

# Feasibility of Cross Laminated Timber Panels in Construction: A Case Study of Carbon12

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Cross Laminated Timber (CLT) is an extremely strong engineered wood panel intended for roof, floor, or wall applications. Currently there is little research comparing CLT to steel and concrete, materials CLT hopes to replace. This research uses a detailed literary analysis on CLT and case study on Carbon12, a recently constructed CLT structure in Portland, Oregon, to compare the cost and schedule requirements of CLT with a cast-in-place concrete slab. The case study consisted of a detailed analysis of Carbon12, interview with Scott Noble, senior project manager for Carbon12, and a detailed schedule and cost analysis. This resulted in a concrete slab floor system total cost that was 89% of the total cost for a CLT floor system in Carbon12. For the schedule analysis, results showed that a concrete floor system would add an additional 10 weeks to the construction schedule of Carbon12. These results led to the conclusion that CLT is a feasible building material for dense, urban, mid-rise structures similar to Carbon12. The quick installation time, small crew, and environmental benefits of CLT outweigh the added costs of the material.

**Key Words:** Cross Laminated Timber, Sustainability, Mid-Rise Structure

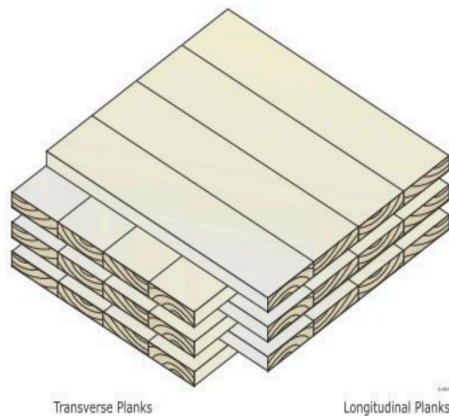


Figure 1- Cross Laminated Timber Design (Scalet, 2015)

Table 4- Carbon12 Total Costs				
Construction Type	Total Material	Total Labor	Total Cost	% of CLT
CLT	\$519,520	\$87,761	\$607,281	100%
CIP Slab (One-Way)	\$210,864	\$330,752	\$541,616	89%



Figure 3- Carbon12 CLT Erection (Kaiser+Path, 2020)

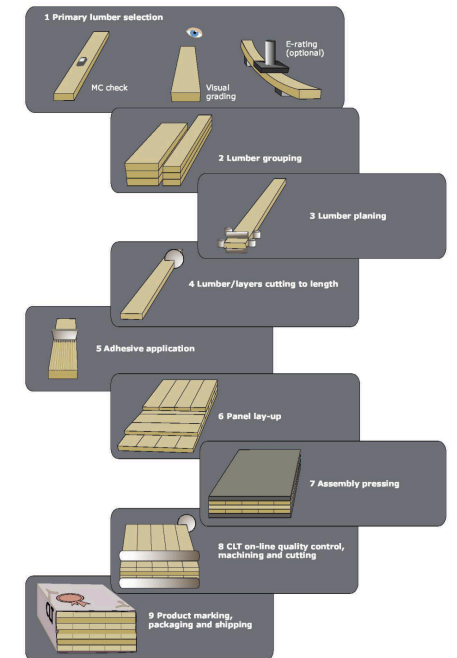


Figure 2- CLT Installation Process (Karacabevli, 2015)