



**Exponent**<sup>®</sup>  
Engineering & Scientific Consulting

## Jerry Zhai, Ph.D.

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### Professional Profile

Dr. Jerry Zhai specializes in earthquake engineering and structural analysis, design, and performance assessment. His expertise extends to probabilistic assessment and failure analysis of reinforced concrete structures under extreme loading. Prior to joining Exponent, Dr. Zhai was a postdoctoral researcher investigating innovative seismic retrofit solutions for unreinforced masonry and reinforced concrete structures.

Dr. Zhai's Ph.D. research focused on the design of shallow foundation systems including mat foundations and spread footings, with an emphasis on developing recommendations for design and constructability when using high-strength steel reinforcement. As part of his research, Dr. Zhai performed large scale structural tests on full-depth mat foundation members and analyzed various foundation configurations using high-fidelity nonlinear finite element models. This work informed developments to reinforced concrete design codes such as ACI 318-25 and provided valuable data on failures in reinforced concrete structures. Combined with his postdoctoral researcher experience with testing fiber-reinforced polymer (FRP) retrofit systems, Dr. Zhai has experience in all aspects of large-scale structural testing, from initial design conception to the final testing stages.

### Academic Credentials & Professional Honors

Ph.D., Civil and Environmental Engineering, University of California, Berkeley, 2024

M.S., Civil and Environmental Engineering, University of California, Berkeley, 2020

B.A.Sc., Civil Engineering, University of Toronto, Canada, 2019

### Prior Experience

Postdoctoral Researcher, University of California, Berkeley, 2024-2025

### Professional Affiliations

American Concrete Association (ACI), Committee 445D Shear and Torsion Databases

Structural Engineers Association of California (SEAOC)

Earthquake Engineering Research Institute

## Publications

Zhai JY, Moehle JP. Shear strength of large beams and foundations with high-strength reinforcement. ACI Structural Journal, In Press, 2025.

Zhai JY. One-way shear strength in thick foundation elements containing high-strength longitudinal reinforcement. Ph.D. Dissertation, University of California, Berkeley, CA, 2024.

Zhai JY, Moehle JP. Design of thick foundation mats with special attention on shear strength. ACCCS Conference, NCREC, Taipei, Taiwan, 2023.

Zhai JY, Chen CI, Worsfold BL, Moehle JP. Blind prediction competition of a shear-critical foundation mat slice. Oral presentation, 12th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Salt Lake City, UT, 2022.

## Presentations

Zhai JY, Moehle JP. Impacts of changes to ACI 318 one-way shear equations on beam and mat foundations shear strengths. Oral presentation, University of Minnesota Annual Concrete Conference, December 2024.

Zhai JY, Moehle JP. One-way shear strength in thick foundation elements. Oral presentation, 2024 SEAOC Convention, Structural Engineers Association of California, September 2024.

Zhai JY, Moehle JP. One-way shear strength in thick foundation elements. Oral presentation, Los Angeles Tall Buildings Conference, Los Angeles Tall Buildings Structural Design Council, November 2023.

Zhai JY, Chen CI, Worsfold BL, Moehle JP. Blind prediction competition of a shear-critical foundation mat slice. Oral presentation, 12th National Conference in Earthquake Engineering, Earthquake Engineering Research Institute, Salt Lake City, UT, June 2022.