. Kim, presented by Kim).

63. "Fire Safety Engineering: Current State and Possible Futures," *EUROFIRE 2013*, Basel, Switzerland, October 9-10, 2013.
64. "A New Paradigm and Framework for Risk-Informed Performance-Based Fire Safety Design - Concept and Implementation," *EUROFIRE 2013*, Basel, Switzerland, October 9-10, 2013 (with A. Alvarez, presented by Alvarez).
65. "The VULCAN INITIATIVE: a Web Platform for the Next Generation of Performance-Based Fire Protection Design," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013 (with A. Alvarez and M. Ferreira, presented by Alvarez and Meacham).
66. "Fire Performance of Earthquake-Damaged Buildings: Overview and Preliminary Analysis of Full-Building Earthquake and Fire Tests," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013 (with J-K Kim and H. Park, presented by Kim and Meacham).
67. "Fire Safety Challenges of Green Buildings," *Interflam 2013*, Interscience Communication, Ltd., London, June 2013 (poster presentation).
68. "Fire Performance in Earthquake Damaged Buildings: Overview of Test Program and Preliminary Findings," *NFPA Conference & Exposition*, Chicago, IL, 10-13 June 2013 (with J. Kim and H. Park, presented by Kim and Park).
69. "Fire Safety Challenges of Green Buildings," *NFPA Conference & Exposition*, Chicago, IL, June 2013.
70. "The VULCAN INITIATIVE: A Web Platform for the Next Generation of Performance-based Fire Protection Design," *NFPA Conference & Exposition*, Chicago, IL, 10-13 June 2013 (with A. Alvarez and M. Ferreira, presented by Alvarez).
71. "Fire Extinguishment Analysis for Unsprinklered Buildings," 2<sup>nd</sup> CILASCI Conference, University of Coimbra, Portugal, 1 June 2013 (with R.W. Fitzgerald, R.C. Till and S.P. Toomey, presented by Fitzgerald).
72. "Risk Management Based on Fire Performance Analysis," 2<sup>nd</sup> CILASCI Conference, University of Coimbra, Portugal, 1 June 2013 (with R.W. Fitzgerald, presented by Fitzgerald).
73. "Shake Table Testing of a Full-Scale Five-Story Building: Post-Earthquake Fire Performance," *2013 ASCE Structures Congress*, 2-4 May 2013, Pittsburg, PA (with J. Kim and H. Park).
74. "Shake Table Testing of a Full-Scale Five-Story Building: Seismic Performance of the Major Nonstructural Components: Egress Systems, Facades," *2013 ASCE Structures Congress*, 2-4 May 2013, (Pantoli, E., Chen, M., Wang, X., Hutchinson, T., Kim, J., presented by Pantoli).
75. "Observations from the Fire and Collapse of the Faculty of Architecture Building, Delft University of Technology," *2013 ASCE Structures Congress*, 2-4 May 2013, Pittsburg, PA (with Engelhardt, M.D., Kodur, V., Kirk, A., Park, H., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K., presented by Engelhardt).
76. "Global Situation with Performance-Based Codes and Fire Safety Design," Invited Keynote Presentation, *7<sup>th</sup> Biennial Conference on Fire Protection Engineering: Performance-Based Design in Buildings, Industry and Transport*, Madrid, Spain, 20 February 2013.
77. "Snapshot of Global Situation with Performance-Based Codes and Fire Safety Design," Invited Keynote Address, *7<sup>th</sup> Biennial Conference on Fire Protection Engineering*, Madrid, Spain, 19-21 Feb. 2013.
78. "Fire and Use: Risk Characterization in Sustainable Buildings," *Solar Building Skins – 7<sup>th</sup> ENERGY FORUM*, Bressanone, Italy, 6-7 December 2012. Post presentation (with Echeverria, J., Gonzalaz, P. and Sanchez-Ostiz, A. presented by Echeverria).

79. "Fire Safety Challenges of Green Buildings," *Fire Protection Research Foundation Symposium: Fire Safety Design and Sustainable Buildings: Challenges and Opportunities*, 7-8 Nov. 2012, Chicago, IL.
80. "Performance-Based Fire Protection Engineering: Current Situation and Future Trends," *SFPE Annual Meeting and Technical Conference*, Savannah, GA, 15 October 2012.
81. "The Effects of Cultural and Social Differences between the West and Saudi Arabia on Emergency Evacuation," *5<sup>th</sup> International Symposium on Human Behavior in Fire*, Cambridge, England, September 2012 (with M. Almejmaj).
82. "'Test bed' Environment Process for Assessing the Appropriateness of Engineering Tools to be Used in Performance-Based Design Applications," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*, Hong Kong, SAR China, June 2012 (with A. Alvarez, presented by Alvarez).
83. "Increasing Fire Safety by Bridging the Gap between Architects and Fire Safety Engineers," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*, Hong Kong, SAR China, June 2012 (with H. Park and N. Dembsey, presented by Park).
84. "Development of a Performance-Based Approach to Addressing Fire Safety in Existing Buildings," *9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*, Hong Kong, SAR China, June 2012 (with J. Echeverria, presented by both).
85. "Observations from Student Exercises and Proposed Experimental Scenarios for Human Behavior Data Collection," *Pedestrian and Evacuation Dynamics 2012*, ETH, Zurich, Switzerland (poster presentation with M. Almejmaj, presented by Meacham).
86. "International Experience with Performance-Based Codes and Fire Safety Design," Invited Speaker, *National Fire Safety Conference of Poland*, Krakow, Poland, 23-24 March 2012.
87. "Limits of Existing Data for Evacuation Modeling," Invited Speaker, *8<sup>th</sup> Annual Fire Safety Conference*, Society of Fire Protection Engineers Atlanta Chapter, Duluth, GA, 14 March 2012.
88. "Assessing Fire Development Risk in Vehicles and the Impacts on Tunnel Infrastructure," *5<sup>th</sup> International Symposium on Tunnel Safety and Security*, New York, NY, 14-16 March 2012 (with Alston, J., Schebel, K., and Coles, A., presented by Alston).
89. "A New Approach to Determining Passenger Rail Vehicle Design Fires," *2012 ASHRAE Annual Meeting*, January 2012, (with Tubbs, J., Alston, J., Johann, M., Dembsey, N.A., Schebel, K., presented by Tubbs).
90. "Fire Growth Simulation in Passenger Rail Vehicles Using a Simplified Flame Spread Model Coupled with a CFD Fire Model," *SFPE 2011 Engineering Technology Conference*, Portland, OR, 25 October 2011 (with Schebel, K., Dembsey, N.A., Tubbs, J., Johann, M., Alston, J., presented by Schebel (*SFPE Foundation Student Scholar Award*)).
91. "Summary of the IRCC Workshop on International Perspectives on the Role of Building Regulation in Responding to the Challenges of Climate Change," *SB11 - World Sustainable Building Conference*, Helsinki, Finland, 19 October 2011 (presented by N. Tolstoy, Boverket).
92. "Delivering Better Fire Safety Performance – How New Zealand is Championing Change Worldwide," Invited Keynote Paper, *Fire NZ2011*, Auckland, New Zealand, 15 Sep. 2011.
93. "'Ready-to-Use' Building Layouts and Combustible Packages for 3-D Fire Simulations," *Fire and Evacuation Modeling Technical Conference*, Baltimore, MD, 16 August 2011 (with A. Alvarez, presented by Alvarez).

94. "The Effects of Sprinkler Sprays on the Transport of Toxic Products, Comparison of Experimental and Numerical Results," poster, *IAFSS 10*, University of Maryland, College Park, July 2011 (with Magnone, Z.L., Accosta Jr., R.F., Dembsey, N., presented by Magnone).
95. "A Simplified Approach for Assessing Initial Fire Development and Spread in Passenger Rail Vehicles," *National Fire Protection Association 2011 Annual Conference*, Boston, MA, June 2011 (with Dembsey, N.A., Tubbs, J., Johann, M. and Schebel, K., presented by Schebel).
96. "Fire Safety Engineering: Current State and Possible Futures," Invited Keynote Address, *International Conference on Fire Safety Engineering, FSE11, Raising the Bar*, Sydney, Australia, 23 March 2011.
97. "Performance-Based Fire Safety Engineering: Current Situation and Future Trends," Invited Keynote Address, *6<sup>th</sup> Biennial Conference on Fire Protection Engineering: Performance-Based Design in Buildings, Industry and Transport*, Madrid, Spain, 23 February 2011.
98. "Fire and Collapse, Faculty of Architecture Building, Delft University of Technology: Implications for Performance-Based Design," *6<sup>th</sup> Biennial Conference on Fire Protection Engineering*, Madrid, Feb 2011.
99. "A Simplified Approach for Assessing Initial Fire Development and Spread in Passenger Rail Vehicles," *Transportation Research Board 2011 Annual Meeting*, Washington, DC, 25 January 2011 (with Dembsey, N.A., Tubbs, J., Johann, M. and Schebel, K., presented by Meacham).
100. "Green Buildings and Fire Safety," Invited Keynote Address, *The International Forum on the Special Challenges of MegaCity and the Solutions for Fire Safety*, Seoul, 6 October 2010.
101. "Development and Assessment of a Decision Support Framework for Enhancing the Forensic Analysis and Interpretation of Fire Patterns, Plenary Address, *2010 International Symposium on Fire Investigation and Technology*, University of Maryland, College Park, MD, 27-29 September 2010 (with Gorbett, G.E. and Wood, C.B., presented by Gorbett).
102. "Towards and Integrated Performance-Based Design Approach for Life Safety across Different Building Use Groups," *Interflam 2010*, London, July 2010 (with Alvarez, A., by Alvarez).
103. "The Effects of Sprinkler Sprays on the Transport of Toxic Products: Comparison of Experimental and Computer Model Results," *Interflam 2010*, London, July 2010 (with Accosta, R., Xiao, B., Crocker, J., Magnone, Z, and Dembsey, N, presented by Accosta).
104. "Performance-Based Design and Regulation: Challenges Faced, Lessons Learned, and a Look to the Future," *Interflam 2010*, London, July 2010.
105. "Fire and Collapse, Faculty of Architecture Building, Delft University of Technology: Implications for Performance-Based Design," *8<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, SFPE, Bethesda, MD, June 2010 (with Park, H., Engelhardt, M., Kodur, V., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K., presented by Meacham).
106. "The Effect of Sprinkler Sprays on the Transport of Toxic Products," *2009 SFPE Annual Meeting and Technology Conference*, Scottsdale, AZ, October 19-20, 2009 (with Accosta, R., Dembsey, N., Beaulieu, T. and Crocker, J., presented by Accosta).
107. "Facilitating Innovation without Compromising Performance: Challenges Faced, Lessons Learned, and a Look to the Future," *2009 Building Australia's Future Conference and Workshops*, Surfer's Paradise, Australia, 21-25 September 2009.
108. "Application of Adaptive Management to Building Evacuation and Emergency Response," *4<sup>th</sup> International Symposium on Human Behavior in Fire*, Cambridge, England, July 13-15, 2009.



109. "Assessment of Human Behavior Parameters Used in Performance-Based Fire Design Approaches for Different Building Use Groups", 4<sup>th</sup> International Symposium on Human Behavior in Fire, Cambridge, England, July 2009 (poster presentation with Alvarez, A.,).
110. "Informing Responses through Improved Situational Awareness – How do We Deliver the "Right" Information?" panel discussion, *Informed Emergency Responses through Improved Situation Awareness*, presented at the 4<sup>th</sup> International Symposium on Human Behavior in Fire, Cambridge, UK, July 2009.
111. "Selecting Appropriate Evacuation Strategies for Super Tall Buildings: Current Challenges and Needs" 4<sup>th</sup> International Symposium on Human Behavior in Fire, Cambridge University, Cambridge, England, July 13-15, 2009 (Tubbs, J. and Meacham, B., presented by Tubbs).
112. "Collection of Data on Fire and Collapse, Faculty of Architecture Building, Delft University of Technology," poster presentation, 2009 CMMI Engineering Research and Innovation Conference, National Science Foundation, Honolulu, HI, June 25-28 2009.
113. "SFPE Engineering Guides," 5<sup>th</sup> Biennial Conference on Fire Protection Engineering: Performance-Based Design in Buildings, Industry and Transport, Madrid, Spain, 18 Feb 2009.
114. "Global Status of Performance-Based Codes and Fire Protection Design Concepts," Invited Conference Keynote Address, 5<sup>th</sup> Biennial Conference on Fire Protection Engineering: Performance-Based Design in Buildings, Industry and Transport, Madrid, 18 Feb 2009.
115. "CRS Criteria for Testing the Applicability of Adaptive Management Concepts to Emergency Planning and Response: A Study Case for Fire," *Society for Risk Analysis, 2008 Annual Meeting*, Symposium on Broadening Risk Considerations in Infrastructure Design, Boston, MA, Dec 2008.
116. "A Risk-Informed Approach to Fire Safety Design of Tall Buildings," Invited Lecture, *International Seminar for Fire Safety Technology on High Rise Buildings*, Seoul, Korea, Nov 2008.
117. "Adaptive Management in Fire Regulation and Emergency Response," 2008 International Association for Fire Safety Science Symposium, Karlsruhe, Germany, September, 2008.
118. "Using Risk as a Basis for Establishing Tolerable Performance: An Approach for Performance-Based Building Regulation," 7<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods, Wellington, NZ, April 2008.
119. "Quantification of Performance in Building Codes: Principles," presented at the *Australian Building Code Board 5th National Conference, Building Australia's Future 2007*, (Invited Speaker), Surfer's Paradise, Australia, September 25, 2007.
120. "Using Risk as a Basis for Establishing Tolerable Performance: An Approach for Building Regulation," presented at the *Workshop on Risk Acceptance and Risk Communication*, Stanford University, Stanford, CA, 26-27 March 2007.
121. "Current Worldwide Situation with Performance-Based Fire Protection Design," presented at the 4<sup>th</sup> Biennial Conference on Fire Protection Engineering: Performance-Based Design in Buildings, Industry and Transport, (Invited Speaker), Madrid, Spain, 21 February 2007.
122. "Use of Refuge Floors in Very Tall Buildings: The Asian Experience," Joint CIB W14 & TG50 Symposium, *Tall Building and Fire*, Atlanta, GA, September 29, 2006.
123. "Fire as an Extreme Event," *American Concrete Institute Annual Convention*, Kansas City, MO, November 6, 2005.
124. "Using Risk as a Basis for Establishing Tolerable Performance: An Approach for Building Regulation," presented at the *Australian Building Code Board 4th National Conference, Building Australia's Future 2005*, (Invited Speaker), Surfer's Paradise, Australia, 13 Sep. 2005.

125. "A Consultant's Perspective on the Role of Risk Analysis in Fire Engineering," *APEC TG3 Standards and Conformance Committee Seminar on Fire Performance of Timber Construction – Building Confidence in Timber*, (Invited Speaker), 24-26 May 2005, Wellington, NZ.
126. "Performance-Based Fire Protection Design: Evolution, Current Situation, and Thoughts for the Future," *3<sup>rd</sup> Biennial Conference on Fire Protection Engineering*, Madrid, Spain, 16 Feb 2005.
127. "Risk-Informed Performance-Based Design: A Process for Balancing Openness and Security Objectives in Buildings," *2004 NFPA Fall Education Forum – Preparedness and Protection in a Hazardous World*, (with Jeff Tubbs and Chris Marrion), Miami, FL, 15 November 2004.
128. "Use of TARA/TVA to Inform Risk Management Decisions," *BOMA Annual Codes & Regulations / Government Affairs Conference – New Codes for New York City*, New York, NY, Oct 21, 2004.
129. "Building Codes and Fire Safety Design in the post September 11, 2001 Environment: How Have Things Changed?" *5<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Luxembourg, 6-8 October 2004.
130. "Uncertainty in Egress Models and Data: Investigation of Dominant Parameters and Extent of Their Impact on Predicted Outcomes – Initial Findings," *5<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Luxembourg, 6-8 October 2004.
131. "Investigation of Uncertainty in Egress Models," *3<sup>rd</sup> International Symposium on Human Behaviour in Fire*, Belfast, Northern Ireland, 1-3 September 2004.
132. "SFPE TG on Fire Risk: Current Status," *Fire Protection Research Foundation, Fire Risk and Hazard Assessment Research Application Symposium*, Annapolis, MD, 23-25 June 2004.
133. "Risk Assessment and Mitigation for Residential and Commercial Properties," *BuildingsNY*, (with Gayle Katzman, Arup Risk Consulting), New York, NY, 8-9 June 2004.
134. "Threat, Risk and Vulnerability Assessment over Building the New Fulton Street Transit Center in NYC," *Rail & Bus Transportation Security Summit*, (with Uday Durg, P.E., New York City Transit / MTA), Washington, DC, 23 August 2004.
135. "A Risk-Informed Performance-Based Approach to Tall Building Design," *CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, Kuala Lumpur, Malaysia, 22 October 2003.
136. "Performance System Model – A Framework for Describing the Totality of Building Performance," *CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, CIB and CTBUH, 23 October 2003.
137. "Qualitative Versus Quantitative Aspects of Performance-Based Regulation" *CIB-CTBUH International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center*, CIB and CTBUH, October 2003.
138. "Risk-Informed Performance-Based Design for the 21<sup>st</sup> Century," *2003 AIA Annual Meeting*, San Diego, CA, USA, 8 May 2003.
139. "A Risk-Informed Performance-Based Decision Framework for Security, Blast, Technological and Natural Hazard Mitigation," *Society for Risk Analysis Annual Meeting*, New Orleans, LA, 9-10 December 2002 (with Richard Little, National Research Council).
140. "The Role of Risk in Building Regulation and Design for Extreme Events," *Society for Risk Analysis Annual Meeting*, New Orleans, LA, 9-10 December 2002.
141. "Challenges in Decision-Making for Fire Risk Problems," *SFPE Symposium on Issues in Fire Risk Assessment*, New Orleans, LA, 5-6 December 2002.

142. "Understanding Risk: Quantification, Perception and Characterization," *SFPE Symposium on Issues in Fire Risk Assessment*, New Orleans, LA, 5-6 December 2002.
143. "Extreme Events, Risk and Performance-Based Design," *Build Boston*, Boston Society of Architects, Boston, MA, November 13, 2002.
144. "Performance-Based Design for Fire Safety," *The MCEER Workshop, Lessons from the World Trade Center Terrorist Attack: Management of Complex Civil Emergencies and Terrorism-Resistant Civil Engineering Design*, New York, 24-25 June 2002.
145. "Risk Perception," *CIB Global Leaders Summit on Tall Buildings*, Garston, UK, 25 April 2002.
146. "Risk and Data Needs for Performance-based Codes," *National Research Council Workshop to Identify Innovative Research Needs to Foster Improved Fire Safety in the United States*, National Research Council, Washington, DC, 15-16 April 2002.
147. "High Rise Steel Frame Buildings in Fire – Is performance Based Design the Way Forward?" *ASCE Structures Conference*, Denver, CO, 4-6 April 2002.
148. "A Performance-Based Multi-Objective Decision Framework for Security and Natural Hazard Mitigation," (with R. Little and R. Smilowitz), *National Symposium on Comprehensive Force Protection*, Society of American Military Engineers, Charleston, SC, Nov 1-2, 2001.
149. "Characterizing Design Loads for Performance-Based Fire Safety Design," *International Conference on Engineered Fire Safety Design*, San Francisco, CA, 11-15 June 2001.
150. "Application of Risk Concepts in Performance-Based Fire Protection Engineering," *International Conference on Engineered Fire Safety Design*, San Francisco, 11-15 June 2001.
151. "Identifying and Regulating for Multiple Levels of Performance," *International Council for Building Research and Innovation, World Congress*, Wellington, NZ, 2-7 April 2001.
152. "Understanding Risk Assessment and its Use in Performance-Based Codes and Fire Safety Design," Australian Building Codes Board Conference, *Building Tomorrow's Future – International and National Partners*, Surfers Paradise, Queensland, Australia, 9-11 April 2001.
153. "Factors Affecting the Perception of Risk and their Impact on Human Behavior in Fire," *Second International Symposium on Human Behavior in Fire*, Massachusetts Institute of Technology, Cambridge, MA, 26-28 March 2001.
154. "Characterizing Risk for Performance-Based Building Regulations," *International Conference on Safety and Risk in Engineering*, IABSE, Malta, 24 March 2001.
155. "A Framework for Incorporating Risk Concepts into Performance-Based Building and Fire Regulations," *Annual Meeting of the Society of Risk Analysis*, Arlington, VA, 3-6 Dec. 2000.
156. "Use of a Decision-Support Tool for Addressing Risk Concepts in Performance-Based Building Fire Safety Regulation Development," *PSAM5, Fifth International Conference on Probabilistic Safety Assessment and Management*, Osaka, Japan, November 2000.
157. "Risk-Based and Risk-Informed Systems Approaches to Fire Safety Engineering: Historical Review and Current Trends," *PSAM5, Fifth International Conference on Probabilistic Safety Assessment and Management*, Osaka, Japan, November, 2000.
158. "Addressing Uncertainty in Performance-Based Fire Safety Engineering: An International Perspective," *UNIFIRE 2000, Annual Conference of the Fire Code Reform Centre, Ltd.*, Melbourne, Victoria, Australia, 10-11 August 2000.

159. "Application of a Decision-Support Tool for Comparing and Ranking Risk Factors for Incorporation into Performance-Based Building Regulations," *3<sup>rd</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, 15-17 June 2000, Lund, Sweden.
160. "The Role of Risk in Development of Performance-Based Regulations," *International Workshop: An Introduction to Performance Based Design for Fire Safety*, 17-18 Feb 2000, Vancouver, BC.
161. "Incorporating Risk Concepts into Performance-Based Building and Fire Regulation Development," *American Society of Mechanical Engineers, International Mechanical Engineering Congress, Safety Engineering and Risk Analysis Division*, 14-19 Nov. 1999, Nashville, TN, USA.
162. "Assessment of the Technological Requirements for Realization of Performance-Based Fire Safety Design in the United States: Final Report," *3<sup>rd</sup> International Conference on Fire Research and Engineering*, SFPE, Chicago, IL, USA, 4-9 October 1999.
163. "Engineered Fire Safety Design Alternatives," *1999 Joint Conference of Building Officials and Code Administrators International, International Conference of Building Officials, and Southern Building Code Congress International*, St. Louis, MO, 14 September 1999.
164. "International Experience in the Development and Use of Performance-Based Fire Safety Design Methods: Evolution, Current Situation, and Thoughts for the Future," *Invited Speaker, IAFSS 6<sup>th</sup> International Symposium on Fire Safety Science*, Poitiers, France, 5-9 July 1999.
165. "Risk-Related Policy Issues in Performance-Based Building and Fire Code Development," *Interflam: 8<sup>th</sup> International Conference on Fire Science and Engineering*, Edinburgh, Scotland, 29 June – 1 July 1999.
166. "Incorporating Risk Concepts into Performance-Based Building and Fire Regulations Development," *2<sup>nd</sup> Conference on Firesafety Design in the 21<sup>st</sup> Century*, Worcester, MA, Jun 1999.
167. "Encouraging the Use of Risk Concepts in Performance-Based Building and Fire Regulation Development," *SFPE Symposium on Risk, Uncertainty, and Reliability in Fire Protection Engineering, and the SFPE/Clark University/NSF Workshop Encouraging the Use of Risk Concepts in Performance-Based Building and Fire Regulation Development*, May 1999.
168. "Fire Safety Analysis and Design in a Performance-Based Regulatory System," *International Convention on Global Building Model in the Next Millennium*, Victoria Building Control Commission, Melbourne, Australia, April 1999.
169. "Incorporating Risk Concepts into Performance-Based Building and Fire Regulations Development: Phase I – Conceptual Approach," *Society for Risk Analysis Annual Meeting*, Phoenix, AZ, Dec. 1998.
170. "The Role of Engineering Societies in Global Fire Safety Engineering Practice," *Symposium on International Harmonization of Performance-Based Fire Safety*, National Institute of Standards and Technology, Gaithersburg, MD, USA, 5-6 October 1998.
171. "A Performance-Based Building Regulatory System: Providing a Means to Streamline the Building Regulatory Process, Promote Innovation in the Construction Industry, and Improve International Economic Competitiveness," *The NCSBCS/NIST/HUD Joint Technical and Research Conference* NCSBCS, Dana Point, CA, 4-7 November 1998. (Best Paper Award)
172. "Integrating Human Factors Issues Into Engineered Fire Safety Design," *Keynote Speaker, 1st International Symposium on Human Behaviour in Fire*, University of Ulster, Antrim, Northern Ireland, 31 August - 2 September 1998.
173. "Risk-Informed Decision-Making in Performance-Based Building and Fire Code Development," *NFPRF Fire Risk and Hazard Assessment Research Application Symposium*, San Francisco, CA, USA, 24-26 June 1998.

174. "Introduction to Performance-Based Codes and Fire Safety Design," *Invited Speaker, Nuclear Energy Institute, Fire Protection Information Forum*, Santa Fe, NM, USA, 24 March 1998.
175. "Engineered Fire Protection Alternatives and Introduction to Computer Modeling for Building Officials," *International Conference of Building Officials, Colorado Chapter, Educational Institute*, Denver, CO, USA, 6 March 1998.
176. "Performance-Based Codes and Fire Safety Design Methods: Application of Fire Research and Codification of Performance," *Invited Speaker, Australian Building Codes Committee*, Surfers Paradise, Queensland, Australia, 4 February 1998.
177. "Performance-Based Codes and Fire Safety Design Methods: Current Situation and Future Needs," *Invited Speaker, AIA Center for Building Performance & Regulations Conference on Performance Codes: How Will They Happen*, San Francisco, CA, USA, 17 October 1997.
178. "Engineered Fire Protection Alternatives and Introduction to Computer Modeling for Building Officials," *International Conference of Building Officials, 1997 Annual Meeting*, Phoenix, AZ, 25 September 1997.
179. "Assessment of the Technological Requirements for Realization of Performance-Based Fire Safety Design in the United States: Phase I - Fundamental Requirements," *2nd International Conference on Fire Research and Engineering, NIST*, Gaithersburg, MD, 12 August 1997.
180. "Identifying and Addressing Uncertainty in Fire Protection Engineering," *2nd International Conference on Fire Research and Engineering, NIST*, Gaithersburg, MD, 12 August 1997.
181. "Concepts of a Performance-Based Regulatory System for the United States," *Invited Speaker, AIA Center for Building Performance & Regulations*, Washington, DC, USA, 19 April 1997.
182. "An Introduction to Performance-Based Fire Safety Design with Applications to Structural Fire Safety Analysis and Design," *ASCE Structures Conference*, Portland, OR, USA, 15 April 1997.
183. "Concepts of a Performance-Based Regulatory System for the United States," *International Association for Fire Safety Science, 5th Symposium*, Melbourne, Australia, 5 March 1997.
184. "Uncertainty in Fire Safety Engineering," *VUT CESARE and SFPE Workshop on Performance-Based Fire Safety Design*, Victoria University of Technology, Melbourne, AUS, 28 Feb. 1997.
185. "An Introduction to Performance-Based Fire Safety Design," *Fire Protection Research Foundation Fire Risk and Hazard Assessment Symposium*, San Francisco, CA, June 1996.
186. "Performance-Based Fire Safety Codes and Engineering Methods: Projects and Perspectives of the SFPE," *NFPA Annual Meeting*, Boston, MA, USA, 20 May 1996.
187. "Performance-Based Fire Safety Codes and Engineering Methods: Projects and Perspectives of the SFPE," *Interflam '96, Cambridge University*, Cambridge, U.K., 26-28 March 1996.
188. "SFPE Perspectives on Performance-Based Fire Safety Design," *U.S./Japan Government Cooperative Program on Natural Resources (UJNR), Fire Research and Safety, 13th Joint Panel Meeting*, March 13-20, 1996, Gaithersburg, MD.
189. "Performance-Based Codes and Design Methods: An Overview," *Build Boston*, World Trade Center, Boston, MA, USA, 16 November 1995.
190. "Application of Fire Dynamics to Fire Detection System Design," *SFPE Technical Symposium on Applications of Fire Dynamics*, University of British Columbia, Canada, 10-11 July 1995.
191. "The Development and Use of Performance-Based Fire Safety Engineering Criteria in International Codes and Standards," *Joint Meeting of the NFPA's Lodging Industry and Industrial Sections, NFPA Fall Meeting*, Toronto, Ontario, Canada, 15 November 1994.

192. "Benefits of Emergency Voice Communication in Hotels," *The Confederation of Fire Protection Associations (Europe) Symposium on Hotel Fire Safety*, Conference Centre of The European Commission, Luxembourg, 1-2 March 1994.
193. "Challenges in Computer Simulation of Low Energy Fires for Smoke Detector Activation Modeling," *EUSAS Workshop on Simulation Techniques as a Background for and Aimed to Fire Detection*, University of Duisburg, Germany, 13-14 January 1994.
194. "Fire Protection in Cable and Service Tunnels: A Goal Oriented Approach," *International Conference on Safety in Cable and Service Tunnels*, London, England, 15-16 November 1993.
195. "Fire Safety in Nuclear Facilities: A Performance-Based Approach," *Post SMiRT Conference No. 6, Fire Safety in Nuclear Facilities*, Heidelberg, Germany, 22-23 August 1993.
196. "International Issues and Developments in Fire Detection and Signaling Systems," *SFPE Engineering Seminars on Issues in International Fire Protection Engineering Practice*, Orlando, FL, USA, May 1993.
197. "Factors Affecting the Early Detection of Fire in Electronic Equipment and Cable Installations," *International Telecommunications Fire Protection Symposium*, New Orleans, LA, USA, May 1992.
198. "Application of State of the Art Detection and Alarm Technology: New Promises, New Problems," *SFPE Engineering Seminar on Engineering Methods in Building Firesafety Design*, Montréal, Québec, Canada, November 1991.
199. "Characterization of Smoke from Burning Materials for the Evaluation of Light Scattering Type Smoke Detector Response," *SFPE Engineering Seminar on Advancing Fire Detection and Alarm Technology*, San Antonio, TX, USA, May 1990.

#### **Workshop, University, Grant and Professional Presentations and Lectures (83)**

1. "Potentially Conflicting Objectives of Fire Safety and Sustainability," *IRCC – OIB Workshop on Sustainability in the Construction Sector*, Vienna, Austria, 23 May 2018.
2. "Incorporating Risk Concepts into Performance-Based Design," Lecture, *International Masters in Fire Safety Engineering (IMFSE) Program*, Lund University, 16 May 2018.
3. "Factors Affecting the Acceptability or Tolerability of Risk," Lecture, *Fire Safety Engineering Program*, Lund University, 14 May 2018.
4. "Sustainable Design and Resilient Design – Competing Objectives or Design Opportunity?," Lecture, *Master's Degree Program in Environmental Design and Building Management, School of Architecture*, University of Navarra, 9 October 2017.
5. "Sustainable Design and Resilient Design – Concepts and Codes (Regulations)," Lecture, *Master's Degree Program in Environmental Design and Building Management, School of Architecture*, University of Navarra, 9 October 2017.
6. "Post-Earthquake Fire Performance of Buildings," Lecture, *Fire Safety Engineering Program*, Lund University, Lund, Sweden, September 12, 2017.
7. "Better Linking Fire Safety Science and Fire Safety Engineering: Research Priorities for Fire Safety Engineering," *IAFSS 12, Pre-Symposium Workshop*, Lund, Sweden, 11 June 2017.
8. "Structural Fire Performance of Earthquake-Damaged Cold Formed Steel Framed Walls: Undamaged Baseline Test," *Joint Usage Research Award Seminar*, Tokyo University of Science, Japan, 22 May 2017.
9. "Situation with Fire Safety Engineering in Countries with Performance-Based Building Regulatory Systems" *SFPE Japan Chapter*, Tokyo, Japan, November 2016.

10. "Fire Safety Challenges of Tall Timber Buildings," *SFPE Japan Chapter*, Tokyo, Japan, November 2016.
11. "Risk-Informed Performance-Based Approach for Achieving Sustainable and Resilient Architecture," *Arup Workshop on Resiliency*, Madrid, Spain, 31 October 2016.
12. "Building Codes and "Green" Building Design: Challenges and Opportunities," Lecture, *Master's Degree Program in Environmental Design and Building Management*, School of Architecture, University of Navarra, 19 October 2016.
13. "Risk-Informed Performance-Based Approach for Achieving Sustainable and Resilient Architecture," Invited Lecture, *Master's Degree Program in Environmental Design and Building Management*, School of Architecture, University of Navarra, 19 October 2016.
14. "Research into the Situation with Fire Safety Engineering in Spain," *Instituto de Ciencias de la Construcción Eduardo Torroja*, Madrid, Spain, 6 October 2016.
15. "Toward Next Generation Performance-Based Building Regulatory System," *Magisterial Presentation*, Ministerio de Fomento, Madrid, Spain, 5 October 2016.
16. "Fire Safety Challenges with Sustainable Buildings, Materials & Systems," *FORUM of Fire Research Laboratory Directors*, SP, Boras, Sweden, 26 September 2016.
17. "Toward Next Generation Performance-Based Building Regulatory System," *TNO Seminar*, TNO, Delft, the Netherlands, 25 July 2016.
18. "Research in Support of Improvement in Verification of Fire Engineered Solutions: Initial Findings & Discussion," *Scottish Government, Building Standards Division, Stakeholder Workshop*, Scottish Fire and Rescue Services Facilities, Cambuslang, Scotland, 16 June 2016.
19. "Regulations for Existing Buildings: Situation in Australia and New Zealand," *IRCC Workshop on Regulation for Existing Buildings*, Oslo, Norway, 20 May 2016.
20. "Fire Safety Challenges with Sustainable Buildings, Materials & Systems" *Australian Building Codes Board Seminar*, Canberra, ACT, Australia, March 2016.
21. "Trends in Performance-Based Building Regulation and Elevators for Evacuation," *Invited Lecture, SFPE Japan Chapter / Tokyo University of Science*, Tokyo, Japan, 8 December 2015.
22. "Post-Earthquake Fire Performance of Buildings: Full-Scale Test Outcomes and Suggestions for Performance-Based Design," *Invited Lecture, Tokyo University of Science*, Tokyo, Japan, 4 Dec. 2015.
23. "Overview of Building Regulatory System and Performance-Based Design for Fire in the USA," *Invited Lecture, Fire and Disaster Management Agency*, Tokyo, Japan, 3 Dec. 2015.
24. "Fire Safety Challenges with Sustainable Buildings, Materials and Systems," *Course Lecture – Disaster Risk Management*, Graduate School of Global Fire Science and Technology, Tokyo University of Science, Tokyo, Japan, 3 December 2015.
25. "Post-Earthquake Fire Performance of Buildings: Full-Scale Test Outcomes and Suggestions for Performance-Based Design," *Invited Public Lecture, Tokyo University of Science*, Tokyo, Japan, 27 November 2015.
26. "US Perspective on Verifying Fire Engineered Solutions as part of a Building Regulatory System," *IRCC Workshop on Verifying Fire Engineered Solutions as part of a Building Regulatory System*, Edinburgh, Scotland, 10 June 2015.
27. "Impact of Green Building Features on Firefighter Safety," *MA Department of Fire Services Senior Fire Officer Forum: Green Buildings - The Fire Service Challenge*, MA Fire Academy, Stow, MA, May 2015.

28. "Fire Performance of Full-Scale Building Subjected to Earthquake Ground Motion: Overview and Key Outcomes from BNCS Project," *Operation Tomodachi – Fire Research*, A Joint Japan-USA Workshop on Large Outdoor Fires and Fire and Structure Interaction, NIST, Gaithersburg, MD, March 2015 (with Park, H-J., and Kim, J-K., presented by Meacham).
29. "Lessons Learned from the Fire and Collapse, Faculty of Architecture Building, Delft University of Technology," *Operation Tomodachi – Fire Research*, A Joint Japan-USA Workshop on Large Outdoor Fires and Fire and Structure Interaction, NIST, Gaithersburg, MD, March 2015 (with Engelhardt, M., Meacham, B.J., Kodur, V., Kirk, A., Park, H., van Straalen, I., Maljaars, J., van Weeren, K., de Feijter, R. and Both, K., presented by Engelhardt.)
30. "A Risk-Informed Performance-Based Approach for Achieving Sustainable and Resilient Architecture," *Invited Lecture, School of Architecture*, University of Navarra, 16 February 2015.
31. "Regulatory Challenges to Achieving Sustainable and Resilient Architecture," Lecture, *Master's Degree Program in Environmental Design and Building Management, School of Architecture*, University of Navarra, 16 February 2015.
32. "Overview of Qualification and Building Control During the Design Phase in the USA," *IRCC Workshop: Verification, Documentation and Control of Building Regulations in the Design Phase*, Malmo, Sweden, 4 June 2014.
33. "Assessment of Post-Earthquake Building Fire Performance," *ISO TC92 SC4 Workshop on Issues in Fire Risk*, Lund, Sweden, 6 April 2014.
34. "Outcomes of BNCS Test Program," *CUREE Workshop on Multi-Hazard Response of Structures: Earthquake and Fire*, NIST, Gaithersburg, MD, 7 January 2014.
35. "Fire Safety Challenges of Insulation Materials and Systems," MA Office of Technical Assistance & Technology, *Safe Spraying and Intelligent Insulation Workshop*, Stow, MA, 11 December 2013.
36. "Fire Challenges of Large Timber Structures," IRCC Workshop, *Use of Timber in Larger Buildings*, Vienna, Austria, 7 June 2013.
37. "New Developments in Building Control Systems," Invited Lecture, Ministry of Land, Infrastructure, Transportation and Tourism (MLIT), Institute for International Harmonization of Building and Housing (IIBH) PB Building Regulation Workshop, March 2013, Tokyo, Japan.
38. "Fire Safety Challenges of Green Buildings," *U.S. Fire Administration Invited Workshop on Changing Severity of Home Fires*, 11-12 December 2012, MFRI, College Park, MD.
39. "Web-based Resource for Advancing Performance-Based Analysis and Design for Fire," Workshop at the *SFPE Annual Meeting and Technical Conference*, Savannah, GA, 13 October 2012 (with A. Alvarez and M. Ferreira, presented by Alvarez and Ferreira).
40. "A New Paradigm and Framework for Risk-Informed Performance-Based Fire Safety Design," NIST, Gaithersburg, MD, July 2012 (with A. Alvarez, presented by Alvarez).
41. "Evacuation Modeling: Benefits and Challenges," SFPE Minnesota, Minneapolis, MN, May 2012.
42. "Building Regulatory and Control System in the United States," Invited Lecture, Ministry of Land, Infrastructure, Transportation and Tourism (MLIT), Institute for International Harmonization of Building and Housing (IIBH) and Architectural Institute of Japan (AIJ) workshop on Performance-Based Building Regulation, 15 December 2011, Tokyo, Japan.
43. "The Purpose and Meaning of Building Control: Is it Meeting Needs and Expectations," Invited Lecture, Ministry of Land, Infrastructure, Transportation and Tourism (MLIT), Institute for International Harmonization of Building and Housing (IIBH) and Architectural Institute of Japan (AIJ) workshop on Performance-Based Building Regulation, 17 Dec 2011, Tokyo, Japan.



44. "Characterization of Risk and Quantification of Design Fires," NIST, Gaithersburg, MD, 18 August 2011 (with A. Alvarez, presented by Alvarez).
45. "An International Perspective on the Regulation of 'Sustainability' in the Built Environment," Boston Society of Architects, Boston, MA, 20 April 2011.
46. "Risk Approaches and Performance Expectations," *ASTM E 05.14.01 Workshop on Exterior Fire Exposure Quantification*, Richmond, CA, 3 February 2011.
47. "Characterization of Risk and Quantification of Design Fires – Year 1 Status Report," NIST Award 60NANB10D228, NIST, 21 January 2011 (with A. Alvarez, presented by Alvarez).
48. "Research to Support Performance-Based Design in Korea," presentation on outcomes from research conducted under award from Korean Institute for Construction Technology, Gyeonggi-Do, Republic of South Korea, 18 November 2010 (with H. Park and N. Dembsey).
49. "Rail Vehicle Fire Hazard Guidance," presentation on final outcomes, DHS Award 2009-ST-108-000013, DHS, Washington, DC, June 2010 (with N. Dembsey and J. Tubbs).
50. "Rail Vehicle Fire Hazard Guidance," presentation on interim findings, DHS Award 2009-ST-108-000013, WPI, Worcester, MA, February 2010 (w/ N. Dembsey, J. Tubbs, and M. Johann).
51. "International Collaboration on Performance-Based Building Codes," *IRCC/WFTAO/NRC Workshop on Objective and Performance-Based Codes: Impacts and Lessons Learned*, Calgary, Sep. 29, 2009.
52. "International Perspectives on Performance-Based Building Codes – Issues Which Have Resulted in Change," *IRCC/WFTAO/NRC Workshop on Objective and Performance-Based Codes: Impacts and Lessons Learned*, Calgary, September 29, 2009.
53. "Performance-Based Codes and Fire Protection Design: A Global Perspective," monthly meeting, *New England Chapter, Society of Fire Protection Engineers*, 2 February 2009.
54. "Towards a Risk-Informed Performance-Based Approach to Fire Engineering and Regulation," *Invited Lecture, Civil and Environmental Engineering*, MSU, Lansing, MI, February 22, 2008.
55. "An International Overview of Performance-Based Codes and Design for Fire Safety," Invited Lecture, Instituto Ciencias de la Construcción "Eduardo Torroja," Madrid, Spain, May 9, 2007.
56. "Trends in Building Safety and Security since September 11, 2001," Invited Lecture, VTT (National Research Laboratory), Espoo, Finland, October 12, 2005.
57. "Use of Risk Concepts in Performance-Based Fire Engineering," *Wellington NZ Chapter of the Society of Fire Protection Engineers*, (Invited Speaker), Wellington, New Zealand, Mar 2005.
58. "The Current Situation of Performance-Based Fire Protection Design in the United States," *Madrid Chapter of the Society of Fire Protection Engineers*, Madrid, Spain, 15 Feb 2005.
59. "The Use of Risk Concepts in Building Regulation," *Workshop on Risk in Building Regulation*, (Invited Speaker), National Institute for Land and Infrastructure Management, Ministry of Land, Infrastructure and Transport, Tokyo, Japan, 3 February 2005.
60. "Fire Protection Engineering and Consulting," *Japan Chapter of the Society of Fire Protection Engineers*, (Invited Speaker), Tokyo, Japan, 2 February 2005.
61. "The Underlying Similarities of Existing Performance-Based Codes: A Global Perspective," *EduCode 2002*, Las Vegas, NV, 4 April 2002.
62. "The Underlying Similarities of Existing Performance-Based Codes," *EduCode*, Las Vegas, NV, 1 February 2001.

63. "Update on SFPE Technical Activities," *Invited Speaker, SFPE Connecticut Valley Chapter Meeting*, Hartford, CT, USA, 15 September 1997.
64. "Update on SFPE Technical Activities and Performance-Based Code and Fire Safety Design Method Development," *Invited Speaker, SFPE Central Ohio and Northeast Ohio Chapter Meeting*, Mansfield, OH, USA, 14 May 1997.
65. "Update on SFPE Technical Activities and Performance-Based Code and Fire Safety Design Method Development," *Invited Speaker, SFPE Pacific Northwest Chapter*, Seattle, WA, 16 April 1997.
66. "Update on SFPE Technical Activities and Performance-Based Code and Fire Safety Design Method Development," *SFPE Portland Chapter Meeting*, Portland, OR, USA, 14 April 1997.
67. "Performance-Based Fire Safety Analysis & Design: An Overview," *Invited Speaker, SFPE New England Chapter Annual Seminar*, Norwood, MA, USA, 10 April 1997.
68. "Update on SFPE Technical Activities and Performance-Based Code & Fire Safety Design Method Development," *Invited Speaker, SFPE NEC Meeting*, Norwood, MA, 3 Feb. 1997.
69. "SFPE Technical Activities," *Invited Speaker, SFPE Philadelphia/Delaware Valley Chapter Meeting*, Philadelphia, PA, USA, 14 January 1997.
70. "Structure of a Performance-Based Regulatory System," *Invited Speaker, International Conference of Building Officials, Performance Advisory Committee*, St. Paul, MN, USA, 12 September 1996.
71. "An Introduction to Performance-Based Codes," *Invited Speaker, International Code Council Performance Committee*, Kansas City, MO, USA, 28 August 1996.
72. "An Introduction to Performance-Based Codes," *International Association of Fire Chiefs Fire Prevention Showcase*, Kansas City, MO, USA, 27 August 1996.
73. "Concepts of Performance-Based Fire Safety Design," *Invited Speaker, SFPE New England Chapter Seminar: Fire Risk Management*, Norwood, MA, USA, 11 April 1996.
74. "Performance-Based Codes and Design Methods: An Overview," *Invited Speaker, SFPE Dallas/Fort Worth Chapter Meeting*, Dallas, TX, USA, 29 January 1996.
75. "Performance-Based Codes and Design Methods: An Overview," *Invited Speaker, SFPE San Diego Chapter Meeting*, San Diego, CA, USA, 25 January 1996.
76. "Performance-Based Codes and Design Methods: An Overview," *SFPE Northern California/Nevada Chapter Seminar: Fire Safety Today*, San Francisco, CA, 23 January 1996.
77. "Technical Initiatives of the Society of Fire Protection Engineers," *Invited Speaker, SFPE Southern California Chapter Meeting*, Los Angeles, CA, USA, 22 January 1996.
78. "Performance-Based Codes and Design Methods: An Overview," *Guest Lecture - FPE 580J: Fire Standards in Codes*, Center for Firesafety Studies, WPI, Worcester, MA, USA, 7 December 1995.
79. "Technical Initiatives of the Society of Fire Protection Engineers," *Invited Speaker, SFPE New Jersey Chapter Meeting*, East Hanover, NJ, USA, 4 December 1995.
80. "Technical Initiatives of the Society of Fire Protection Engineers," *Invited Speaker, SFPE Chicago Chapter Breakfast*, NFPA Fall Meeting, Chicago, IL, USA, 15 November 1995.
81. "Technical Initiatives of the Society of Fire Protection Engineers," *Invited Speaker, Department of Fire Engineering*, University of Canterbury, Christchurch, New Zealand, 2 November 1995.
82. "Technical Initiatives of the Society of Fire Protection Engineers," *Invited Speaker, Society of Fire Safety*, Melbourne, Australia, 31 October 1995.

83. “Application of State of the Art Detection and Alarm Technology: New Promises, New Problems,” *SFPE New England Chapter Meeting*, Wayland, MA, USA, November 1991.

#### **CONFERENCE ORGANIZING AND PROGRAM COMMITTEE SERVICE**

*SFPE 2019 Annual Conference*, Chandler, AZ, USA, Member Program Committee. October 2019.

*4<sup>th</sup> International Conference on Safety in Ports (SIP)*, A Coruna, Spain. Organized by CESCO. Member Program Committee. September 2019.

*Workshop on Agenda 2030 for a Fire Safe World*, CEN/CENELEC Building, Brussels, Belgium, December 2018.

*3<sup>rd</sup> International Conference on Safety in Ports (SIP)*, A Coruna, Spain. Organized by CESCO. Member Program Committee. May 2018.

*Fire Engineering Design Solutions: the 12<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Honolulu, HI, USA. Co-Chair – Program Committee. Society of Fire Protection Engineers. April 2018.

*FIRE SAFETY 2017, International Conference on Research and Advanced Technology in Fire Safety*, Santander, Spain, Organized by the Fire Safety Engineering Group (GIDAI), University of Cantabria. Member of the Scientific Committee. 20-21 October 2017.

*2<sup>nd</sup> International Fire Safety Symposium – IFireSS 2017*, University of Naples, Italy. Member – International Scientific Committee. Organized by the International Council for Research and Innovation in Building and Construction (CIB) Working Group 14 (CIB W014) and Department of Structures for Engineering and Architecture, University of Naples, June 2017.

*12<sup>th</sup> International Symposium on Fire Safety Science*, Topic Co-Leader – Special Applications (General Session) and Organizer, Pre-Conference Workshop, Linking Fire Safety Science to Fire Safety Engineering, International Association for Fire Safety Science, Lund, Sweden, June 2017.

*6<sup>th</sup> International Symposium on Human Behavior in Fire*, Cambridge, England, Member – Program Committee. Organized by Interscience Communications Ltd, September 2015.

*8<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*, Member – Organizing and Program Committees. Organized by the Association of Fire Protection Engineering Professionals (APICI), Madrid, Spain. Feb. 2015.

*International Fire Safety Symposium*, University of COIMBRA, Portugal. Member – International Scientific Committee. Organized by the International Council for Research and Innovation in Building and Construction (CIB) Working Group 14 (CIB W014), ISO TC 92, the University of Coimbra and Luso-Brazilian Fire Safety Association (ALBRASCI). April 2015.

*World Sustainable Buildings Conference SB14*, Barcelona, Spain. Member – International Scientific Committee, Organizer – Special Joint Session of IRCC / CIB TG79. Organized by the CIB, the International Institute for Sustainable Built Environment (iiBSE), the Green Building Council Espana (GBCE), and the Ministry of Housing, Spain. October 2014.

*10<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Brisbane, Australia. Member – Program Committee. Conference organized by the Society of Fire Protection Engineers and the Society of Engineers Australia. November 2014.

*11<sup>th</sup> International Symposium on Fire Safety Science*, Topic Leader – Special Applications (General Session) and Co-Organizer, Pre-Conference Workshop, Multi-Objective Fire Safety System Design – Economy, Sustainability and Aesthetics, International Association for Fire Safety Science, Christchurch, New Zealand. March 2014.

*7<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*, Member – Organizing and Program Committees, APICI, Madrid, Spain. Feb. 2013.

*9<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Hong Kong, SAR China, Member – Program Committee. Organized by SFPE. June 2012.

*5<sup>th</sup> International Symposium on Human Behavior in Fire*, Cambridge, England, Member –Program Committee. Organized by Interscience Communications Ltd, 2012.

*6<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*, Member – Organizing and Program Committees. Organized by the Association of Fire Protection Engineering Professionals (APICI) Madrid, Spain. February 2011.

*IRCC and ICC Workshop on International Perspectives on the Role of Building Regulation in Responding to the Challenges of Climate Change*, Boston, MA, Workshop organizer. Oct. 2010.

*8<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods*, Lund, Sweden, Member – Program Committee. Society of Fire Protection Engineers. June 2010.

*Suppression and Detection Research and Applications (SupDet)*, Orlando, FL. Member –Program Committee. Organized by Fire Protection Research Foundation. February 24-26, 2009.

*5<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*, Program Committees. APICI, Madrid, Spain. February 2009.

*CRS Perspectives on Broadening Risk Considerations for Infrastructure Design*. Workshop organizer. At Society for Risk Analysis 2008 Annual Meeting, Boston, MA. December 2008.

*Architectural Heritage and Performance-Based Building Codes: Approaches and Experiences*, Madrid, Spain. Workshop co-organizer with Mr. Javier Serra, Spanish Ministry of Housing. Presented by the IRCC and the Spanish Ministry of Housing. November 2008.

*IRCC Session: Global Perspectives – Policy and Practice, World Sustainable Buildings Conference SB08*, Melbourne, Australia. Session organizer. September 2008

*IRCC Workshop on Fire Safety Criteria in Performance-Based Building Regulation*, Vienna, Austria. Workshop co-organizer with Dr. Rainer Mikultis, Austrian Institute for Building Construction (OIB), Presented by the IRCC and the OIB. October 2007.

*IRCC-PEER Workshop on Performance-Based Building Codes for Design*, Berkeley, CA. Workshop co-organizer with Prof. Jack Moehle, PEER / University of California, Berkeley. IRCC/PEER. Oct 2006.

*IRCC Invited Workshop on the Use of Risk in Regulations*, San Francisco, CA. Workshop organizer. Presented by IRCC. October 2006.

*IRCC Global Summit on Sustainability and Building Regulation*, Gold Coast, Australia. Workshop co-organizer with Mr. Mike Balch, Australian Building Codes Board (ABCB). Presented by IRCC and ABCB. September 2005.

*3<sup>rd</sup> International Symposium on Human Behavior in Fire*, Belfast, Northern Ireland. Member –Program Committee. Organized by Interscience Communications, Ltd. September 2004.

*IRCC Global Policy Summit on the Role of Performance-Based Building Regulations in Addressing Societal Expectations, International Policy, and Local Needs*, National Research Council, Washington, DC. Chair of Organizing and Program Committees. Nov. 2003.

*SFPE Symposium, Issues in Fire Risk Assessment and Management*, New Orleans, LA. Chair of Organizing and Program Committees. Presented by SFPE and NSF. March 2002.

*2<sup>nd</sup> International Symposium on Human Behavior in Fire*, Cambridge, MA. Member –Program Committee. Organized by Interscience Communications, Ltd. March 2001.

*SFPE Symposium, Risk, Uncertainty, and Reliability in Fire Protection Engineering*, Baltimore, MD. Chair of Organizing and Program Committees. Presented by SFPE. March 1999.

*1<sup>st</sup> International Symposium on Human Behavior in Fire*, Ulster, Northern Ireland. Member –Program Committee. Organized by University of Ulster. September 1998.

*2<sup>nd</sup> International Conference on Performance-Based Codes and Fire Safety Design*, Maui, Hawaii. Member – Program Committee. Presented by SFPE and ICBO. May 1998.

*Second International Conference on Fire Research and Engineering*, Gaithersburg, MD. Member – Program Committee. Organized by SFPE. August 1997.

*SFPE Focus Group on Concepts of a Performance-Based System for the U.S.*, Arlington, VA. Organizer. Supported by SFPE and NIST. 1996.

*1<sup>st</sup> International Conference on Performance-Based Codes and Fire Safety Design*, Ottawa, Canada. Member – Program Committee. Presented by SFPE. September 1996.

### **REFEREE / REVIEWER FOR CONFERENCE ABSTRACTS / PAPERS**

*1<sup>st</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*2<sup>nd</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*3<sup>rd</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*4<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*8<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*9<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*10<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*12<sup>th</sup> SFPE International Conference on Performance-Based Codes and Fire Safety Design Methods*

*International Fire Safety Symposium (IFireSS), Coimbra, Portugal 2015*

*1<sup>st</sup> International Symposium on Human Behavior in Fire*

*2<sup>nd</sup> International Symposium on Human Behavior in Fire*

*3<sup>rd</sup> International Symposium on Human Behavior in Fire*

*4<sup>th</sup> International Symposium on Human Behavior in Fire*

*5<sup>th</sup> International Symposium on Human Behavior in Fire*

*6<sup>th</sup> International Symposium on Human Behavior in Fire*

*7<sup>th</sup> IAFSS International Symposium on Fire Safety Science*

*8<sup>th</sup> IAFSS International Symposium on Fire Safety Science*

*9<sup>th</sup> IAFSS International Symposium on Fire Safety Science*

*10<sup>th</sup> IAFSS International Symposium on Fire Safety Science*

*11<sup>th</sup> IAFSS International Symposium on Fire Safety Science,*

*12<sup>th</sup> IAFSS International Symposium on Fire Safety Science,*

*FIRE SAFETY 2017, International Conference on Research and Advanced Technology in Fire Safety, Santander, Spain*

*4<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*

*5<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and Transport*

*6<sup>th</sup> Biennial Congress on Fire Safety Engineering: Performance-Based Design in Buildings, Industry and*

*Transport**8th Asia-Oceania Symposium for Fire Science and Technology**9th Asia-Oceania Symposium for Fire Science and Technology**ASHRAE Transactions**Suppression and Detection Research and Applications – A Technical Working Conference (SupDet 2009)***EXTERNAL EXAMINER / OPPONENT FOR PHD DISSERTATIONS***Assessing Fire Safety of Fibre Reinforced Polymer Composite Ship Structures*, Franz Evegren, Ph.D. Dissertation, Lund University, Lund, Sweden. Opponent. October 2017.*Multiple Vehicles Design Fire Scenarios in Car Parking Buildings*, Mohd Zahirasri bin Mohd Tohir, Ph.D. Dissertation, University of Canterbury, Christchurch, New Zealand. External Examiner. Sep. 2015.*Rail Tunnel Evacuation*, Karl Fridolf, Ph.D. Dissertation, Lund University, Lund, Sweden. Member of Examination Committee. June 2015.*Engineering Safety. Application to Fire Safety Design of Buildings and Road Tunnels*, Henrik Bjelland, Ph.D. Dissertation, University of Stavanger, Stavanger, Norway. Served as First Opponent. Nov. 2013.*The Real Cost of Fire in Australia*, Brian Ashe, Ph.D. Dissertation, Macquarie University, Sydney, New South Wales, Australia. External Examiner. February 2012.**PHDS, MS THESES, AND GRADUATE RESEARCH PROJECTS****PhD Dissertations***Completed**William Ivans*, (December 2017), WPI. *A Framework for Assessing the Technical Quality and Adequacy of Performance-Based Design approaches to Fire Safety Engineering*. Primary advisor. Co-advisors: N. Dembsey, WPI, and Dr. Stephen Unwin, Pacific Northwest National Laboratories.*Amaya Osacar* (October 2017), University of Navarra. *Establishing a Performance-Based Fire Safety Strategy Approach for Existing Buildings*, Ph.D. research, University of Navarra, Pamplona, Spain. Co-Supervisor. Primary supervisor Prof. Juan Echevarria, University of Navarra.*Gregory Gorbett* (October 2015), WPI. *Development and Assessment of a Decision Support Framework for Enhancing the Forensic Analysis and Interpretation of Fire Patterns*. Primary advisor. Dissertation Committee included Prof. N. Dembsey, FPE and Christopher Wood, FPE (adjunct) and Firelink LLC.*Haejun Park* (February 2014), WPI. *Increasing Building Fire Safety by Bridging the Gap between Architects and Fire Safety Engineers*. Primary advisor. Dissertation Committee included Prof. N. Dembsey, FPE and Prof. Mark Goulthorpe (MIT Architecture).*Alberto Alvarez* (February 2012). *An Integrated Framework for the Next Generation of Risk-Informed Performance-Based Design Approach used in Fire Safety Engineering*. Primary advisor. Dissertation Committee included Nicholas Dembsey (WPI FPE) and J. Russell Thomas, Head of Fire Research, National Research Council, Canada.*In Progress**Majed Almejmaj*, PhD Candidate, WPI. *Investigation of Cultural Factors Impacting Emergency Evacuation in Saudi Arabia*, Primary advisor. Dissertation Committee includes Prof. N. Dembsey, FPE, Jeanine Skorinko, SSPS, Michael Radzicki, SSPS.*Michael Stromgren*, PhD Candidate., Lund University. *Data and Framework for Building Fire Safety Policy Decision* (tentative title), Co-Supervisor. Primary supervisor Prof. Patrick van Hees, Lund University.

Antonio Leiras, PhD Candidate, University of Coimbra. *Development of Fire Risk Assessment Method for Buildings Using a Risk Index Approach*, Co-Supervisor. Primary supervisor Prof. Joao Paulo Rodrigues.

Paulo Prata Ramos, PhD Candidate, University of Coimbra, *Prospects for the implementation of a fire safety performance-based code in Portugal*, Co-Supervisor. Primary supervisor Prof. Joao Paulo Rodrigues.

### **MS/MA Theses**

Jin Kyung Kim (May 2014), MS, WPI. *Seismic Performance of Fire Protection Systems and Post-Earthquake Fire Performance of Buildings*. Advisor. Reader N. Dembsey.

Robert Neale (May 2013), MA, Naval Post Graduate School and U.S. Department of Homeland Security, Center for Homeland Defense and Security. *Evaluating the Arson Scenario: A Policy Option Analysis of the Physical Security Criteria for Federal Facilities Design Basis Threat*. Reader. Advisor Dr. Tom Mackin, Professor, California Polytechnic, San Luis Obispo.

Adam Tracy (May 2010), WPI. *The Implementation of Residual Risk Analysis for Explosion Protection Systems*. Co-advisor. Prof. K. Notarianni, FPE, advisor, and Randal Davis (Fenwal), co-advisor.

Matthew A. Johann (May 2002), WPI. *Fire-Robust Structural Engineering: A Framework Approach to Structural Design for Fire Conditions*. Co-advisor. Prof. L. Albano and Prof. R. W. Fitzgerald, advisors.

Scott Laramée (May 1999), WPI. *Performance-Based Approach for Analysis and Evaluation of Aircraft Hangars and Similar High Ceiling Spaces*, Co-advisor. Prof. N. Dembsey, advisor.

Armin Wolski (May 1999), WPI. *Addressing Building Fire Safety as an Acceptable Risk Problem – A Guide for Developing Performance-Based Fire Safety Regulations*. Co-advisor. Prof. N. Dembsey, advisor.

### **Graduate Independent Study Projects (ISGs)**

Woojung Park (July 2017). *Marina Risk Reduction*. Graduate Independent Study Project. Advisor.

Mai Tomida (December 2015). *Case Studies on Building Fire Impacts to the Environment*. Advisor.

Mary Long (May 2015). *Impact of Smoke Compartment Size on Horizontal Evacuation Time in Healthcare Facilities*. Advisor.

Camille Levy (May 2015). *Assessing Variability in Engineer Selection of Tenability Criteria*. Advisor.

Ian Jutras (May 2015). *A Framework for Performance-Based Design and the Development of Objective-Criteria-Scenario Triplets*. Advisor.

Drew Martin (May 2015). *Quantification of Green Building Features on Firefighter Safety: Test Rig Development and Risk-Based Safety Assessment Tool*. Advisor.

Manuel Hurtado (October 2014). *Development of Design Fire Heat Release Rate Catalog and Database*. Graduate Independent Study Project. Advisor.

Ian Jutras (August 2014). *A Proposed Approach for Developing and Presenting Fire Scenarios, Design Fires and Criteria for Regulation and Design*. Advisor.

Drew Martin (May 2014). *Quantification of Green Building Features on Firefighter Safety*. Graduate Independent Study Project. Advisor.

Minchao Yin (December 2013). *Quantification of Green Building Features on Firefighter Safety*. Graduate Independent Study Project. Advisor.

James Grimard and Samantha Sinapi (December 2013). *Characterization of Aging, Overweight and Disabled Populations and Impacts on Evacuation from High-Rise Buildings*. Advisor.

Jin Kyung Kim (May 2012). *Seismic Performance of Fire Protection Systems and Post-Earthquake Fire Performance of Buildings*. Advisor. (Transitioned to MS thesis in 2012).

William Ivans (May 2012). *Characterization of Building Types and Quantification of Design Fires*. Advisor.

Juan Echeverria (May 2011). *Development of a Performance-Based Approach to Addressing Fire Safety in Existing Buildings*. Advisor.

Shane Cherney (May 2011). *Characterization of Building Types and Quantification of Design Fires*. Graduate Independent Study Project. Advisor.

Arthur Gager (May 2011). *Quantification of Design Fires (S11)*. Advisor.

Donald Havener (May 2011). *Data for Validation, Verification and Algorithm Development of the Egress Model Pathfinder*. Advisor. Co-advisor Charlie Thornton, Thunderhead Engineering.

Kevin Black (May 2011). *People and Fires*. Advisor.

Kurt Schebel (December 2009 and May 2010). *Rail Vehicle Fire Hazards*. Advisor. Co-advisors Prof. N. Dembsey, WPI, and Mr. J. Tubbs, Arup. Mr. Schebel was awarded the **2011 SFPE Education and Scientific Foundation Student Scholar Award** for his work.

Christine Chioffi (May 2010). *VID System Development to Improve Fire Detection for Fire Protection Engineering Applications*. Advisor. Co-advisors Prof. Ali Rangwala, FPE, Prof. Humi, Math, Dr. Daniel Gottuk, Hughes Associates.

Mohammed Saleh (May 2010). *Fire Risk Assessment in a Petroleum Processing Facility*. Advisor.

Alberto Alvarez (May 2009). *Fire Risk Assessment in French Petrochemical Facilities*. Advisor.

Robert Accosta (December 2008 and May 2009). *The Effect of Sprinkler Sprays on Fire Induced Mass Flow Rates*. Graduate Independent Study Project. Advisor. Co-adviser Prof. N. Dembsey.

Alberto Alvarez (December 2008). *New Perspective on Performance-Based Design for Fire*, Graduate Independent Study Project. Advisor.

Amanda Moore (May 2003). *Development of Design Fires for Structural Fire Protection*. Graduate Independent Study Project. Co-advisor. Primary advisors Prof. L. Albano, and Prof. R. W. Fitzgerald.

Jennifer Sapochetti (May 2000). *Evaluating the Usability of Performance-Based Codes and Engineering Guides*. Co-advisor. Primary advisor Prof. N. Dembsey.

## **COURSES DEVELOPED AND TAUGHT**

### **Worcester Polytechnic Institute (WPI), Worcester, MA, USA**

Developed and taught the following graduate courses:

- FPE 555, *Detection, Alarm and Smoke Control*
- FPE 571, *Performance-Based Design*
- FPE 580M, *Fire Risk and Regulatory Policy*
- FPE 580N, *People and Fire*
- FPE580R, *Fire Risk Assessment*
- FPE3080, *Introduction to Building Fire Safety Systems Design*

### **Universidad Carlos III de Madrid, Madrid, Spain**

Co-developer of program, Member of External Council of Direction, and Lecturer, (2006-2008), professional Master's Degree program in Fire Safety Engineering. Funded by the Spanish Association of



Fire Protection Engineers (Asociación de Profesionales de Ingeniería de Protección contra Incendios (APICI)), Metro de Madrid and others, this was the first university-level Master's program in fire safety engineering in Spain. I was part of the team that developed the overall program, including topic areas and content. I developed and taught the module on Performance-Based Design. This program was transitioned to Comillas Pontifical University in Madrid in 2009.

**Society of Fire Protection Engineers, Boston, MA, USA**

- Developed and taught SFPE Seminar *Fire Safety Design Challenges for Very Tall Buildings* (2014 - )
- Co-developed the SFPE/ICBO/IFCI Seminars *Engineering Fire Safety Alternatives* and *Introduction to Computer Fire Modeling* (1997)
- Co-developed and co-taught the SFPE Short Course *Introduction to Performance-Based Design for Fire Protection Engineers* (1995 – 1997)
- Co-developed and co-taught the *SFPE Tutorial Performance-Based Fire Detection and Signaling Systems* (1993 –1995)