Postdoctoral Position on FEMA P-695 Study for Post-Tensioned Mass Timber Rocking Walls

Supervisors: Shiling Pei (Colorado School of Mines), Reid Zimmerman (KPFF Consulting Engineers)

Project Description:

Post-Tensioned Mass Timber Rocking Walls are a well-suited seismic force-resisting system for mass timber buildings up to approximately 12 stories in height in regions of moderate to very high seismicity. To date, Post-Tensioned Mass Timber Shear Walls have been implemented via performance-based seismic design in the U.S. and abroad on designed and built projects. Extensive physical testing and analysis has also been performed on Post-Tensioned Mass Timber Shear Walls, varying from component and sub-assembly level to full building shake table tests.

This position is to support a two-year project to develop seismic design parameters (i.e., $R$, $C_0$, $\Omega_0$, and height limits) for Post-Tensioned Mass Timber Rocking Walls following the FEMA P-695 process for inclusion in ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. The postdoctoral researcher will develop a suite of mass timber building archetype designs following an existing prescriptive method, construct nonlinear analytical models, perform incremental dynamic analyses, collaborate closely with industry partners and a peer review panel to refine the design and analysis, and develop a final report and code-change proposal to be considered by the code committee. This position represents a unique opportunity to be instrumental in codifying a resilient, sustainable, and innovative system for high seismic regions unlike any that currently exist in ASCE 7 while simultaneously building strong relationships in the academic, professional engineer, and code-writing communities.

This project is scheduled to start in September 2023. We are looking for applicants who can start working ideally around that time, but no later than December 2023, and continue for a two-year period. A postdoctoral researcher position at Colorado School of Mines is a 12 month full time appointment with a typical salary range of $60,000-$65,000 per year plus benefits.

Qualifications:

- Ph.D. with a focus on structural engineering
- Good communication and writing skills
- Experience in finite element analysis for seismic applications
- Familiarity with OpenSees is preferred but NOT required
- Background on wood buildings is preferred but NOT required
- Willingness to relocate near Golden, CO and to travel to Seattle, WA for short term collaboration

Application submission:

Please send your CV to Professor Shiling Pei at spei@mines.edu. We will conduct Zoom interviews with qualified applicants on a rolling basis. Upon selection, an official application will need to be completed through Colorado School of Mines’ hiring portal.