



2017 TFG
Conference

Strength and Stiffness in a Seismic Event: Fundamentals & Demonstration

Dick Schmidt & Joe Miller
Fire Tower Engineered Timber

The Timber Frame Engineering Council is currently sponsoring a research project on the seismic-load behavior of traditional, stand-alone timber frames (those without shear walls or other lateral load carrying components). This presentation will include a discussion of basic considerations for structural design to resist seismic loadings, and it will feature full-scale testing of two sample timber frames that rely solely on pegged knee-braces to resist the cyclic racking deformations representative of a seismic event.

Our intention is to test two full-size bents that will be mounted within a loading frame on a flat-bed trailer. The presentation is intended to be informative to timber-frame carpenters, designers and engineers. Audience members should be interested in this presentation because it represents new information developed from current research regarding the structural behavior of timber frames. Seismic load behavior is not well understood by most timber frame carpenters and designers. Structural engineers understand the fundamental principles, but will be interested in observing behavior of the demonstration specimens and seeing actual hysteresis curves demonstrating the ductility, or lack thereof, of these structures.

About the Speakers

Dick Schmidt (Ph.D., P.E.)

Dick Schmidt joined the Timber Framers Guild in 1995, started breaking mortise and tenon joints, served as a member of the board of directors, and became a founding member of the Timber Frame Engineering Council. The research he conducted with his graduate students at the University of Wyoming has found its way into the industry's design standard TFEC 1 – Standard for Design of Timber Frame Structures, of which he served as primary author.

After three decades at the University of Wyoming, which include two years living in Germany, nine years in administrative roles, and some amazing experiences with his students on service projects in Central America and Africa, Dr. Schmidt made another professional turn and joined Fire Tower Engineered Timber.

Joe Miller (Ph.D., P.E.)

Dr. Miller's interest in timber framing grew from a project he took on with his father, rebuilding an ancestral barn in southern Indiana. In his freshman year at the Rose-Hulman Institute of Technology, he attended a lecture by Ben Brungraber. Ben must have said something inspiring, because Joe ventured forth on an ambitious track that eventually led to a Masters in Civil Engineering at University of Wyoming. While in school, he conducted innovative research on the strength of wooden dowels - findings that significantly advanced the acceptance of timber frame construction among engineers and code officials.

Master's degree in hand, Joe had a two-year stint with Yankee Barn Homes in New Hampshire, doing engineering, lateral analysis, drafting, and frame design. Next came a spell with Trillium Dell Timberworks in Illinois, where he refined his design, engineering, and cutting skills in the shop. Meanwhile, Dr. Miller sought out a school where he could undertake intensive research on key laminated beams. Michigan Technological University gave him the green light, and now he has a Doctorate of Philosophy in Civil Engineering for his analytic methodology for the design and engineering of keyed beams. Concurrent to his advanced studies, he privately consulted on timber frame designs and taught on-line courses for Norwich University in Advanced Structural Analysis. Dr. Miller has been with Fire Tower Engineered Timber since 2009.