

Exponent®
Engineering & Scientific Consulting

Connie Chen, Ph.D., P.E.
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Professional Profile

Dr. Connie Chen specializes in structural analysis, forensic investigation, and performance assessment of buildings and other structures subjected to a variety of conditions, including earthquakes, extreme winds, wildland fires, and water intrusion. Her experience includes developing and applying advanced numerical modeling methods to evaluate complex structural behavior, including the nonlinear behavior of reinforced concrete structures under extreme loading. She has simulated tall reinforced concrete buildings response to earthquakes, with a particular focus on understanding the effects of vertical ground motions.

As a consultant, Dr. Chen has worked on a diverse range of projects, including forensic structural analysis of building failures (including bowstring truss roofs and metal buildings), failure analysis of poles and other utility infrastructure to mitigate the risk of wildfire ignitions, and damage assessments of residential and commercial buildings, including historic buildings, auditoriums, and specialty structures housing scientific equipment. She has also evaluated existing buildings for design errors and code compliance issues, and has developed expert witness reports and technical opinions in the context of construction-related legal disputes.

Additionally, Dr. Chen has worked on the development and delivery of a probabilistic risk assessment framework for electric transmission infrastructure to support wildfire prevention. She developed proof-of-concept code for a probabilistic modeling engine and coordinated a cross-functional software development team to deploy the model within a client-facing data platform. She worked on the design of interactive risk visualization dashboards, translating technical modeling outputs into actionable insights for stakeholders. She also worked with client stakeholders during the user acceptance testing (UAT) phase to help triage issues, communicate model behavior, and refine functionality based on user feedback.

Dr. Chen received her Ph.D. in Civil Engineering from the University of California, Berkeley, where her doctoral research focused on the effect of vertical input ground motions on tall reinforced concrete core-wall buildings. Her work involved designing and modeling a 40-story archetypal reinforced concrete core-wall building, developing a custom suite of ground motions with the vertical component of motion, and performing nonlinear response history analysis (NLRHA). She developed advanced numerical models to represent the nonlinear behavior of slab-column gravity systems as well as the lateral response of columns under high axial compression. She also has experience leveraging high-performance computing for large-scale nonlinear dynamic simulations of structural systems.

Dr. Chen has experience teaching graduate and undergraduate-level structural engineering courses at UC Berkeley, including the seismic design of reinforced concrete structures. Dr. Chen also has experience analyzing existing buildings and designing nonstructural components while working at a design consulting firm in San Francisco.

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Academic Credentials & Professional Honors

Ph.D., Civil and Environmental Engineering, University of California, Berkeley, 2023

M.S., Civil Engineering, University of California, Berkeley, 2018

B.S., Civil Engineering, University of California, Berkeley, 2017

EERI/FEMA NEHRP Graduate Fellowship in Earthquake Hazard Reduction, 2022-2023

NSF Graduate Research Fellowship, 2019-2022

UC Berkeley Chancellor's Fellowship, 2017-2018

Boeing Scholars Program, 2014-2016

Beavers Heavy Construction Award, 2014

Edward Frank Kraft Award, 2014

Licenses and Certifications

Professional Engineer Civil, California, #98145

Safety Assessment Evaluator (CA)

Professional Affiliations

Earthquake Engineering Research Institute (EERI), member

Structural Engineers Association of Northern California (SEAONC), member

ASCE Engineering Mechanics Institute (EMI), member

Publications

Araújo R., G.A., C. Cattron, C. I. Chen, A. Gasha, and P. Vargas. 2026. "2025 EERI LFE Travel Study – Mexico: Lessons on Post-Earthquake Engineering Interventions on Cultural and Historic Buildings." In Proceedings of the 13th National Conference in Earthquake Engineering, Portland, OR: Earthquake Engineering Research Institute.

Chen, C. I., and J. P. Moehle. 2024. "A Study of the Effects of Vertical Ground Motions on Column Axial Forces in Tall Core-Wall Buildings." In Proceedings of the 18th World Conference on Earthquake Engineering, Milan, Italy: International Association for Earthquake Engineering.

Chen, C. I., and J. P. Moehle. 2024. "Outrigger Action in Tall Core-Wall Buildings with Flat-Plate Framing." ACI Structural Journal, 121 (2), 143–151. https://doi.org/10.14359/51740250.

Chen, C. I. 2023. "A Study of the Effect of Vertical Ground Motions on Tall Reinforced Concrete Buildings." Ph.D. dissertation, Berkeley, CA: University of California, Berkeley.

Chen, C. I. and J. P. Moehle. 2022. "A Study of the Effects of Vertical Input Ground Motions on the Design of Tall Core Wall Buildings." In Proceedings of the 12th National Conference on Earthquake Engineering, Salt Lake City, UT: Earthquake Engineering Research Institute.

Chen, C. I. and J. P. Moehle. 2021. “Nonlinear Modeling of Post-Tensioned Slab - Core Wall - Column Framing Systems.” In 2021 Convention Proceedings, San Diego, CA: Structural Engineers Association of California, 74–85.

Presentations

Chen, C. I. and Moehle, J. P. “Modeling Slab–Wall–Column Interaction in Tall Core Wall Buildings Under Earthquake Loading.” Oral presentation, Engineering Mechanics Institute (EMI) Conference, Boulder, CO, June 2026.

Chen, C. I. and Moehle, J. P. “Vertical earthquake effects on column axial response in tall core-wall buildings.” Oral presentation, Engineering Mechanics Institute (EMI) Conference, Anaheim, CA, May 2025.

Chen, C. I. and Moehle, J. P. “A Study of the Effects of Vertical Ground Motions on Column Axial Forces in Tall Core-Wall Buildings.” Oral presentation, 18th World Conference on Earthquake Engineering (18WCEE), Milan, Italy, July 2024.

Chen, C. I. and Moehle, J. P. “Column Axial Forces in Tall Reinforced Concrete Buildings Under Horizontal and Vertical Ground Motions.” Poster presentation, Earthquake Engineering Research Institute (EERI) Annual Meeting, Seattle, WA, April 2024.

Chen, C. I. and Klemencic, R. “Testing and Modeling of Post-tensioned Slab-Column-Core Wall Framing.” Oral presentation, Jack Moehle Symposium, Berkeley, CA, April 2023.

Chen, C. I. and Moehle, J. P. “A Study of the Effects of Vertical Input Ground Motions on the Design of Tall Core Wall Buildings.” Oral presentation, 12th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Salt Lake City, UT, June 2022.

Chen, C. I. and Moehle, J. P. “Nonlinear Modeling of Post-Tensioned Slab - Core Wall - Column Framing Systems.” Oral presentation, 2021 SEAOC Convention, Structural Engineers Association of California, San Diego, CA, September 2021.

Additional Education & Training

EERI Learning from Earthquakes (LFE) Travel Study Program in Mexico, September 2025