Dustin T. Cook, Ph.D., P.E.

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Education

Ph.D., University of Colorado Boulder **2017-2021**

Department of Civil, Environmental, and Architectural Engineering

Dissertation: Advancing Performance-Based Earthquake Engineering for Modern Resilience Objectives

Advisor: Abbie Liel

M.S., University of California, Los Angeles **2014**

Department of Civil and Environmental Engineering

B.S., California State University, Chico **2012**

Department of Civil and Environmental Engineering

Teaching Experience

Teaching Assistant: Reinforced Concrete Design and Senior Design **2018-2019**

University of Colorado, Boulder: CEAE Department

Provided teaching and administrative assistance to aid professors in providing instruction to undergraduate engineering students for reinforced concrete design in the Fall of 2018 and senior design in the Spring of 2019. Corresponded with students via email, held bi-weekly office hours, graded student assignments, organized guest lectures, and occasionally lectured on class material.

Lecturer of Civil Engineering: Statics Lecture and Activity Session **2015-2016**

California State University Chico: Department of Civil Engineering

Instructed undergraduate engineering students in the resolution of forces on rigid bodies in 2D and 3D space through structured lecture and activity sessions in the Fall of 2015 and the spring of 2016. Monitored student learning through regular exams, graded homework assignments, in-class activity assignments, and regularly held office hours.

Instructor of Civil Engineering: Statics Activity Session **2013**

California State University Chico: Department of Civil Engineering

Instructed three statics activity sessions for undergraduate engineering students. Facilitated student learning through in-class example problems and demonstrated statics fundamentals through hands-on activities. Graded activities and homework assignments.

Undergraduate Instructor: Mechanics of Materials Extra Session **2012**

California State University Chico: Department of Construction Management

Conducted weekly instructional sessions for undergraduate construction management students. Provided instruction and feedback on mechanics of materials homework assignments and practice problems.

Work Experience

NRC Postdoctoral Fellow **2021-2023**

National Institute of Standards and Technology

Postdoctoral researcher. Currently working to develop prescriptive design requirements to inform functional recovery-based performance targets in future building codes and standards.

Research Engineer, Technical Developer, and Seismic Risk Consultant **2014-2021**

Haselton Baker Risk Group, LLC

Developed software for performance-based earthquake engineering. Researched and developed new methods for structural response and performance model population to expedite the PBEE and risk assessment process. Assisted clients in performing seismic risk assessments.

Junior Structural Engineer **2014-2015**

Culp and Tanner, Inc. Structural Engineers

Reviewed shop drawings related to reinforced concrete, post tensioned, and steel components. Aided in the design of reinforced concrete columns for parking garage systems.

Research Experience

NRC Postdoctoral Fellow **2021-2023**

National Institute of Standards and Technology

Research Assistant: Liel Research Group **2017-2021**

University of Colorado, Boulder

ATC-138: Support of Performance-Based Seismic Design of Buildings **2020-2021**

Funded by the Federal Emergency Management Agency (FEMA)

Working group member. Developed a framework for the performance-based assessment of building functional recovery.

ATC-134: Performance-Based Seismic Engineering: **2017-2021**

Benchmarking of Existing Building Evaluation Methodologies

Funded by the National Institute of Science and Technology (NIST)

Working group member. Compared the response of an ASCE 41 analytical model with the observed damage and instrumented response of a structure.

ATC-123: Improving Seismic Design of Buildings with Configuration Irregularities **2015-2018**

Funded by the Federal Emergency Management Agency (FEMA)

Working group member. Analytically investigated response of modern RC moment frame structures with vertical irregularities.

ATC-58-2: Development of Performance Based Seismic Design Guidelines: Phase 3 **2014-2017**

Funded by the Federal Emergency Management Agency (FEMA)

Working group member. Helped develop guidelines, resources, and methods for the improvement of the FEMA P-58 method.

NEESR-CR: Full-Scale RC and HPFRC Frame Subassemblies Subjected to Collapse-Consistent Loading Protocols for Enhanced Collapse Simulation and Internal Damage Characterization **2012-2017**

Funded by the National Science Foundation (NSF)

Working group member. Developed near fault loading protocols for experimental tests of RC moment frame subassemblies.

2012 PEER Summer Internship Program **Summer 2012**

Funded by the National Science Foundation (NSF)

Student Intern. Experimentally investigated shear wall boundary element behavior.

Publications and Presentations

Journal Publications

Cook, Liel, DeBock, and Haselton. *Benchmarking FEMA P-58 Repair Costs and Unsafe Placards from the Northridge Earthquake: Implications for Performance-Based Engineering*. International Journal of Disaster Risk Reduction. February 2021.

Cook and Liel. *A Framework to Relate Component Response to Global Consequences.* Bulletin of Earthquake Engineering: Advances in Seismic Fragility and Vulnerability Assessment. August 2021.

Conference Papers and Presentation

Haselton, Almeter, **Cook**, and Liel. *Resilient Design for Functional Recovery: Recent Traction in the S.E. Profession, New Technical Developments, and Proposed Next Steps.* Structural Engineers Association of California Virtual Convention, 2021.

Cook, Liel, Haselton, Koliou, and Almeter. *Functional Recovery: A New Framework to Quantify Recovery Time for Resilient Design*. Presentation at the Architectural Engineering Institute Virtual Conference, 2021.

Haselton, **Cook**, Almeter, Liel, and Wade. *Test Applications of the Working Pre-Beta FEMA P-58 Functional Recovery Assessment Method.* Presentation at the Earthquake Engineering Research Institute Annual Meeting, 2021.

Liel, **Cook**, Haselton, and Koliou. *Overview and Development of a Method for Assessing Building Functional Recovery*. Presentation at the Earthquake Engineering Research Institute Annual Meeting, 2021.

Cook and Liel. *A Performance-Based Framework for Assessing Building-Specific Functional Recovery*. Presentation at the Structural Engineers Association of California Convention, 2020.

Cook and Liel. *ASCE 41 Assessment of the Imperial County Services Building and Comparison with Recorded Response.* Paper and presentation at the 17th World Conference on Earthquake Engineering, 2020.

Cook, Liel, DeBock, Haselton. *Hindcasting Loss Estimate for the 1994 Northridge Earthquake: Implications for Loss Assessment at Low Intensity Shaking.* Paper and poster at the 17th World Conference on Earthquake Engineering, 2020.

Haselton, **Cook**, DeBock, Almeter, Wade. *Resilient Seismic Design for Functional Recovery Using Prescriptive and Non-Prescriptive Design Methods.* Paper at the 17th World Conference on Earthquake Engineering, 2020.

Cook, Liel, Luco, Almeter, and Haselton. *Implications of Seismic Design Values for Economic Losses*. Paper and presentation at the 13th International Conference on Applications of Statistics and Probability in Civil Engineering, ICASP13, 2019.

Cook, Liel, and Haselton. *Benchmarking of Seismic Loss Estimations from FEMA P-58 Compared to Other Methods.* Presentation at ASCE & SEI Structures Congress, 2019.

Wade, DeBock, Haselton, **Cook**, and Almeter. *Expected Performance of New Building-Code-Compliant Buildings in California.* Paper and presentation at the SEAOC Convention, 2018.

Cook, Wade, Haselton, Baker, and DeBock. *A Structural Response Prediction Engine to Support Advanced Seismic Risk Assessment.* Paper at the 11th National Conference on Earthquake Engineering, 2018.

Haselton and **Cook**. *Resilient Seismic Design Using Prescriptive and Non-Prescriptive Design Methods.* Paper and presentation at the 11th National Conference on Earthquake Engineering, 2018.

Debock, **Cook**, Haselton, and Wade. *New Developments for Rapid Seismic Risk Assessment of Wood Light-Frame Buildings.* Paper and presentation at the 11th National Conference on Earthquake Engineering, 2018.

Debock, Wade, **Cook**, Haselton, Valley, and Sabol. *Quantitative Assessments of Code Provisions for Vertical Building Irregularities in Frame Buildings.* Paper and presentation at the 11th National Conference on Earthquake Engineering, 2018.

Wade, Debock, Lawson, Koliou, **Cook**, and Haselton. *Seismic Risk Assessment of Tilt-Up Buildings using the FEMA P-58 Method.* Paper and presentation at the 11th National Conference on Earthquake Engineering, 2018.

Debock, Fitzgerald, **Cook**, Haselton. *New Developments in FEMA P-58 Seismic Risk Assessment of Wood Light-Frame Buildings.* Paper and presentation at the SEAOC Convention, 2016.

Cook, Fitzgerald, Chrupalo, Haselton, Baker. *Building Loss Estimation Methods: A Comparison of Methods and Recommendations for the Future.* Paper and presentation at the ATC & SEI, 2nd Conference on Improving the Seismic Performance of Existing Buildings and Other Structure, 2015.

Fitzgerald, **Cook**, Haselton. *Building Loss Estimation Methods: NSF NEESR Full-Scale Ductile RC Columns Subjected to Collapse-Consistent Loading Protocols: Learning from the Test Data and Recommendations for Simulating Collapse Behavior and Estimating Building Collapse Safety.* Paper and presentation at the ATC & SEI, 2nd Conference on Improving the Seismic Performance of Existing Buildings and Other Structure, 2015.

Haselton, **Cook**, Fitzgerald, Baker. *Progress on Resilience-Based Seismic Design and Assessment Supported by Advanced Prediction of Building Damage, Repair Cost, and Building Closure Time.* Paper and Presentation at the ATC & SEI, 2nd Conference on Improving the Seismic Performance of Existing Buildings and Other Structure, 2015.

Other Publications

Haselton, DeBock, and **Cook**. *Post-Earthquake Reoccupancy and Functional Recovery Times for New Residential Buildings in California: What do current codes and building practices provide?* White paper, Haselton-Baker Risk Group, 2021.

Tremayne, Mahin, Anderson, **Cook**, Erceg, Esparza, Jimenez, Krausz, Lo, Lopez, McCurdy, Shipman, Strum, *Earthquake Engineering for Resilient Communities: 2012 PEER Internship Program Research Report Collection*. Paper published by PEER 2012/07.

Webinars and Invited Presentations

Functional Recovery: A New Framework to Quantify Recovery Time for Resilient Design. SEAONC Summer Seminar on Functional Recovery and Resilient Design, 2021.

Quantifying Building Functional Recovery Time: New Developments and Ongoing Work. Haselton Baker Risk Group, 2021.

Benchmarking SP3 against Northridge Losses. SP3 Webinar Series. Haselton Baker Risk Group, 2020.

Detailed Benchmarking and Validation Studies of the SP3-RiskModel: An Overview of Findings. SP3-RiskModel Webinar Series. Haselton Baker Risk Group, 2018.

Upcoming Publications

Cook and Liel. *A Framework for Operationalizing the Assessment of Post-Earthquake Functional Recovery of Buildings.* Earthquake Spectra. Submitted May 2021. In review.

Cook, Safiey, and Liel. Impact of structural design characteristics on functional recovery performance. Anticipated submission December 2021.

Cook et al. *ASCE/SEI Assessment of Reinforced Concrete Buildings: Benchmarking ASCE/SEI 41 Nonlinear Dynamic Procedures with Empirical Damage Observations.* Anticipated submission 2022.

Professional Affiliations, Activities, and Awards

California Board for Professional Engineers, Land Surveyors and Geologists

- Professional Engineer, since 2016. License number: 86539

United Government of Graduate Students (UGGS)

- Awarded the 2019-2020 Graduate Teaching Excellence Award

California Office of Emergency Services (CalOES)

- Certified Disaster Service Worker under the Safety Assessment Program (SAP)

American Society of Civil Engineers (ASCE)

- Member since 2017.
- Reviewer for journal articles in *Natural Hazards Review*.

Earthquake Engineering Research Institute (EERI)

- Member since 2017.
- Secretary, Younger Members Committee, 2019-2021
- Co-Chair, Younger Members Committee, since 2021
- Executive Committee Member, World Housing Encyclopedia, since 2020.
- Secretary, World Housing Encyclopedia, since 2021.
- Received an honorable mention for the 2019-2020 EERI/FEMA NEHRP Graduate Fellowship in Earthquake Hazard Reduction.
- Reviewer for journal articles in *Earthquake Spectra*.