

ABBIE B. LIEL

Associate Professor, Ph.D., P.E.
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EDUCATION

Stanford University, Ph.D., Civil and Environmental Engineering (Structural Engineering), June, 2008

University College London, M.Sc., Building and Urban Design and Development, September, 2004

University College London, M.Sc., Civil and Environmental Engineering, *with distinction*, September, 2003

Princeton University, B.S.E., Civil and Environmental Engineering, certificate from the Woodrow Wilson School of Public and International Affairs, *summa cum laude*, June, 2002

ACADEMIC EMPLOYMENT HISTORY

Associate Professor, Dept. of Civil, Environmental and Architectural Engineering, **University of Colorado**, Boulder, 2015– present. Faculty Director of Civil Engineering Program (2018 – present). Clark Faculty Fellow (2018 – present)

Civil Engineering Honorary Visiting Researcher, Department of Civil and Environmental Engineering, **University of Auckland**, Aug. – Dec. 2015

Assistant Professor, Dept. of Civil, Environmental and Architectural Engineering, **University of Colorado**, Boulder, 2008 – 2015

Graduate Research Assistant, Dept. of Civil and Environmental Engineering, **Stanford University**, 2004 – 2008

Visiting Researcher, Earthquake Research Institute, **University of Tokyo**, 2006

Undergraduate Research Assistant, Dept. of Civil and Environmental Engineering, **Princeton University**, 2000 - 2002

HONORS AND AWARDS

National / International

Fellow of ASCE, *ASCE*, Inducted 2019

Fellow of ASCE's Structural Engineering Institute, *SEI*, Inducted 2019

Nominated as part of a team for Governor's High Impact Science Award (Unsuccessful), 2018

Civil Engineering Honorary Visiting Research Award, *University of Auckland*, 2015

Shah Family Innovation Prize, Awarded by the *Earthquake Engineering Research Institute*, 2015

Outstanding Paper *Earthquake Spectra*, 2013

Outstanding Paper of 2012 (Runner-up) in *Journal of Performance of Constructed Facilities*, 2013

National Science Foundation CAREER Award, 2012

Selected as Next-Generation Hazards and Disaster Researcher, 2009

Research Fellowship, Japan Society for the Promotion of Science, 2006

Winner, Student Paper Competition, Earthquake Engineering Research Institute, 2006

Recipient, Graduate Research Fellowship, National Science Foundation, 2004 – 2008

Marshall Scholar, 2002 – 2004

University of Colorado

Research Development Award, Dept. of Civil, Environmental and Architectural Engineering, 2018
Charles A. Hutchinson Memorial Teaching Award, College of Engineering, 2018
Outstanding Faculty Advisor Award, College of Engineering, 2015
Dean's Award for Outstanding Junior Faculty Member, College of Engineering, 2013
Faculty Teaching Award, Dept. of Civil, Environmental and Architectural Engineering, 2013
CU IMPART (Implementation of Multicultural Perspectives and Approaches in Research and Teaching) Faculty Fellowship Award for Diversity, CU Office of Diversity, Equity and Community Engagement, 2012
Young Researcher Award, Dept. of Civil, Environmental and Architectural Engineering, 2011

Other

Engineering News Record, Top 20 under 40, Rocky Mountain Region, 2015
Profiled in American Society of Engineering Education *PRISM* Magazine, 20 under 40 (<http://www.asee-prism.org/20-under-40-sep/>), Sept. 2014
Stanford Graduate Fellowship, Stanford University, 2004 – 2008
Princeton University: Pyne Prize, 2002 (highest undergraduate honor); Angus Civil Engineering Prize, 2002; Hayes-Palmer Engineering Prize, 2002; Van de Velde Public Policy Award, 2001

RESEARCH FUNDING

Current: Designing for and assessing functional recovery in seismic retrofit of existing concrete buildings: A framework. \$365,562 (PI: **Abbie Liel**; co-PIs: Maria Koliou). *National Institute of Standards and Technology*.

Current: Building seismic resilience of incrementally-constructed buildings (July 2019 – December 2020), \$49,845 (PI: **Abbie Liel**, Collaborator: Amy Javernick-Will). *University of Colorado Innovation Seed Grant*.

Current: Building Capacity for Safer Post-Disaster Shelter: Leveraging Local Understanding and Advanced Engineering Assessments (May 2019 – April 2023), \$499,867 (PI: Amy Javernick-Will, co-PIs: **Abbie Liel**, Matthew Koschmann). *National Science Foundation*.

Current: Integrative Reengineering of Infrastructure for Tomorrow's Communities (Oct. 2018 – Aug. 2020), \$1.2 million (PI: **Abbie Liel**, co-PIs: Shideh Dashti, Amy Javernick-Will, Joseph Kasprzyk, Kyri Baker, Sherri Cook). *U.S. Department of Education GAANN Program*.

Current: ATC 134: Performance-Based Seismic Engineering Benchmarking of Existing Building Evaluation Methodologies \$43,909 (March 2017 – present) PI: **Abbie Liel** *Applied Technology Council* (with funding from NIST).

Current: Post-Disaster Housing Reconstruction: Participation, Performance and Community Resilience (June 2017 – July 2020) \$49,927 (PI: Amy Javernick-Will, Collaborator: **Abbie Liel**) *University of Colorado Innovation Seed Grant*.

Current: Hazards SEES: The Risk Landscape of Earthquakes Induced by Deep Wastewater Injection (Sept 2015-August 2020) \$2,631,954 (PI: **Abbie Liel**, co-PI: Liesel Ritchie, Anne Sheehan, Senior Personnel: Amy Javernick-Will, Hari Rajaram, Kristy Tiampo, Kathryn Mutz). *National Science Foundation*. (Liel Portion: \$405,609) Supplement for "Structural Response to Long Duration Shaking in Different Tectonic Environments" of \$16,860.

SERVICE AND OTHER PROFESSIONAL ACTIVITIES

Licensed Professional Engineer in the State of California. California Professional Civil Engineer, License No. 75961

Consulting Activities

Research Consultant, Applied Technology Council

Project Technical Committee for ATC-145, *Guide for Repair of Earthquake Damaged Buildings to Achieve Future Resilience*, 2019 – present
Project Technical Committee for ATC-139, *Effect of Long Duration Shaking*, 2017 - present
Project Technical Committee for ATC-134, *Performance-Based Seismic Engineering: Benchmarking of Existing Building Evaluation Methodologies*, 2017 - present
Project Management Committee for ATC-78, *Identification and Mitigation of Non-ductile Concrete Buildings*, 2010 – 2018
Working group for ATC-63, *Quantification of Building System Performance and Response Parameters*, and ATC-63-1, *Development of Structural Component Equivalency Methodologies*, 2005 – 2010
Research Consultant, Building Seismic Safety Council, National Institute of Building Sciences
Working group for *Development of Simplified Seismic Design Procedures*, 2010 – 2012

Professional Committees: Technical

Voting Member, ASCE/SEI Standards Committee- ASCE/SEI 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures, *Main Committee, American Society of Civil Engineers*, 2017 - present
Voting Member, ASCE/SEI Standards Committee- ASCE/SEI 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures, *Snow and Rain Loads Subcommittee, American Society of Civil Engineers*, 2017 - present (Chair of Working Group on Ground Snow Loads)
Member, *Structural Engineers Association of Colorado, Sub-Committee on Snow Loads*, 2012 – Present
Advisory and Steering Committee Member, Concrete Coalition for Earthquake Engineering Research Institute, 2014- 2017; Lead Public Policy and Advocacy Working Group 2014- 2015
Associate Member, Committee on Seismic Rehabilitation (ASCE 31/41) of *American Society of Civil Engineers* 2010- 2013
Member, Technical Council on Life-Cycle Performance, Safety, Reliability, and Risk of Structural Systems (Task Group 1), *American Society of Civil Engineers*, 2009 – 2015
Panel evaluating Building and Fire Research at NIST, Organized by National Academies, 2009 – 2010

Professional Committees: Service

Member of Awards Committee, *Earthquake Engineering Research Institute*, 2019 – present
Mentor, *Next Generation Hazards Researcher Program* (sponsored by NSF), 2019 – 2022
Member of Committee on Reform of Structural Engineering Education, *Structural Engineering Institute, American Society of Civil Engineers*, 2015 – present
Co-chair, *2017 ASCE Structures Congress*, Local Planning Committee
Founding Member, *Young Professionals Committee*, Structural Engineering Institute, American Society of Civil Engineers, 2011- 2015

Editorships

Associate Editor handling ~12 papers per year, *Earthquake Spectra*, 2019 – present
Board Member, *Structural Safety*, 2018 – present
Associate Editor, *ASCE Natural Hazards Review*, 2015 - 2018

Professional Affiliations

Fellow of ASCE's Structural Engineering Institute, Fellow of American Society of Civil Engineers, Earthquake Engineering Research Institute, American Society of Engineering Education, Elected Member of Consortium of Universities for Research in Earthquake Engineering, Structural Engineers Association of Colorado

Other Professional Activities

Proposal Reviewer: National Science Foundation, USGS External Grants Program, CU Innovation Seed Grants; UK Natural Environment Research Council's Increasing Resilience to Natural Hazards in China program; NIST Disaster and Resilience Research Program; Proposal Reviewer for NSERC (Canada); AAAS for EPSCOR

Journal Article Reviewer: ASCE Journal of Structural Engineering, ASCE Journal of Bridge Engineering, ASCE Natural Hazards Review, Bulletin of Earthquake Engineering, Bulletin of the Seismological Society of America, Earthquake Engineering and Structural Dynamics, Earthquake Spectra, Engineering Structures, Journal of Earthquake Engineering, International Journal of Disaster Risk Reduction, Natural Hazards, Soil Dynamics and Earthquake Engineering, Structural Safety, Structure and Infrastructure Engineering, among others

Conference Committees: Scientific Committee for 12th International Conference on Applications of Statistics and Probability in Civil Engineering (2015), **Local co-chair for 2017 ASCE Structures Congress**, Scientific Committee for International Conference on Applications of Statistics and Probability in Civil Engineering (2019). Peer reviewed articles for many others.

PUBLICATIONS

Notation: * indicates current or former University of Colorado graduate student, ^ University of Colorado undergraduate student or REU student working with us, ~University of Colorado postdoctoral fellow. Links to all publications are available on my website (www.abbieliel.com).

Journal Articles

[55] Welsh-Huggins, Sarah*, Abbie B. Liel, and Sherri M. Cook. “Reduce, Reuse, Resilient: Life-cycle seismic and environmental performance of buildings with alternative concretes”, *ASCE Journal of Infrastructure Systems*, In Press. [10.1061/IS.1943-555X.0000510]

[54] Chase, R.*, **Liel, A.B.**, Luco, N., Baird, B.*, “Seismic Loss and Damage in Light-Frame Wood Buildings from Sequences of Induced Earthquakes”. *Earthquake Engineering and Structural Dynamics*, 48(12), 1365 - 1383. [10.1002/eqe.3189]

[53] Bullock, Zach*, Shideh Dashti, **Abbie B. Liel**, Keith A. Porter, and Zana Karimi, “Assessment Supporting the Use of Outcropping Rock, Evolutionary Intensity Measures for Prediction of Liquefaction Consequences on Structures”, *Earthquake Spectra*, In Press. [10.1193/041618EQS094M]

[52] Valigura, Jakob*, **Abbie B. Liel**, and Petros Sideris, “Risk-Based Assessment of Seismic Repair Costs for Reinforced Concrete Bridges Considering Competing Repair Strategies”, *ASCE Journal of Bridge Engineering*, 24(11), pp. 04019108. [10.1061/(ASCE)BE.1943-5592.0001466]

[51] Paramasivam, Balaji*, Shideh Dashti and **Abbie B. Liel**. “Impact of Spatial Variations in Permeability of Liquefiable Deposits on the Seismic Performance of Structures and Effectiveness of Drains”, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 145(8), 2019. [10.1061/(ASCE)GT.1943-5606.0002054]

[50] Liu, Taojun~, Nicolas Luco, and **Abbie B. Liel**. “Increases in Life-Safety Risks from Induced Earthquakes in the Central United States”, *Earthquake Spectra*, 35(2), 471 – 488, 2019. [doi.org/10.1193/041618EQS095M]

[49] Barba-Sevilla, M., Baird, B.*, **Liel, A.**, Tiampo, K., “Hazard Implications of the 2016 Mw 5.0 Cushing, OK Earthquake from a Joint Analysis of Damage and InSAR Data,” *Remote Sensing*, 10(11), 2018. [10.3390/rs10111715]

[48] Bullock, Zach*, Zana Karimi~, Shideh Dashti, **Abbie Liel**, Keith Porter and Kevin Franke, “Probabilistic Models for Residual and Peak Transient Tilt of Mat-Founded Structures on Liquefiable Soils”, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 145(2), 2019. [doi.org/10.1061/(ASCE)GT.1943-5606.0002002]

[47] Bullock, Zach*, Zana Karimi~, Shideh Dashti, Keith Porter, **Abbie Liel** and Kevin Franke, “A Physics-Informed Semi-Empirical Probabilistic Model for the Settlement of Shallow Founded Structures on Liquefiable Ground”, *Geotechnique*, 69(5), 2019. [doi.org/10.1680/jgeot.17.P.174]

[46] Paramasivam, Balaji*, Shideh Dashti and **Abbie Liel**, “Influence of Prefabricated Vertical Drains on the Seismic Performance of Structures Founded on Liquefiable Soils”, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 144(10), 2018. Editor’s Choice, October, 2018. [doi.org/10.1061/(ASCE)GT.1943-5606.0002054]

- [45] Olarte, Juan*, Shideh Dashti and **Abbie B. Liel**, “Effects of Drainage Control on Densification as a Liquefaction Mitigation Technique”, *Soil Dynamics and Earthquake Engineering*, 110, 212-231, 2018. [doi.org/10.1016/j.soildyn.2018.03.018]
- [44] Karimi, Zana~, Shideh Dashti, Zachary Bullock*, Keith Porter and **Abbie B. Liel**, “Key Predictors of Structure Settlement on Liquefiable Ground: A Numerical Parametric Study”, *Soil Dynamics and Earthquake Engineering*, 113, 286-308, 2018. [doi.org/10.1016/j.soildyn.2018.03.001]
- [43] Welsh-Huggins, Sarah* and **Abbie B. Liel**. “Evaluating multi-objective outcomes for hazard resilience and sustainability from enhanced building seismic design decisions”, *ASCE Journal of Structural Engineering*, 144(8), 2018. [doi.org/10.1061/(ASCE)ST.1943-541X.0002001]
- [42] Arroyo, Orlando Amell*, **Abbie B. Liel** and Sergio Gutierrez. “A Performance-Based Evaluation of a Seismic Design Method for Reinforced Concrete Frames”, *Journal of Earthquake Engineering*, 22(10). [10.1080/13632469.2017.1309605]
- [41] Olarte, Juan*, Shideh Dashti, and **Abbie Liel**, “Can ground densification improve seismic performance of the soil-foundation-structure system on liquefiable soils?” *Earthquake Engineering and Structural Dynamics*, 47(5), 1193-1211, 2018. [10.1002/eqe.3012]
- [40] White, Isabel, Taojun Liu~, Nicolas Luco and **Abbie B. Liel**. “Considerations in comparing the USGS induced-one-year seismicity models with “Did You Feel It?” and instrumental data”, *Seismological Research Letters*, 89(1), 127 – 137, 2017. [doi.org/10.1785/0220170033]
- [39] Sattar, Siamak* and **Abbie B. Liel**. “Collapse Indicators for Existing Nonductile Concrete Buildings with Varying Column and Frame Characteristics”, *Engineering Structures*, 152, 188-201, 2017. [10.1016/j.engstruct.2017.08.041]
- [38] Bullock, Zachary*, Shideh Dashti, **Abbie B. Liel**, Keith Porter, Zana Karimi~, and Brendon Bradley, “Ground Motion Prediction Equations for Arias Intensity, Cumulative Absolute Velocity, and Peak Incremental Ground Velocity for Rock Sites in Different Tectonic Environments”, *Bulletin of Seismological Society of America*, 107(5), 2293-2309, 2017. [10.1785/0120160388]
- [37] Salehi, Mohammad*, Petros Sideris and **Abbie Liel**. “Numerical Simulation of Hybrid Sliding-Rocking Columns subjected to Earthquake Excitation”, *ASCE Journal of Structural Engineering*, 143(11), 2017. [10.1061/(ASCE)ST.1943-541X.0001878]
- [36] Arroyo, Orlando Amell*, and **Abbie B. Liel**, “A call to refocus research goals for the development of seismic optimization methods”, *Earthquake Spectra*, 33(3), 1029- 1031, 2017. [doi.org/10.1193/011617EQS016O]
- [35] Olarte, Juan*, Balaji Paramasivam*, Shideh Dashti, **Abbie Liel**, and Jacopo Zannin, “Centrifuge modeling of Mitigation-soil-foundation-structure interaction on liquefiable ground”, *Soil Dynamics and Earthquake Engineering*, 97, 304-323, 2017. [10.1016/j.soildyn.2017.03.014]
- [34] **Liel, Abbie B.**, D. Jared DeBock*, James R. Harris, Jeannette Torrents, Bruce Ellingwood, “Reliability-Based Design Snow Loads: II Reliability Assessment and Mapping Procedures,” *ASCE Journal of Structural Engineering*, 143(7), 2017. [10.1061/(ASCE)ST.1943-541X.0001732]
- [33] DeBock, D. Jared*, **Abbie B. Liel**, James R. Harris, Bruce Ellingwood and Jeannette Torrents, “Reliability-Based Design Snow Loads: I. Site-Specific Probability Models for Ground Snow Loads,” *ASCE Journal of Structural Engineering*, 143(7), 2017. [10.1061/(ASCE)ST.1943-541X.0001731]
- [32] Arneson, Erin*, Derya Deniz~, Amy Javernick-Will, **Abbie Liel** and Shideh Dashti, “Information Deficits and Community Disaster Resilience,” *ASCE Natural Hazards Review*, 18(4), 2017. [10.1061/(ASCE)NH.1527-6996.0000251]

- [31] Deniz, Derya~, Erin E. Arneson*, **Abbie B. Liel**, Shideh Dashti and Amy N. Javernick-Will, “Flood Loss Models for Residential Buildings Based on the 2013 Colorado Floods”, *Natural Hazards*, 85(2), 977-1003, 2017. [10.1007/s11069-016-2615-3]
- [30] Welsh-Huggins, Sarah J.* and Abbie B. Liel, “A Life-Cycle Framework for Integrating Green Building and Hazard-Resistant Design: Examining the Seismic Impacts of Buildings with Green Roof Systems”, *Structure and Infrastructure Engineering*, 13(1), 19-33, 2017. [10.1080/15732479.2016.1198396]
- [29] Haselton, Curt B., Abbie B. Liel, Sarah Taylor Lange, Gregory G. Deierlein. “Calibration of Reinforced Concrete Beam-Columns for Simulating Seismic Response to Collapse.” *ACI Structural Journal*, 113(6), 2016.
- [28] Harrington, Cody C.* and **Abbie B. Liel**, “Collapse Assessment of Moment Frame Buildings, Considering Vertical Ground Shaking”, *Earthquake Engineering and Structural Dynamics*, 45, 2475 – 2493, 2016. [10.1002/eqe.2776]
- [27] Sattar, Siamak* and **Abbie B. Liel**. “Seismic Performance of Non-Ductile Reinforced Concrete Frames with Masonry Infill Walls: II. Collapse Assessment”, *Earthquake Spectra*, 32(2), pp. 819 – 842, 2016. [10.1193/091514EQS141M]
- [26] Sattar, Siamak* and **Abbie B. Liel**. “Seismic Performance of Non-Ductile Reinforced Concrete Frames with Masonry Infill Walls: I. Development of a Finite-Element Enhanced Strut Modeling Approach”, *Earthquake Spectra*, 32(2), pp. 795-818, 2016. [10.1193/090914EQS139M]
- [25] Kozak, Derek L.* and Abbie B. Liel. “Reliability of Steel Roof Structures under Snow Loads”. *Structural Safety*, 54, 46-56, 2015. [10.1016/j.strusafe.2015.02.004]
- [24] DeBock, D. Jared* and **Abbie B. Liel**. “A Comparative Evaluation of Probabilistic Regional Seismic Loss Assessment Methods, Using Scenario Case Studies.” *Journal of Earthquake Engineering*, 19(6), pp. 905-937, 2015. [10.1080/13632469.2015.1015754]
- [23] Lin, Yolanda C.*, Abhishek Paul*, Ross B. Corotis, and **Abbie B. Liel**, “A Framework Methodology for Risk-Based Decision Making: Applications to Transportation Agencies,” *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 1(3), 2015. [10.1061/AJRUA6.0000819]
- [22] Raghunandan, Meera*, **Abbie B. Liel**, and Nicolas Luco. “Aftershock Collapse Vulnerability Assessment of Reinforced Concrete Frame Structures”, *Earthquake Engineering and Structural Dynamics*, 44(3), pp. 419-439, 2015. [DOI: 10.1002/eqe.2478]
- [21] Raghunandan, Meera*, **Abbie B. Liel**, and Nicolas Luco. “Collapse Risk of Buildings in the Pacific Northwest due to Subduction Earthquakes”, *Earthquake Spectra*, 31(4), pp. 2087 -2115, 2015. [10.1193/012114EQS011M]
- [20] Baradaran Shoraka, Majid, K.J. Elwood, T.Y. Yang, and **Abbie B. Liel**. “Collapse Assessment of Non-Ductile, Retrofitted and Ductile Reinforced Concrete Frames” *ACI Special Publication*, 297, pp. 1-20, 2014.
- [19] Vigh, LG, Deierlein, GG, Miranda, E, **Liel, AB** and Tipping, S. “Component model calibration for cyclic behaviour of a corrugated shear wall,” *Thin Walled Structures*, 75, pp. 53-62, 2014. [10.1016/j.tws.2013.10.011]
- [18] DeBock, D. Jared*, Jack W. Garrison*, Kevin Y. Kim^, and **Abbie B. Liel**. “Incorporation of Spatial Correlations Between Building Response Parameters In Regional Seismic Loss Assessment,” *Bulletin of the Seismological Society of America*, 104(1), pp. 214-228, 2014. [10.1785/0120130137]
- [17] DeBock, D. Jared*, **Abbie B. Liel**, Curt B. Haselton, John D. Hooper, and Richard Henige. “Importance of Seismic Design Accidental Torsion Requirements for Building Collapse Capacity,” *Earthquake Engineering and Structural Dynamics*, 43(6), 831 – 850, 2014. [10.1002/eqe.2375]
- [16] **Liel, Abbie B.** and Gregory G. Deierlein, “Cost-Benefit Evaluation of Seismic Risk Mitigation Alternatives for Older Reinforced Concrete Frame Buildings,” *Earthquake Spectra* 29(4), pp. 1391-1411, 2013. [10.1193/030911EQS040M].

- [15] **Liel, Abbie B.**, Ross B. Corotis, Jeannette Sutton, Guido Camata, Enrico Spacone, and Rose (Bricker-Ford) Holtzmann*. “Setting Priorities for Rebuilding and Recovery: the Example of L’Aquila, Italy,” *Earthquake Spectra* 29(3), pp. 843-868, 2013. [10.1193/1.4000158]
- [14] Strobel, Kristen M. and **Abbie B. Liel**. “Snow Load Damage to Buildings: Physical and Economic Impacts,” *Proceedings of ICE - Forensic Engineering*, 166(3), pp. 116-133, 2013. [10.1680/feng.12.00023]
- [13] Vigh, LG, Deierlein, GG, Miranda, E, **Liel, AB** and Tipping, S. “Seismic performance assessment of steel corrugated shear wall system using non-linear analysis,” *Journal of Constructional Steel Research* 85, pp. 48 – 59, 2013. [10.1016/j.jcsr.2013.02.008]
- [12] Raghunandan, Meera* and **Abbie B. Liel**. “Effect of Ground Motion Duration on Earthquake-Induced Structural Collapse,” *Structural Safety* 41, pp. 119-133, 2013. [doi: 10.1016/j.strusafe.2012.12.002]. **One of five most highly-cited papers in Structural Safety 2014, 2015 and 2016.**
- [11] **Liel, Abbie B.** and Gregory G. Deierlein. “Using Collapse Risk Assessments to Inform Seismic Safety Policy for Older Concrete Buildings,” *Earthquake Spectra* 28(4), pp. 1495-1521, 2012. [10.1193/1.4000090] **Recognized as Outstanding Earthquake Spectra Paper of 2012 Award by the Earthquake Engineering Research Institute.**
- [10] Ramirez, C.M., **A.B. Liel**, J. Mitrani-Reiser, C.B. Haselton, A.D. Spear, J. Steiner, G.G. Deierlein, and E. Miranda. “Expected Earthquake Damage and Repair Costs in Reinforced Concrete Frame Buildings,” *Earthquake Engineering and Structural Dynamics*, 41(11), pp. 1455-1475, 2012 [10.1002/eqe.2216].
- [9] Champion, Casey P.* and **Abbie B. Liel**. “The Effect of Near-Fault Directivity on Seismic Collapse Risk,” *Earthquake Engineering and Structural Dynamics*, 41(10), pp. 1391-1409, 2012. [10.1002/eqe.1188].
- [8] Geis, Jamie M.*, Kristen M. Strobel and **Abbie B. Liel**, “Snow-Induced Building Failures,” *ASCE Journal of the Performance of Constructed Facilities*, 26(4), pp. 1-12, 2012 [doi:10.1061/(ASCE)CF.1943-5509.0000222]. **Nominated for Outstanding Paper of 2012 Award in Journal of Performance of Constructed Facilities (runner up).**
- [7] **Liel, Abbie B.** and Kathryn P. Lynch*, “Vulnerability of Reinforced Concrete Frame Buildings and Their Occupants in the 2009 L’Aquila, Italy Earthquake,” *ASCE Natural Hazards Review*, 13(1), pp. 1-16, 2012. [10.1061/(ASCE)NH.1527- 6996.0000047]
- [6] Lynch, Kathryn P.*, Kristen L. Rowe and **Abbie B. Liel**, “Seismic Performance of Reinforced Concrete Frame Buildings in Southern California,” *Earthquake Spectra*, 27(2), pp. 399-418, 2011. [10.1193/1.3570684]
- [5] **Liel, Abbie B.**, Curt B. Haselton and Gregory G. Deierlein, “Seismic Collapse Safety of Reinforced Concrete Buildings: II. Comparative Assessment of Non-Ductile and Ductile Moment Frames,” *ASCE Journal of Structural Engineering* 137(4), pp. 492-502, 2011. [10.1061/(ASCE)ST.1943-541X.0000275]
- [4] Haselton, Curt B., **Abbie B. Liel**, Gregory G. Deierlein, Brian S. Dean, and Jason H. Chou “Seismic Collapse Safety of Reinforced Concrete Buildings: I. Assessment of Ductile Moment Frames,” *ASCE Journal of Structural Engineering* 137(4), pp. 481-491, 2011. [10.1061/(ASCE)ST.1943-541X.0000318]
- [3] Haselton, C.B., J.W. Baker, **A.B. Liel**, and G.G. Deierlein, “Accounting for Ground Motion Spectral Shape Characteristics in Structural Collapse Assessment through an Adjustment for Epsilon,” *ASCE Journal of Structural Engineering* 137(3), pp. 332-344, 2011. [10.1061/(ASCE)ST.1943-541X.000010]
- [2] **Liel, Abbie B.**, Curt B. Haselton, Gregory G. Deierlein and Jack W. Baker, “Incorporating Modeling Uncertainties in the Assessment of Seismic Collapse Risk of Buildings,” *Structural Safety* 31(2), pp. 197-211, 2009 [doi:10.1016/j.strusafe.2008.06.002]. Recognized as one of the most cited articles in *Structural Safety* since 2007 (<http://www.journals.elsevier.com/structural-safety/most-cited-articles/>).
- [1] **Liel, Abbie B.** and David P. Billington, “Engineering Innovation at Bonneville Dam,” *Journal of Technology and*

Culture 49(3), pp. 727-751, 2008. [10.1353/tech.0.0088]

Magazine Articles

[1] **Abbie B. Liel** and SEI Young Professionals Committee. “Diversity in the Structural Engineering Profession: Challenges and Opportunities”, *Structure Magazine*, October, 2014.

Book Chapters

[4] **Liel, Abbie B.** and Sarah J. Welsh-Huggins*. “Tradeoffs between Resilient and Sustainable Buildings,” In Handbook of Sustainable and Resilient Infrastructure, Ed. Paolo Gardoni, Routledge: New York, 2018.

[3] Souto-Martinez, Adriana, Elaina Sutley, **Abbie B. Liel**, Wil V. Srubar III, “Embodied Carbon of Wood and Reinforced Concrete Structures Under Chronic and Acute Hazards,” In Embodied Carbon in Buildings: Measurement, Management and Mitigation, Ed. Pomponi, Francesco, De Wolf, Catherine, Moncaster, Alice (Eds.) to be published 2018, Springer International Publishing. [DOI: 10.1007/978-3-319-72796-7]

[2] **Liel, Abbie B.** “Development of an Engineering Organization/Development of an Engineer” in Festschrift, 2012. (Available at http://bechtel.colorado.edu/~liel/publications_files/BillingtonFS_2012_standard.pdf)

[1] Deierlein, Gregory G. and **Abbie B. Liel**. “Benefit-Cost Evaluation of Seismic Risk Mitigation in Existing Non-ductile Concrete Buildings” in Advances in Performance-Based Earthquake Engineering, Geotechnical, Geological and Earthquake Engineering Vol. 13 Part 3. Michael Fardis, Ed. Springer: pg. 341-8, 2010. [DOI: 10.1007/978-90-481-8746-1_32]

Conference Proceedings

Notation: †Peer-reviewed conference proceedings; others are peer-reviewed abstract. #Presenter.

[91] †Goldwyn, Briar, Casie Venable, Amy Javernick-Will and **Abbie Liel**. “The Influence of Reconstruction Modality, Social Capital, and Community Satisfaction on Willingness to Participate in Resilience-Building Activities”. *Construction Research Congress*, 2020, 10 pg.

[90] Deniz, Derya~#, Bruce Ellingwood, Abbie Liel and Shideh Dashti. “Data-driven versus Simulation Approaches in Flood Performance Assessment of the Residential Buildings: A Case Study of 2013 Colorado Flood.” 2nd *International Conference on Natural Hazards Infrastructure (ICONHIC2019)*, Chania, Greece, 2019. Extended abstract.

[89] †Goldwyn, Briar*#, Aaron Opdyke, Amy Javernick-Will and **Abbie Liel**. “Humanitarian Shelter and Settlements Research Priorities”. *Engineering Projects and Organizations Conference*, Vail, CO, June, 2019, 17 pg.

[88] †Bullock, Z.*#, Dashti, S., **Liel, A.B.**, & Porter, K. “A Framework for Machine Learning-Assisted Design and Execution of Numerical Parametric Studies in Evaluating the Seismic Response of Soil-Structure Systems.” 12th *Canadian Conference on Earthquake Engineering*. CCEE12, Quebec City, QC, 2019, 8 pg.

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