

FACULTY OF CIVIL ENGINEERING IN SUBOTICA

Slip modulus of screws in timber and lightweight concrete composite structures, BioResources, 13(3), 2018

Scientific paper

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The use of lightweight concrete in timber-concrete composite structures for the purposes of reconstruction, upgrading, and strengthening has increasing application potential. The correct combination of mechanical properties of both materials can preserve the beneficial aspects of timber in tension and concrete in compression, while reducing the weight of the structure. This paper experimentally evaluated the slip modulus of screw connectors as one of the key issues in the structural design of these types of composite structures. The results of four groups of push-out tests, which were performed on composite samples, are presented. All of the samples had identical cross sections, but each group was made with a different lightweight concrete density class according to Eurocode 2. The obtained results were compared with the values recommended by Eurocode 5. The analysis showed that the code recommendations yielded slip modulus values that were considerably higher than the ones obtained experimentally, which could lead to unsafe timber and lightweight concrete structures.

