



Vibration Properties of a Timber Floor Assessed in Laboratory and During Construction

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Summary:

In the present work the change in natural frequencies, damping and mode shapes of a prefabricated timber floor element have been investigated when it was integrated into a building structure. The timber floor element was first subjected to modal testing in laboratory with ungrounded and simply supported boundary conditions, and then in situ at different stages of building construction. The first five natural frequencies, damping ratios and mode shapes of the floor element and the entire floor were extracted and analysed. It may be concluded that the major change in natural frequencies occur as the floor element is coupled to the adjacent elements and when partitions are built in the studied room, the largest effect is on those modes of vibration that largely are constrained in their movement. The in situ conditions have a great influence on the damping, which depends on the damping characteristics of the supports, but also on the fact that the floor is integrated into the building and interacts with it. There is a slight increase of damping in the floor over the different construction stages and the damping values seem to decrease with ascending mode order.

Online Access: Free

Resource Link

<http://www.diva-portal.org/smash/get/diva2:343982/FULLTEXT01.pdf>