

# Erica C. Fischer, Ph.D., P.E.

erica.fischer@oregonstate.edu

## Education

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**Purdue University**, West Lafayette, IN, Lyles School of Civil Engineering, Ph.D., 2015

Area of Specialization: Structural Engineering

Ph.D. Dissertation: Fire behavior of simple (shear) connections in steel-frame buildings

Research Advisor: Professor Amit H. Varma

**Cornell University**, Ithaca, NY, Civil and Environmental Engineering, B.S.C.E., 2007

## Awards and Recognition

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- Degenkolb Engineers CEO Circle Award (Spring 2017)
- Estus H. and Vashti L. Magoon Award for Excellence in Teaching (Spring 2015)
- Purdue Graduate Student Government (PGSG) Travel Grant (Spring 2015)
- Purdue University Outstanding Civil Engineering Graduate Student (Spring 2014)
- College of Engineering Travel Grant, sponsored by College of Engineering (Spring 2014)
- American Society of Civil Engineering (ASCE) O.H. Ammann Fellowship (2013-2014)
- First Place Poster Award, American Society of Civil Engineers Structures Congress (Spring 2012)
- National Science Foundation (NSF) Civil, Mechanical and Manufacturing Innovation Engineering Research and Innovation Conference Pre-Conference Student Workshop (Summer 2012)
- American Institute of Steel Construction (AISC)/Steel Erectors of Chicago Scholarship (Fall 2011)
- National Science Foundation (NSF) Reinvigorating Engineering and Change History (REACH) Fellowship (2010-2012)

## Research

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**Assistant Professor, Oregon State University, 09/2017-present**

Graduate Research Assistant, Purdue University, 08/2010 – 08/2015

Research Supervisor: Professor Amit H. Varma

**Ph.D. Dissertation: Behavior of simple (shear) connections in steel-frame buildings during fire (funded by AISC, AISI, NSF)**

- Applied thermal loads using high temperature ceramic fiber radiant heaters. Measured composite beam deflections and thermal distribution throughout specimens, and used innovative methods of determining connection rotation with digital photogrammetry.
- Investigated plate bearing and bolt shear connection failure modes at elevated temperatures. Utilized tests in structural reliability analysis for bolt shear resistance factors varying with temperature.
- Developed three-dimensional (3D) finite element method (FEM) models to predict the behavior of composite beams and simple connections during fires.
- Performed parametric study to examine the effect of beam length, fire protection, deck orientation, continuous deck around columns on the performance of simple connections during a fire.

Graduate Research Assistant, Purdue University, 08/2014-12/2014

Research Supervisor: Professor Judy Liu

**Project: Learning from Earthquakes – Examination of structural failures after the Napa Valley Earthquake**

- Forensic examination of buildings in downtown Napa, residential neighborhoods in the downtown Napa region, and wineries and wine storage facilities after the August 24, 2014 earthquake
- Performed comprehensive investigation of previous earthquakes that caused similar damage to wineries and wine storage facilities around the world

Graduate Student, Purdue University, 01/2013-05/2013

Research Supervisor: Professor Pablo Zavattieri

**Project: Finite element modeling of bolt shear fracture using cohesive elements**

- Developed three-dimensional (3D) FEM models to model bolt shear failure mode of a shear-tab connection using cohesive elements
- Developed cohesive zone model for bolt shear in a shear-tab connection including fracture energy
- Compared results of 3D FEM connection model with component spring model developed to model connections in FEM building models

Graduate Research Assistant, Purdue University, 08/2012-05/2013

Research Supervisor: Professor Amit H. Varma

**Project: Evaluation of steel-concrete (SC) walls for nuclear construction application (funded by Mitsubishi Heavy Industries (MHI))**

- Designed pushout specimens to test strength of proprietary tie bar and shear stud configuration of proposed SC wall design
- Tested Pushout specimens to compare strength of proprietary tie bar and shear stud configuration to required strength of RC walls for nuclear application provided in American Concrete Institute (ACI) 349

Graduate Research Assistant, Purdue University, 01/2013-08/2015

Research Supervisor: Professor Amit H. Varma

**Project: Design of Split-tee Connections for Special Composite Moment Frames**

- Comprehensive investigation of previous research on connections for composite moment frame construction
- Developed design procedure for engineers to use to design split-tee connection for special composite moment frames
- Developed journal paper which provides engineers with the tools to apply for prequalification of similar split-tee connections for special composite moment frames

### **Research Grants**

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Title: A Framework for Evaluating the Impact of Post Disaster Public Behavior on Emergency Management

Funding Agency: National Science Foundation (NSF)

Co-authors: Kasey M. Faust, Ph.D. (UT Austin), Salvador Hernandez, Ph.D. (Oregon State University)

Amount: \$399,064

Status: Rejected

## Publications

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### JOURNAL ARTICLES

- J1. Fischer, E.C., Varma, A.H. (2015). Fire Behavior of Composite Beams with Simple Connections: Benchmarking of Numerical Models. *Journal of Constructional Steel Research*. vol. 111. p. 112-125
- J2. Selden, K.L., Fischer, E.C., Varma, A.H. (2015). Experimental Investigation of Composite Beams with Shear Connections Subjected to Fire Loading. *ASCE Journal of Structural Engineering*. vol. 141 (10).
- J3. Fischer, E.C., Varma, A.H. (2015). Design of Split-Tee Connections for Special Composite Moment Frames. *AISC Engineering Journal*. vol. 52 (3). p. 185-202
- J4. Fischer, E.C., Liu, J., Varma, A.H. (2016). Cylindrical Steel Tank Damage During Earthquakes: Lessons Learned and Mitigation Opportunities. *ASCE Practice Periodical on Structural Design and Construction*
- J5. Fischer, E.C., Selden, K.L., Varma, A.H. (2016). Experimental Evaluation of Fire Performance of Simple (Shear) Connections. *ASCE Journal of Structural Engineering*
- J6. Fischer, E.C., Varma, A.H. (2016). Fire Resilience of Composite Beams with Simple Connections: Parametric Studies and Design. *Journal of Constructional Steel Research*. vol. 128. p. 119-135.
- J7. Fischer, E.C., Zhu, Q., Varma, A.H. "Experimental Evaluation of Single-Bolted Lap Joints under Fire Loading". *Accepted June 2017*.

### TRADE JOURNAL ARTICLES

- J8. Fischer, E.C., Liu, J., Varma, A.H. (2015). Lessons Learned from the Napa Valley Earthquake: A Case Study. *Structure Magazine*. National Council of Structural Engineers Association (NCSEA), March 2015, p. 10-14.
- J9. Fischer, E.C., Slivers, A. (2016). How Sustainable is Seattle's Concrete? *Equilibrium Newsletter for Structural Engineers Association of Washington (SEAW)*. May 2016.
- J10. Fischer, E.C., Varma, A.H. (2016). Environmental Impacts of Fire. *Structure Magazine*. National Council of Structural Engineers Associations (NCSEA). September 2016.
- J11. Fischer, E.C., Calvi, P. (2016). Seattle Engineers go to Italy to Perform Reconnaissance. *Equilibrium Newsletter for Structural Engineers Association of Washington (SEAW)*. October 2016.
- J12. Fischer, E.C., Houruchi, C., Koklanos, P., Stringer, M. (2017). What Structural Engineers Need to Know About Resiliency in 2017. *Structure Magazine*. National Council of Structural Engineers Associations (NCSEA). January 2017.

### JOURNAL ARTICLES (WORK-IN-PROGRESS)

- J13. Fischer, E.C., Agarwal, A., Varma, A.H. "Advanced Fire Analysis to Predict Full Story Fire and Moving Fire Induced Collapse of Steel-Framed Buildings". *Expected submission date: April 2017*
- J14. Fischer, E.C., Agarwal, A., Varma, A.H. "Advanced Fire Analysis to Predict Compartment Fire Induced Collapse of Steel-Framed Buildings". *Expected submission date: April 2017*

### REPORTS

- R1. Fischer, E.C. (2015). "Learning from Earthquakes: 2014 South Napa Valley Earthquake Reconnaissance Report." Purdue University Research Repository. Purdue University. West Lafayette, IN

## CONFERENCE PROCEEDINGS (IN PRINT)

- C1. Selden, K.L., Fischer, E.C., Varma, A.H. (2014). “Advanced Fire Testing of a Composite Beam with Shear Tab Connections.” *ASCE Structures Congress*, Boston, MA, April 3-5, 2014.
- C2. Selden, K.L., Fischer, E.C., Varma, A.H. (2014). “Experimental Evaluation of Composite Beams Subjected to Fire Loading.” *Structures in Fire Conference*, Shanghai, China, June 10-13, 2014.
- C3. Fischer, E.C., Varma, A.H. (2015). “Sustainability and Structural Fire Engineering.” *ASCE Structures Congress*, Portland, OR, April 23-25, 2014.
- C4. Fischer, E.C., Varma, A.H. (2015). “Numerical Analysis of Composite Beams with Shear-tab Connections Subjected to Fire.” *PROTECT15 – 5<sup>th</sup> International Workshop of Performance Protection & Strengthening of Structures under Extreme Loading*. East Lansing, MI, June 28-30, 2015.
- C5. Fischer, E.C., Lai, Z., Varma, A.H. (2015). “Design of Connections for Composite Special Moment Frames (C-SMF) with Concrete-Filled Steel Tube (CFT) Columns.” *8<sup>th</sup> STESSA Conference on Behaviour of Steel Structures in Seismic Areas*. Shanghai, China, July 1-3, 2015.
- C6. Fischer, E.C., Gimbert-Carter, S.J. (2016). “Learning to Survive: Disaster Resilience in Developing Countries.” *ASCE Structures Congress*, Phoenix, AZ, February 14-17, 2016.
- C7. Fischer, E.C., Varma, A.H. (2016). “Behavior of Single-Bolted Lap Splice Joints at Elevated Temperatures” *8<sup>th</sup> International Connections Workshop*. Boston, MA, May 24-26, 2016.

## CONFERENCE PROCEEDINGS (ACCEPTED)

- C8. Fischer, E.C., Liu, J. (2017). “Seismic Behavior of Cylindrical Fluid-Filled Steel Tanks.” *ASCE Structures Congress*, Denver, CO, April 6-8.
- C9. Fischer, E.C., Varma, A.H., Agarwal, A. (2017). “Advanced Analysis of Steel-Frame Buildings for Moving and Full Story Fires.” *ASCE Structures Congress*, Denver, CO, April 6-8.

## Poster Presentations

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- P1. Selden, K.L., Fischer, E.C., Varma, A.H. (2012). Experimental and Numerical Evaluation of Composite Floor Slabs Under Fire. *ASCE Structures Congress*, Chicago, IL, March 29-31, 2012.
- P2. Selden, K.L., Fischer, E.C., Varma, A.H. (2013). Fire Resistance of Composite Floor Beams and Associated Beam-to-Column Connections. *ASCE Structures Congress*, Pittsburgh, PA, May 2-4, 2013.
- P3. Fischer, E.C., Varma, A.H., Zhu, Q., Agarwal, A. Connection Models for Advanced Fire Analysis of building Structures. *ASCE Structures Congress*, Boston, MA, April 3-5, 2014.
- P4. Selden, K.L., Fischer, E.C., Varma, A.H. (2012). Experimental and Numerical Evaluation of Composite Floor Slabs Under Fire. *NSF CMMI Research and Innovation Conference*, Boston, MA, July 8-9, 2014.
- P5. Fischer, E.C., Varma, A.H. (2015). “Sustainability and Structural Fire Engineering.” *ASCE Structures Congress*, Portland, OR, April 23-25, 2014.
- P6. Fischer, E.C., Liu, J., Varma, A.H. (2015). “Seismic Behavior of Cylindrical Fluid Filled Tanks.” *EERI Annual Meeting*, Boston, MA, April 1-3, 2015.

## Oral Presentations

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- OP1. Fischer, E.C., Seismic Behavior of Split-Tee Connections for Special Composite Moment Frames, *Invited Talk*, American Society of Civil Engineers (ASCE) Composite Construction Committee, ASCE Structures Congress, Pittsburgh, PA, May 2-4, 2013.
- OP2. Fischer, E.C., Experimental Evaluation of Composite Beams Subjected to Fire Loading, *Conference Presentation*, Structures in Fire Conference, Shanghai, China, June 10-13, 2014.
- OP3. Fischer, E.C., Numerical Analysis of Composite Beams with Shear-tab Connections Subjected to Fire, *Conference Presentation*, PROTECT15 – 5<sup>th</sup> International Workshop of Performance Protection & Strengthening of Structures under Extreme Loading, East Lansing, MI, June 28-30, 2015.

- OP4. Fischer, E.C., Resiliency of Steel-Frame Buildings in Fire, *Invited Talk*, Degenkolb Engineers, November 11, 2015.
- OP5. Fischer, E.C., Sustainability and Structural Fire Engineering, Seattle, Washington, *Invited Talk*, Structural Engineers Association of Washington (SEAW) Sustainability Committee, November 19, 2015.
- OP6. Fischer, E.C., Learning to Survive: Disaster Resilience in Developing Countries, *Conference Presentation*, ASCE Structures Congress, Phoenix, AZ, February 14-17, 2016.
- OP7. Fischer, E.C., Ash, C., Thurston County School Assessment Program: The 50-year Washington State Resiliency Plan, *Conference Presentation*, 2016 Partners in Emergency Preparedness Conference, Tacoma, WA, April 19-21, 2016
- OP8. Fischer, E.C., Introduction to Structural Fire Engineering, *Invited Lecture*, CE 500, University of Washington, Seattle, May 10, 2016.
- OP9. Fischer, E.C., Behavior of Single-Bolted Lap Splice Joints at Elevated Temperatures, *Conference Presentation*, 8<sup>th</sup> International Connections Workshop, Boston, MA, May 24-26, 2016.
- OP10. Fischer, E.C., Rodriguez-Nicol, T., Koklanos, P., Disaster Resilience for Sustainable Design, *Webinar*, American Society of Civil Engineers (ASCE), August 5, 2016.
- OP11. Fischer, E.C. August 24, 2016 Central Italy Earthquake, *Invited Talk*, Degenkolb Engineers, October 5, 2016.
- OP12. Fischer, E.C., Reconnaissance After 2016 Central Italy Earthquake, *Invited Talk*, Structural Engineers Association of Washington (SEAW) Earthquake Engineering Committee, Seattle, November 1, 2016.
- OP13. Fischer, E.C., Parametric Study of Fire Behavior Composite Beams with Simple Connections, *Invited Talk*, American Institute of Steel Construction (AISC) Task Committee (TC) 8, Chicago, IL, November 15, 2016.
- OP14. Fischer, E.C., Learning from Earthquakes Plenary Session, *Invited Panelist*, Earthquake Engineering Research Institute (EERI) Annual Meeting, March 7-10, 2017, Portland, OR.
- OP15. Fischer, E.C. Analysis of Rectangular CFT Columns Subject to Elevated Temperatures, *Invited Talk*, Structural Stability Research Council (SSRC), March 21-24, San Antonio, TX.
- OP16. Fischer, E.C., Seismic Behavior of Cylindrical Fluid-Filled Steel Tanks, *Invited Talk*, ASCE Structures Congress, Denver, CO, April 6-8.
- OP17. Fischer, E.C., Advanced Analysis of Steel-Frame Buildings for Moving and Full Story Fires, *Invited Talk*, ASCE Structures Congress, Denver, CO, April 6-8.
- OP18. Fischer, E.C., Calvi, P. Reconnaissance After August 24, 2016 Central Italy Earthquake, *Invited Talk*, Washington Chapter Earthquake Engineering Research Institute (EERI), April 19, Seattle, WA.

## **Teaching**

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### **CE 498 – Civil Engineering Senior Design Project, Teaching Assistant**

Purdue University: 01/2014-05/2015

Supervisor: Professor Robert Jacko and Professor Mark Bowman (Spring 2014)

Project description: Solving the Combined Sewer Overflow Problem in Evansville, IN – Corporate Partner: CH2MHILL (Class size = 123 students)

Supervisor: Professor Robert Jacko (Fall 2014)

Project description: Section 5, Tier II of I-69 Expansion from Evansville to Indianapolis, IN (Fall 2014) – Corporate Partner: HNTB (Class size = 40 students)

Supervisor: Professor Robert Jacko (Spring 2015)

Project Description: Savannah Harbor Expansion Project – Corporate Partner: Eco2Tech (Class size = 80 students)

Tasks included: Interfacing with corporate partners to obtain data for students and provide guest lectures for class; obtaining and organizing data from corporate partner for students to access on Purdue's ftp site; creation of project assignment description and scope of work for students; occasionally preparing lecture on structural design; mentoring students by assisting students with writing reports, making presentations, performing technical research, interpreting codes and standards; grading; maintaining attendance record and course grade book; and building and maintaining Blackboard class site.

### **CE 270 – Introduction to Mechanics for Civil Engineers, Occasional Lecturer**

Purdue University: Spring 2012, Fall 2013

Supervisor: Professor Amit H. Varma

Tasks included: Preparing lecture material on elastic stress-strain behavior, shear and moment diagrams, and torsion; lecturing to students, preparing homework assignments on lecture material

### **CE 591 – Advanced Steel Design, Occasional Lecturer**

Purdue University: Spring 2012

Supervisor: Professor Robert Connor

Tasks included: Preparing lecture material on composite beam design, lectured to students, preparing homework assignments on lecture material, grading homework assignments

### **Gifted Education Research Institute (GERI) Structural Engineering Course Instructor**

Purdue University: 07/2012, 07/2013

Tasks included:

- Teaching in a classroom setting and working one-on-one with sixth and seventh graders on the concepts of structural engineering over a 1-week (6-hours/day), intensive program for gifted students
- Preparing lectures, projects, and field trips pertaining to structural engineering
- Providing daily feedback on student progress
- Exposing students to different areas of structural engineering through interactive, hands-on activities, and field trips to a concrete plant, structural engineering laboratory, sustainable homes, and construction sites

### **Summer Undergraduate Research Fellowship (SURF) Program, Graduate Mentor**

Purdue University: 05/2012-08/2012

Tasks included mentoring two undergraduate students by assisting with:

- Writing a problem statement and research abstract,
- Providing background material on structural fire research,
- Teaching students about instrumentation, building test setups, designing specimens, and testing specimens

### **Arch 1612 – Structural Concepts, Teaching Assistant**

Cornell University: 01/2007-05/2007

Supervisor: Professor Petru Petrina

Tasks included:

- Providing lab session during two 2-hour sessions per week. During this time a one-hour review of class material was provided, followed by one-hour to work one-on-one with students on course topics and homework help.
- Preparing homework assignments and homework solutions for students
- Grading examinations and homework assignments
- Managing course grade book and class website

## **Academic Excellence Workshop (AEW), Facilitator (MATH 191, MATH 192, MATH 293)**

Cornell University: 01/2006-05/2007

Tasks included:

- Teaching calculus in the context of engineering in a classroom setting for one two-hour session per week
- Developing problem solving collaborative sessions for undergraduate students, including development of content for sessions
- Preparing lesson plans on topics students covered in their class lectures that week that included example problems and an overview of the course material covered
- Managing attendance records for pass/fail one-credit course

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## **Work Experience**

**Design Engineer, *Degenkolb*, Seattle, WA, 09/2015-present**

Select projects include:

- Airplane Manufacturer (Everett, WA): Designed retrofit of existing truss moment-frame building for airplane production; detailed of connections of new megatruss to existing framing; detailed of crane attachment to existing building framing
- Boeing 45-334 (Everett, WA): Designed new fire pump house for building. Performed seismic evaluation of existing building per ASCE 41-13. Designed seismic retrofit of building per ASCE 41-13.
- Veteran's Administration Hospital (Roseburg, OR): Existing RC buildings with hollow clay tile walls; Performed seismic analysis of existing RC buildings with hollow clay tile walls as per ASCE 41; designed seismic upgrade to both buildings
- Thurston County School Inspections (Olympia, WA): Performed structural inspections of schools in Thurston County, WA per ASCE 41. Collaborated with FEMA to perform *HAZUS* analysis of schools. Wrote report and prepared multiple presentations to: school administrators, emergency management official, and design professionals. Developed tool for school districts to use to determine seismic risk in school district. Tool based upon FEMA *HAZUS* program.
- Redhook Brew Pub (Seattle, WA): Designed and detailed anchorage for brew pub tanks to raised concrete platform; designed and detailed supports for brew pub pipes throughout brewery; designed and detailed bar lighting armature; interfaced with contractor and architect to design various components of brewery, perform routine inspections, and meet deadlines.
- Graduate Hotel (Seattle, WA): Linear Dynamic Analysis of existing 1930s reinforced concrete 15-story hotel; performed seismic analysis of existing RC building per ASCE 41-13 Tier 3 analysis; designed and detailed voluntary seismic retrofit of building.

**Assistant Project Manager, *Purdue University/URS Nuclear Project*, West Lafayette, IN, 08/2011-08/2012**

- Presentation: Traveled to Washington, D.C. to assist in preparing a presentation to the Nuclear Regulatory Commission (NRC) on the analytical investigations and future experimental investigations of SC walls for nuclear applications
- Scheduling and Deliverables: Coordinated with United Research Services (URS) and Mitsubishi Heavy Industries (MHI) on creating schedules, project meetings, and deliverables
- Quality Control: Coordinated and communicated with Purdue University's Vice President of Research to create and implement export and quality control plans for numerical investigation on behavior of SC walls for nuclear applications

**Engineer, Murray Engineering, New York, NY, 08/2009-08/2010**

Select projects include:

- 161<sup>st</sup> Street Development, Queens, NY: Designed two 9-story towers on a shared parking garage; performed lateral analysis on masonry walls for both earthquake and wind loads; performed gravity analysis on steel framed parking garage for transfer loads into foundations
- 130 W. 12<sup>th</sup> Street, New York, NY: Performed extensive analysis on existing roof to determine additional capacity for recreational use; surveyed building to determine existing structural layout and system; designed structural reframing of elevator core to accommodate elevator enlargement as well as elevator servicing additional floors
- 33 Spring Street, New York, NY: Created plans for emergency shoring procedure as per NYC Department of Buildings (DOB); inspected shoring placement throughout building for structural stability; examined surrounding buildings for effects on party walls

**Engineer, DeSimone Consulting Engineers, New York, NY, 07/2007-07/2009**

Select projects include:

- 50 West Street, New York, NY: Designed 750-foot tall flat slab reinforced concrete (RC) residential structure with RC shear walls; performed multiple analysis for high modulus concrete including lateral analysis; performed design iterations to determine need for liquid mass damper to reduce period of structure when subjected to wind load
- 161 Maiden Lane, New York, NY: 554-foot tall flat slab RC residential structure with 15:1 aspect ratio; performed multiple analysis for options of preliminary shear wall layout design including lateral analysis
- David H. Koch Theater Renovation at Lincoln Center, New York, NY: Designed expansion of steel-framed orchestra pit incorporating masonry bearing walls and light gage raised floors in concrete building; analyzed hung steel gridiron over stage and existing 73-foot long roof truss joists for new theater and mechanical equipment; designed new box office light box framing using Unistrut and structural glass; performed structural inspections on all work performed
- Former Queens Family Courthouse, Queens, NY: 12-story mixed use steel and masonry building, 453,000 s.f.; incorporated existing 1928 building façade into new structure for historical preservation; designed transfer floor girders to allow for commercial tenants in mixed-use building
- Taught portion of in-house seminar on recent changes to NYC Building Code

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### Leadership Experience

**Structural Engineering Institute (SEI) Sustainability Committee**

Steering Committee Member (10/2015-present)

**Structural Engineering Institute (SEI) Sustainability Committee**

Disaster Resilience Work Group (DRWG) leader (09/2015-present)

**Earthquake Engineering Research Institute (EERI) Younger Members Committee**

Co-Chair (10/2014-present)

- Created the Virtual Earthquake Reconnaissance Team (VERT) to perform virtual reconnaissance after major earthquake events
- Create events and forums to increase involvement of young professionals and students in EERI
- Interact with EERI Board of Directors about policies to implement and promote to encourage more young professionals and student to be active in EERI
- Develop technical activities for younger members of EERI



**Earthquake Engineering Research Institute (EERI) *Student Leadership Council***

Member (08/2011-08/2014)

- Assisted in planning and operating the annual 2012, 2013, and 2014 EERI Undergraduate Seismic Design Competition
- Assisted in planning and operating the annual 2011, 2012, and 2013 Young Researcher's Symposium at the NEES Quake Summit
- Chaired the "Transition Working Group" to transition the Student Leadership Council from a board of selected 15 graduate students to a council containing representation from each EERI Student Chapter
- Wrote and implemented bylaws for the Student Leadership Council

**Earthquake Engineering Research Institute (EERI) *Student Leadership Council***

Co-President (08/2012-08/2013)

- Managed 15 graduate students from different universities throughout the United States to organize and run the 2013 EERI Undergraduate Seismic Design Competition
- Raised over \$60,000 in sponsorship from industry for the 2013 EERI Undergraduate Seismic Design Competition
- Applied for, and was awarded \$5,000 grant to organize and run the Young Researcher's Symposium at the 2013 NEES Quake Summit in Reno, NV
- Expanded the EERI Student Leadership Council from a council of 15 graduate students to a council with two representatives from each EERI Student Chapter
- Interfaced with EERI staff and board members to run the 2013 EERI Undergraduate Seismic Design Competition, Young Researcher's Symposium, and day-to-day operation of the Student Leadership Council
- Assisted universities in starting EERI Student Chapter (i.e. Cornell University)

**Earthquake Engineering Research Institute (EERI) *Purdue University Student Chapter***

President (08/2011-08/2013)

- Created partnership between Purdue's EERI Student Chapter and University of Illinois Urbana-Champaign EERI Student Chapter to receive more lecturers with expenses paid by EERI
- Organized and ran 13 different EERI lectures included 2 joint Purdue-Catholic University of Chile Webinars
- Organized full-day SAP2000 training by CSI raising over \$2,000 for Purdue EERI Student Chapter

**Earthquake Engineering Research Institute (EERI) *Purdue University Student Chapter***

Secretary (08/2010-08/2011)

- Organized full-day California Emergency Management (CalEMA) Safety Assessment Program (SAP) Training for Purdue University and surrounding states. Over 150 professionals and students attended the training bringing in over \$4,000 for Purdue's EERI Student Chapter
- Created connection with local high schools to teach AP Physics classes about earthquake engineering

**Structural Engineers Association of New York (SEAoNY)**

Programs Committee Chair (01/2008-08/2010)

- Organized monthly lectures on current topics in structural engineering for professional engineers in the New York City area
- Organized full-day seminars on changes in NYC Building Code
- Organized social events for engineers in New York City area such as architectural boat cruise around Manhattan

### **Structural Engineers Association of New York (SEaONY)**

University Outreach Committee Chair (08/2009-08/2010)

- Started University Outreach Committee to get young engineers to give lectures to engineering students at universities in the New York City area

### **Structural Engineers Association of New York (SEaONY)**

Sponsorship Committee Chair (01/2009-08/2010)

- Started Sponsorship Committee to raise money for NCSEA National Conference and sponsorship for monthly SEaONY lectures
- Raised over \$40,000 for NCSEA National Conference held in NYC October 2010
- Obtained sponsorship for over 90% of monthly lectures held

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## **Disaster Mitigation and Reconnaissance**

**Volunteer Structural Engineer**, Earthquake Engineering Research Institute (EERI), 09/2016

*2016 Central Italy Earthquake Reconnaissance*

- Examined structural damage after the August 24, 2016 Central Italy Earthquake
- Documented damage to hospitals, schools, and residential building construction
- Comparison of seismic performance of retrofitted and existing structures

**Volunteer Structural Engineer**, Build Change, 03/2016-present

*Indonesia School Design Initiative*

- Developing typical school design for Indonesia government
- Developing school construction guidelines and standards for confined masonry school construction in Indonesia

**Volunteer Structural Engineer**, California Earthquake Clearinghouse, 08/2014

*2014 South Napa Earthquake Reconnaissance*

- Examined structural damage after the August 24, 2014 Napa Valley Earthquake
- Documented damage in downtown Napa, surrounding residential communities, and wineries and wine storage facilities

**Volunteer Structural Engineer**, Appropriate Infrastructure Development Group (AIDG), 03/2010

*2010 Haiti Earthquake Reconnaissance*

- Examined structural damage after the January 12, 2010 Haitian Earthquake
- Performed inspections to residential and commercial structures in Port-au-Prince and Leogane
- Documented building inspections performed in conjunction with the United Nations reconnaissance work
- Created sketches for the proper construction of property walls that were translated into French and Creole and distributed to home owners in Port-au-Prince and Leogane
- Assisted in creating a masonry training program for Haitian masons to learn proper construction techniques

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## **Student Supervision**

Student Name:	Rachel Chicchi
Degree:	Ph.D.
Anticipated Graduation Date:	8/2017
Name of Advisor:	Amit H. Varma
<b>Title of Dissertation:</b>	<b>Robustness and Structural Performance under Multi-Hazards</b>

## Professional Service

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**Member,** SEI/ASCE Fire Protection Committee, 02/2016-present

- Development of design examples of the Performance-Based Design Guidelines for Fire
- Writing of analysis guidelines for Performance-based Design Guidelines for Fire

**Member,** EERI School Earthquake Safety Initiative (SESI), 04/2016-present

**Member,** EERI Learning from Earthquakes On-site Learning Program, 10/2015-10/2016

**Member,** Structural Engineers Association of Washington (SEAW) Sustainability Committee, 09/2015-present

**Member,** Structural Engineers Association of Washington (SEAW) Disaster Response Committee, 09/2015-present

**Member,** SEI/ASCE Sustainability Committee, 08/2012-present

- Organized Top 10 Frequently Asked Questions (FAQ) on Disaster Resilience and Climate Change for publication on committee website
- Investigation of rate of resiliency of developed countries versus undeveloped countries after natural disaster

**Member,** SEI/ASCE Composite Construction Committee, 08/2012-present

- Leading effort to develop Performance-Based Design Guidelines for Composite Construction

## Certification

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Professional Engineering License – California, 03/2013-present (CA, #80786)

Professional Engineering License – Washington, 01/2016-present (WA, #53389)

California Emergency Management Agency (CalEMA) Safety Assessment Program (SAP) Certification

ATC-20 Training Certification

ATC-45 Training Certification

RESTORE Training in Masonry Conservation