



Vibration and Sound Insulation Performance of Mass Timber Floors with Concrete Toppings

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Organization:	University of Northern British Columbia
Country of Publication:	Canada
Material:	CLT (Cross-Laminated Timber) DLT (Dowel Laminated Timber) NLT (Nail-Laminated Timber) Timber-Concrete Composite
Application:	Floors Ceilings
Topic:	Acoustics and Vibration
Keywords:	Concrete Topping Acoustic Membrane Exposed Mass Timber Elements
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Summary:

The impact sound perceived in the lower volume in a building is radiated by the vibration of the ceiling transmitted from the vibration of the floor generated by an impact source in the upper volume. Thus, the dynamic behaviour of a floor is one crucial intermediate step to understand the impact sound insulation performance of such a floor. A key to reducing the impact sound is to isolate the structural floor from the subfloor. Floating floor construction is a common way of improving the impact sound insulation, which is to float a concrete topping on the mass timber floor with an elastic layer in between. There are two types of floating floor solutions, a) with a continuous elastic layer and b) with point bearing elastic mounts as shown in Figure 1. This study will investigate both solutions and will provide guidance on how to adopt both solutions for mass timber floors with an exposed ceiling.

The objectives of this project are:

1. To measure the sound insulation performance of mass timber floors with full-scale concrete topping on various continuous elastic interlayer materials
2. To measure the sound insulation performance of mass timber floors with full-scale concrete topping on discrete elastic load mounts