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Fire and Acoustics Performance of Lightweight Floor Assemblies – Phase 2

Objectives

To provide the technical information necessary to determine the fire-resistance ratings (FRRs) for lightweight floor assemblies for which noise-control ratings already existed (they were developed in Phase 1 of the project). Fire researchers also sought to confirm some of the findings of Phase 1. For acoustics researchers, the main objectives were to examine areas in which information was lacking, and to resolve some inconsistencies in the data from Phase 1.

Background

Phase I of this project, completed in 1998, resulted in (in 2002) the addition of fire-resistance ratings (FRR) and noise-control ratings for 177 generic floor assemblies to the National Building Code (NBC) Part 9, Appendix A. However, most of the new entries in the expanded NBC table give updated information about the acoustical performance of the assemblies but not about their fire performance. Phase 2 was launched mainly to address this deficiency.

Statement of Work

Approximately 60 full-scale fire and acoustics tests were conducted, investigating parameters such as support conditions, type of insulating material and its method of installation, spacing of resilient channels and framing members, and number and thickness of gypsum board layers.

Outcomes

The findings from this multidisciplinary project are being compiled and an ad hoc committee of project partners is preparing a submission for changes to the NBC. This code change request will be considered by the appropriate standing committees after the publication of the 2005 NBC, for possible inclusion in the next edition. An important additional outcome of Phase 2 is a program for estimating sound transmission class (STC) and impact insulation class (IIC), which was developed for floors with resilient metal channels and insulating material.

Partners

Canada Mortgage and Housing Corporation, Canadian Steel Construction Council, Canadian Wood Council, Cellulose Insulation Manufacturers Association of Canada, Cellulose Insulation Manufacturers Association (U.S.), Forintek Canada Corporation, Gypsum Association (U.S.), Gypsum Manufacturers of Canada, Ontario Ministry of Municipal Affairs and Housing, Owens-Corning Canada, Roxul Inc., Truss Plate Institute of Canada, Truss Plate Institute (U.S.).

One of 60 floor assemblies, typical of those used in residential construction, undergoing a full-scale test at IRC

Start/Completion Date

The project began in January 2000 and was completed in December 2004.

Project Managers

Fire: Dr. Mohamed Sultan: 613-993-9771; Mohamed.Sultan@nrc-cnrc.gc.ca
Acoustics: Dr. Alf Warnock: 613-993-9370; Alf.Warnock@nrc-cnrc.gc.ca

For more information, see http://irc.nrc-cnrc.gc.ca/ie/floors/phase2_e.html

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