

Dynamic behavior of modern timber structures under seismic excitation

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ABSTRACT

Timber is a renewable and environmentally friendly building material that has gained popularity due to its strength and seismic resilience when engineered with modern techniques. As society increasingly emphasizes the importance of sustainable, resilient, and visually appealing architecture, timber's unique properties offer an attractive choice for using as lateral force-resisting system in multi-story buildings. Engineered timber products such as cross-laminated timber (CLT) and glued-laminated timber (glulam) possess remarkable mechanical properties, including outstanding strength-to-weight ratios and damping capabilities. These properties make modern timber materials well-suited for serving as the primary structural components even in the construction of high-rise buildings. This paper explores the dynamic behavior of modern timber structures and their potential for seismic applications. We highlight recent advancements in construction technologies and the challenges associated with using timber in building systems. Furthermore, we provide insights into research projects related to the development of modern timber structures in Thailand, offering a glimpse into the advantages and outlining our future research directions.

Keywords: Modern timber structures, Dynamic behavior, Seismic response, Cross-laminated timber