

**Framework - A tall re-centering mass timber building in the United States**

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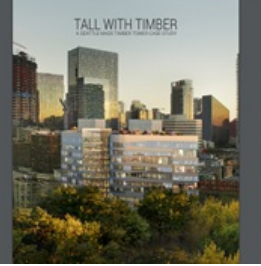
**ABSTRACT:** Framework is a 15-story, 180k sf office and retail building to be constructed almost entirely out of mass timber, including both the primary and secondary framing systems, on a tight schedule in the United States (Portland, Oregon). Utilizing performance-based design and analysis, response history analysis, the primary and secondary framing systems, including timber walls, were designed for lateral, torsional, and axial loads. These structural algorithms were validated through finite element analysis to determine structural behavior under the influence of energy dissipation, variations in member stiffness, and a program-specific loading program completed at Oregon State University and Portland State University.

The construction of mass timber buildings in the United States presents an opportunity to promote sustainable design which is consistent with the sustainability goals of many office programs. This case study illustrates the various modeling and design behaviors of mass timber walls, including mass timber walls in taller buildings in Seattle, however, it requires an additional level of thoughtful design, careful detailing, and testing, and careful detailing, including consideration of the relative steel-to-timber (S/T) wall shear capacities to help guide design, fabrication, and construction of gravity connections, and CFT diaphragms.

**1 INTRODUCTION**

Framework is a 150k sf office and retail building to be constructed on a green field in Portland, Oregon's Pearl District. The project is a 15-story office building, 180k sf office, 50k sf retail, 10k sf residential, and a parking lot. The entire superstructure will be constructed of mass timber, including both the primary and secondary framing systems. See Figure 1a.

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**TALL WITH TIMBER**  
A SEATTLE MASS TIMBER TOWER CASE STUDY

**Tall with Timber: A Seattle Mass Timber Tower Case Study**