

ASK THE INSPECTOR COLUMN FOR AUGUST 31, 2016
HEADLINE: NOISE TRANSMISSION...A SOUND ISSUE

At a recent home inspection on a semi-detached home, the client questioned how much noise they would hear from the adjoining residence. This particular semi was built some 40 years ago and the amount of attention to noise would not have been what it is today.

Sound transmission and the accompanying annoyances have become one of the areas that the national building codes, as well as builders across Canada, are now addressing. Older homes are especially subject to noise transmission, as they often lack the minimal sound deadening properties.

First let's look at the levels of noise that we hear. These are all rated as sound transmission class (STC). STC is established by testing 16 standard frequencies from 125 Hz to 4000 Hz, which are then plotted on a sound graph. STC is roughly the decibel reduction in noise that a partition or wall can provide. For example, the National Building Code requires an STC rating of 50 for partitions in row houses. A poorly insulated partition would have a rating of 25 when normal speech can be heard through the wall. A block wall filled with insulation and drywall mounted on steel studded walls, which are not attached to the block wall, would have a rating of 72. The standards state that any partition or wall with over a 60 STC allows practically no audible sound. As you can see, in sound rating, the higher the number the quieter it is. A home can be tested by professionals knowledgeable in the setup and interpretation of acoustical testing. If the noise levels are constantly high and there are younger members in your home, it can have long term effects on their hearing.

In a single family home, it is commonly accepted that the vast majority of sound transmission is through the windows, followed by the exterior doors. There are different kinds of sound transmission, air borne, impact sound and flanking sound. Air borne travels through the building and is created by occupancy noise from household activities, such as voices or a radio. When this sound hits a surface, it will reflect into the room. Impact sound is just that, footsteps, things like water pipes vibrating and noises from furnace ducting. Flanking sound happens when noise travels through a structure; like the juncture of your walls and floors in the assembly of the home.

Sound travelling towards a home can be caused by numerous conditions; traffic, commercial or industrial operations, a home sitting higher on a hill than other homes. It's actually a long list. The most tried and true method to improve external air borne sound transmission is to install new thermopane windows and then, on the side or sides of your home that are noisy, add a fixed glass second layer. This is often done by installing an internal storm window that can be removed for ventilation or cleaning. You can buy doors and windows that have

an acoustical rating, but they are very expensive. Older homes often have paneled exterior doors; these panels are generally quite thin. Changing these doors to insulated metal external doors will not only help with the noise, it will add some considerable energy savings, too. If you have newer doors and windows, give the weather-stripping and caulking a good look over, as these are areas where sound will travel. If this is not in the budget, then a heavy window curtain is the next best thing. They must be from floor to ceiling to be effective.

As well, there are many smaller areas that can add up to increased amounts of sound transmission. Examples of improvements that could be made include: placing foam pads behind the external electrical plugs; removing the floor trim on external walls and sealing the joint between the floor and the wall and, in the basement, sealing the area between the foundation and the actual wall plates. Any void in your outside wall like your dryer vent, HVAC vents or supply lines to the AC also need to be sealed.

If you are planning any major renovations, this is the time to look at the numerous kinds of drywall and sound board on the market. The company that makes "QuietRock" advertises that their drywall, installed without resilient strips, can reduce noise by up to 70%. They actually make a home theatre drywall that is 1 3/8" thick with a rating of over STC 60. Wouldn't that be a good idea when the kids have their movies on in the theatre room! Another product that I personally like is called "Enermax." That because this material is made of 98% recycled wood fibre and contains no VOC's. It is 1/2" thick, cut with a utility knife and, as an added benefit, adds an R4.7 insulation factor. They do recommend that this material be installed with what is known as a resilient bar. This metal strip separates the Enermax and drywall from the wood studding, effectively reducing the sound levels. If there is noise created by external conditions, a call to your local municipality is in order. I know of more than one case where a factory or business was operating over the permitted STCs. It is widely known that annoying sounds can affect sleeping habits and hearing, as well as increase irritability in humans. There is, in fact, an extensive list of long term effects. Having your home environment made quieter is worth the time, money and effort on many levels.

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