



Plan a research program for acoustic performance of wood-frame buildings

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Abstract:

Acoustic performance is one of the important issues that need to be addressed to help wood compete with other materials in the housing market, especially the multi-family housing market. The 1995 National Building Code of Canada (NBCC) increased the minimum sound transmission class (STC) ratings requirement from 45 to 50 between residential suites, and from 50 to 55 between suites and vertical shafts, against the 1990 NBCC. In a recent survey of prefabricated houses, sound performance was reported to be a key concern for increased acceptance of wood-frame buildings components in foreign markets, particularly Europe and Japan, where the code requirements for sound insulation are more stringent than in Canada. In view of this growing awareness of acoustic performance issues in Canada and elsewhere, and the corresponding evolution of building codes, the wood industry needs to demonstrate that wood-frame buildings can match or outperform buildings using other materials with respect to all major criteria, including acoustic performance.

This report identifies gaps in the sound-transmission research for wood-frame buildings. These gaps are either issues not completely addressed or understood, or they have been ignored by non-wood researchers or the current National Building Code of Canada. The issues identified include: 1) a lack of design information on Field Sound Transmission Class (FSTC) and Impact Insulation Class (IIC) ratings for wood-frame construction; 2) conflicts between some construction solutions for sound insulation and other performance attributes; 3) a lack of design and construction guidelines for low frequency thumping noises induced by footsteps in wood-frame construction; 4) limited information on the design of wood-frame construction insulated against exterior noises. Forintek lacks the expertise to deal with noise insulation issues in wood-frame construction.

Four potential research projects are proposed to address these issues. It is recommended that Forintek should play an active role in sound insulation research in order to deal with occupant complaints about poor sound performance in wood-frame buildings.

Co-ordination with acoustics experts at the Institute for Research in Construction (IRC) and other institutes, the wood and building industries, and code regulators is necessary to the success of any research to be undertaken to fill these gaps, reinforce the performance attributes of Canadian wood-frame systems and increase their market acceptance.

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