



## IMPROVING MASS TIMBER DURABILITY AND PREVENTING WOOD DECAY

A McIntire-Stennis supported project

### PROJECT

Mass timber building technology offers an opportunity to utilize more sustainable materials in construction because mass timber can serve as a carbon sink and lock carbon away in the building structure, instead of consuming more energy, like materials such as steel and concrete. Mass timber materials are also usually manufactured from domestically grown products, instead of sourced from foreign countries, which can provide additional energy savings and support local economies.

But while there are many potential benefits to using mass timber, mass timber structures in the United States face a major challenge from termites and fungi, which can cause damage to the wood and lead to early failure of a building. While standard wood frame buildings can be protected from termites through different preservative treatments, the chemicals used in these treatments can interfere with the resins that hold mass timber panels together, and make the panels unusable in building applications. Mass timber panels also rely on moisture barriers to increase the durability of the materials, and termites can attack the dry wood behind these barriers.

To successfully expand mass timber construction in the United States, a solution to the termite problem needs to be identified. If mass timber construction fails due to decay, it could hurt public confidence in this green technology and threaten its long-term potential. The project, led by Oregon State University Assistant Professor of Wood Science and Engineering Gerald Presley and graduate student Cody Wainscott, aims to test different treatments for cross-laminated timber panels (CLT), to identify a treatment that would maintain mass timber's structural integrity and improve the durability of the material against termites and fungi.

Presley's lab has manufactured experimental materials to test different treatments on Douglas-fir lumber to identify a treatment with the most potential.



### IMPACT

Oregon State University researchers will provide valuable information about the most effective treatments for CLT panels. Their research will help guide mass timber manufacturing practices to produce more durable and reliable wooden structures, that are better protected from decay and termite attack. This could position mass timber materials to be more widely used as an environmentally-friendly and sustainable building material across the globe.

### About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

