STOP NOISE™ ACOUSTICAL SURFACES INC.
Sound Solutions for Over 40 Years | Soundproofing | Acoustics | Noise & Vibration Control

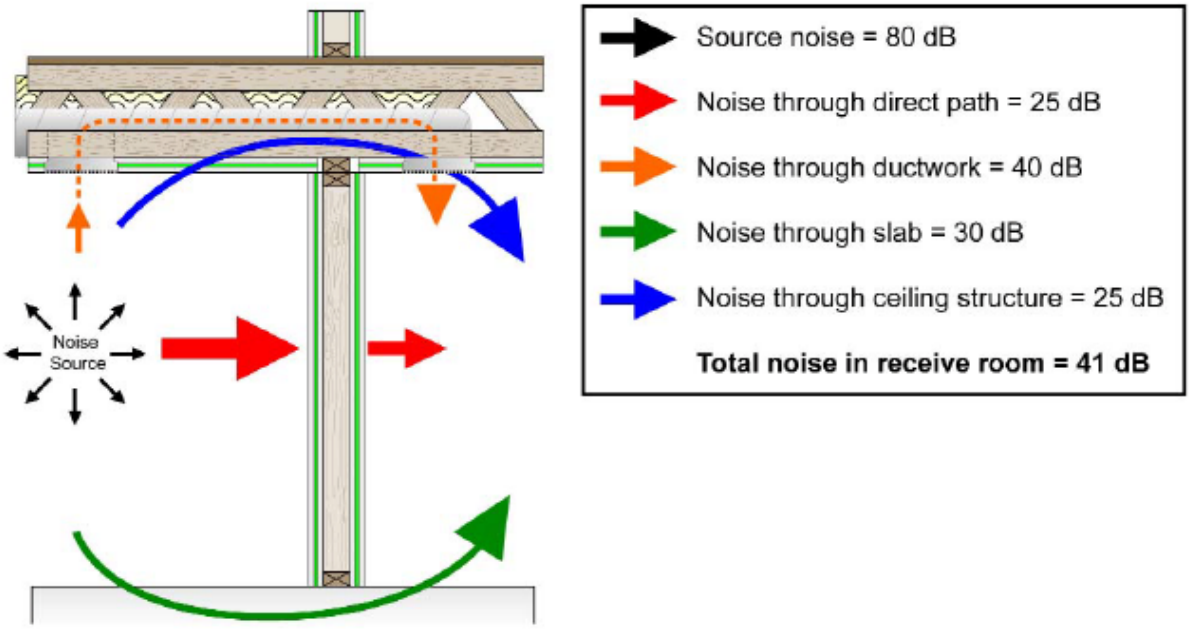
The Impact of Green Glue on Structure-Borne Sound

Vibrations can take several paths to compromise acoustic isolation.

Green Glue is a damping material, its purpose is to raise the damping of structures in which it is included. The literal definition of damping is the dissipation of energy over time or distance. In our previous article "Green Glue Compared", we showed how the Green stuff stacks up to other damping options available to you. Those graphs illustrated the decay of energy over time. Here we try to assess just how quickly Green Glue can destroy energy over distance.

Flanking Noise paths

The transmission of sound through structural paths rather that through the air is often called "flanking sound" - sound going to the next room through the floor or ceiling, rather than the walls. Sound going upstairs through the framework, etc. If we can reduce the amount of transmitted vibration, we can greatly mitigate the problem of structure borne noise.



This diagram illustrates some simple flanking noise paths. The red arrow is direct sound – what you would measure in a lab to arrive at an STC rating, etc. – the green and blue paths are some simple "flanking paths". Often, these paths are more important than the direct, yellow, path at many frequencies.

123 Columbia Court North Suite 201 Chaska, MN 55318 | TOLL FREE 800.527.6253 | PHONE 952.448.5300 | FAX 952.448.2613 | WEB SITE www.acousticalsurfaces.com

National, state and local building codes for new and remodeled multifamily residential buildings require an STC of 50 by design and 45 by actual field test. Unfortunately, many buildings are constructed based on the design criteria but noise checks to see if appropriate noise control techniques have been adhered to during the actual construction. Experience teaches us that the building inspectors will not check the noise control techniques but nevertheless will sign a certificate of occupancy certifying that the structure has been built to code. The best way to validate the noise control performance is by a field test or by inspection by a qualified acoustician during the construction phase. This can eliminate potential litigation later, after the occupants have moved in and become dissatisfied with the sound privacy.

Many difference approaches are promoted to improve the STC ratings of existing walls and floors. It is wise to ask for validating acoustical test data before proceeding with a solution. Furthermore, be sure to ask for the composite performance data as apposed to the data on a single component. Materials that are tested as a single entity may not perform the same way in actual practice. For example, a layer of gypsum board may have an STC of 32 when tested by itself. Adding another layer will only improve the STC by 1-2 points thus adding a layer of gypsum board to an existing wall is likely to only increase the STC by 1-2 points. The improvement is not cost effective.

Retrofitting a wall can be much easier to achieve than a floor/ceiling assembly. The most prevalent complaint about a floor/ceiling assembly is frequently one of impact noise such as footfalls. Unfortunately, the only way to address this problem is with the upstairs floor surface. Hard surfaced floors have become quite popular in recent years thereby exacerbating the problem of intrusive impact noise. The solution to resolving annoying impact noise from above is to treat the floor surface above, generally, with a layer of acoustical underlayment.

In the case of condos or town homes that start out with carpeting, owner rules and regulations should state that if the carpet is removed and hard surfaces floor finishes installed instead, underlayment below the hard surfaced material should be mandatory in order to maintain the same sound isolation characteristics afforded by carpet.

Unfortunately, trying to resolve the problem from below the ceiling is unlikely to produce an significant relief from impact noise. Improvements will be experienced for airborne noise however, in the same manner we see improvements in retrofitting walls as described above.

123 Columbia Court North Suite 201 Chaska, MN 55318
TOLL FREE 800.527.6253 PHONE 952.448.5300 FAX 952.448.2613 WEB SITE www.acousticalsurfaces.com