



Stress-laminated timber decks in bridges: Friction between lamellas, butt joints and pre-stressing system

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Author: Massaro, Francesco Mirko
Malo, Kjell Arne

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Summary:

Stress-laminated timber (SLT) decks in bridges are popular structural systems in bridge engineering. SLT decks are made from parallel timber beams placed side by side and pre-stressed together by means of steel rods. SLT decks can be in any length by just using displaced butt joints. The paper presents results from friction experiments performed in both grain and transverse direction with different levels of pre-stress. Numerical simulations of these experiments in addition to comparisons to full-scale experiments of SLT decks presented in literature verified the numerical model approach. Furthermore, several alternative SLT deck configurations with different amounts of butt joints and pre-stressing rod locations were modelled to study their influence on the structural properties of SLT decks. Finally, some recommendations on design of SLT bridge decks are given.

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