

Abstract:

In this study, the construction of I-joists using two species of ash (*Fraxinus Spp*) and eucalyptus (*Eucalyptus spp*) in two simple methods and evaluated by light. In the first method I-joists with variable dimensions web and flanges Mercury, with wings separately, the two sides studied the lives of rafters attached. Flange thickness to height ratio lives in three levels (1, 5.1, 2), the thickness of the beam height in the lives of three levels (2, 5.3, 5) and the width of the wings at three levels (3, 8/3, 6/4 inches) variables in this research. Mechanical properties such as modulus of rupture beam (MOR), modulus of elasticity (MOE) were tested. Results in this study showed an increase in height of the flange thickness John and increasing the thickness of the beam height in life increases the modulus of rupture and modulus of elasticity was increased and the wing had little effect on flexural strength. At the end of the beams using FEM (ABAQUS) were evaluated. In the second phase the two light beams made of the variables of this section: The kind of LVL and solid wood wings on two levels, two levels zigzag shape and honeycomb John's brain, treatment pad at John's two levels are without treatment and treated. Mechanical properties such as modulus of rupture beam (MOR), modulus of elasticity (MOE) were tested. The results showed that the use of LVL beams and in the wings of the resistance modulus of rupture and modulus of elasticity the honeycomb core is capable Marine treatments in this section had no significant effect on the mechanical properties of the beam.

Keywords: I-joists, *Fraxinus Spp*, *Eucalyptus spp*, honeycomb beams, zigzag beams, compression treatment.



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**Determination of I-joint beam strength
manufactured from ash *Fraxinus excelsior*
and eucalyptus, *Eucalyptus spp* wood species**

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