



Truss Plates for Use as Wood-Concrete Composite Shear Connectors

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LVL (Laminated Veneer Lumber)

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Design and Systems
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Summary:

Wood-concrete composite systems are well established, structurally efficient building systems for both new construction and rehabilitation of old timber structures. Composite action is achieved through a mechanical device to integrally connect in shear the two material components, wood and concrete. Depending on the device, different levels of composite action and thus efficiency are achieved. The purpose of this study was to investigate the structural feasibility and effectiveness of using truss plates, typically used in the making of metal-plate-connected wood trusses, as shear connectors for laminated veneer lumber (LVL)-concrete composite systems. The experimental program consisted of two studies. The first study established slip-modulus and ultimate shear capacity of the truss plates when used in an LVL-concrete push out assembly. The second study evaluated overall composite bending stiffness and strength in two full size T-beams when subjected to four-point bending. One beam employed two continuous rows of truss plates and the other employed one row. It was found that the initial stiffness of both T-beams was similar for one and two rows of truss plates but that the ultimate capacity was approximately 20% less with the use of only one row.

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