



## **Joint Institute for Wood Products Innovation**

**Project Name:** Joint development of product layup for mass timber panels from Californian feedstock (fir)

### ➤ **Methodology**

The research will develop new mass timber panel products with the following steps:

- Identify appropriate feedstock - The analysis will review the literature on the use structural use, its availability throughout California and the mechanical properties (e.g. processability, mechanical strength, stiffness and bonding with different glues) of selected feedstocks. Based on preliminary analysis and discussions, the feedstock will likely be fir.
- Standardized tests for selected feedstock - The missing physical and mechanical properties are obtained through standardized (i.e. ASTM) tests outsourced to the TallWood Design Institute or a laboratory specialized in material testing.
- Identification and design of a Californian structural engineered wood panel product - Based on preliminary analysis, this product will likely be a cross-laminated timber (CLT) panel. Structural and manufacturing optimization will determine the best panel design including lumber stock dimensions, panel layup and panel dimensions. This process will be repeated for a range of panel types (panel thicknesses, known as 3, 5, 7 or 9 ply CLT).
- Prototyping and structural load testing – assessment of the final product’s performance in collaboration with the TallWood Design Institute. The test can include (bi-axial) bending, shear, fire, and connection tests.
- Demonstration project – the newly designed panel product from local feedstock will be implemented in a small-scale demonstration project or exhibited.
- Building product certification – Key aspects of the building certification process and design guidelines will be prepared.

### ➤ **Expected outcome**

- Certified engineered wood product from Californian feedstock.
- Partnerships with existing, out-of-state wood innovation centers.

### ➤ **Timeline**

- First year: design of optimized CLT panel layups, prototyping, sample manufacturing and preliminary load test (at TallWood Design Institute), design guidelines for Californian CLT.
- Beyond first year: building product certification and full set of load tests.

### ➤ **Open questions**

- Is this research pursuing a full product certification?
- Who will benefit or use the developed Californian CLT?

- Policy proposal (this research is a proof of concept) or technology proposal (this research leads to a fully certified building product)?

➤ **Future work**

- Multispecies panel product – design of the panel is independent from the feedstock.
- Panel product design more efficient than CLT.

➤ **Budget**

- \$150,000 for staff, travel, material and laboratory access.

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