



## Fire Performance of Connection Made up of Custom CLT Layups Utilizing Pine from Logs Harvested in Western Forest Restoration Programs

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Summary:

The objective of this project is to determine the fire performance of connections made up of the custom cross-laminate timber (CLT) layups utilizing ponderosa pine from logs harvested in Western U.S. forest restoration programs and produced by regional CLT manufacturers. Tests will be performed using ASTM E119 standard protocol on the CLT Connections, with CLT manufactured by the manufacturer (Vaagen Brothers) located in the Northwestern U.S. Fire testing is required before manufacturers will consider using pine in CLT. The volume of pine in high fire danger areas in the Western U.S. is much greater than that of Douglas-fir and we believe that ponderosa pine lumber can be successfully utilized in CLT panels. This project builds on previous Wood Innovation grants: Muszynski et al., (2017), Gupta et al. (2018) and Riggio et al. (2018), first two aimed at determining the fire performance and the third on demonstration of a modular structure designed for custom cross-laminate timber (CLT) layups utilizing ponderosa pine from logs harvested in Western U.S. forest restoration programs. We estimate that as few as 100 proposed modular units a year will lead to utilization of approximately 33 MMBF of pine lumber, and will allow treatment of about 460 additional acres of threatened forestland. At this rate, the harvest and manufacture of the lumber required will retain or create about 9.2 jobs/MMBF, including 57 jobs created directly for the CLT manufacturing (as estimated by Beck Group).