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### High sound and thermal insulation constructions with dB-deck

Bart Ingelaere<sup>a</sup>, Gerrit Vermeir<sup>b</sup> and Debby Wuyts<sup>a</sup>

<sup>a</sup>BBRI, rue du Lombard, 42, B-1000 Brussel, Belgium

<sup>b</sup>Lab. ATF, Katholieke Universiteit Leuven, Celestijnenlaan 200D, B-3001 Leuven, Belgium

The new Belgian requirements demand  $D_{nT,w} \geq 58$  dB and  $L'_{nT,w} \leq 50$  dB between apartments for enhanced acoustic comfort. At the same time the Energy Performance Regulations impose strict requirements for the thermal insulation between apartments. Higher demands on sound insulation can be realized in practice by using higher surface weights for walls and floors and by applying failure free floating floors. However requiring higher weights for floors is in contradiction with the technique of concrete hollow floor elements. A thermal and acoustical solution was found in the development of dB-deck, a prefab double floor element with intermediate supporting elastic pads, cutting structural vibration paths between superposed apartments. In combination with double walls without anchors (allowing for a high sound reduction index and no structural transmission in the horizontal sense), this construction technique allowed for  $D_{nT,w} > 63$  dB and  $L'_{nT,w} < 47$  dB without a floating floor in experimental setups. This solution was developed by a team of the BBRI, KULeuven and CDM for an important producer of hollow floor elements. This technique has now been used for real constructions. The paper presents technical details, the results of the acoustical measurements and the acoustical advantages and difficulties met in the construction of this apartment block.