

# A Cost-Effective Solution for Ensuring High Acoustic Performance in New Multi-Family Buildings

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Multi-family buildings offer many advantages to their occupants over single-family homes. Unfortunately, acoustical privacy is often not one of those advantages. If you have ever lived in an apartment, condo or townhouse, at some point you have likely questioned if your walls were purposely constructed thin, or if your fellow neighbors were simply that loud. Add to this, an increasing number of residences now have home entertainment systems with large-screen televisions and surround sound stereo systems that are capable of producing higher volumes; it is as important as ever to ensure acoustic comfort.

Though the issue of noise is nothing new, specifiers and other design/construction professionals must be able to control the sound within a living unit or, at the very least, mitigate its transmission into adjoining spaces. Today's buyers expect a certain level of quality and consider a quiet unit as a must-have feature. As a result, when sound control is not a priority in the design and construction of multi-family buildings, it can result in owner complaints and, in worse cases, building owner vs. building team litigation.

A common assumption is that walls between various living spaces simply need to be thicker to reduce sound transmission. However, while this will help to a small degree, it is typically the design and construction of the wall assembly, and not necessarily the depth of the framing member, that can be a major factor in transmitting sound from one living unit to the other. In addition, the quality of the construction, or lack thereof, can have a significant impact. Therefore, we must consider how wall assemblies are constructed in most multi-family housing units.

Typically, they are made of gypsum board fastened to both sides of a wood or steel stud. When sound waves hit one side of the wall it causes the gypsum board on that side to vibrate. Because the gypsum board is rigidly connected to the stud, the vibration is transmitted through the stud to the gypsum board on the other side, until it ultimately reaches the adjoining living space.

The design of wall and floor assemblies may be the most important elements in noise control, but special acoustical products can also help dampen sound transmission between units. While the majority of these solutions achieve excellent results, they frequently require a larger budget than typically afforded to condominium, apartment or townhouse projects not targeting the luxury market. For most other real world budgets, the use of a traditional resilient furring channel is usually the most economical way to provide sound control. When properly installed, these relatively simple metal channels act as an acoustical barrier by disrupting the path of the sound waves attempting to pass through the wall assemblies and into adjoining rooms.

Research indicates that when combined with standard batt insulation, resilient channels can add up to 5 Sound Transmission Class (STC) points to an otherwise identical wall. This can often be enough to meet the STC ratings required by the project design goals or local codes.

The IIC (Impact Insulation Class) rating required by the building code almost mandates the use of resilient channels to hang the ceiling in a multi-family project. Unless the floors are completely carpeted, which is rare for kitchens and bathrooms, it is very difficult to achieve IIC ratings without using resilient channels and batt insulation in the floor-ceiling construction.

Resilient channels have provided building and design professionals a cost-effective solution for minimizing sound transmission through walls, ceilings and floors for more than 50 years. In order to achieve the desired sound rating, it is important that the contractor properly install the resilient channels and gypsum board components. Improper installation will nullify any additional acoustical performance you would have gained from using resilient channels.

Over the past few years, several new acoustical wallboard and insulation products have entered the marketplace, promising high STC ratings and a stronger contribution to the acoustical performance of wall assemblies. These new technologies, however, come at a higher price than traditional wall assembly with resilient channels, sound-absorbing insulation and acoustical sealant. These are important elements to consider at a time when nearly everyone is tightening their belts and following a stricter budget.

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