



Creating an Acoustically Friendly Office Environment

Providing an acoustically balanced working environment benefits both employers and employees directly by significantly improving overall productivity. Unfortunately, it is often the least considered aspect in workspace design. The highest overhead and investment for most businesses is its staff. In order to capitalize on that investment, it is critical that employees are as productive as possible. That means an office environment with high speech privacy and less annoying distractions.

Employees' most productive time is spent doing quiet and focused work. Yet, employee surveys have shown that the number one facility issue is noise within the office environment with its associated distraction, stress, and loss of productivity. Not only is there an immediate and ongoing cost to the company, but also some employees may choose to seek a better work environment, further impacting corporate efficiency and generating unnecessary hiring and retraining costs.

There are three acoustical issues that must be addressed by employers who wish to be proactive: Ambient Sound Level, Speech Privacy, and Sound Transmission Paths.

First we will address ambient sound levels. Every office has a level of background 'noise' that is directly related to the type of work being performed. The most distracting and counter-productive sounds are those associated with overheard conversations, noisy mechanical systems, and intermittent sounds such as ringing telephones, photocopiers and other intrusive 'noises'.

Speech privacy is the most critical issue in any office environment. If speech is indirectly intelligible to others, employees feel extremely restricted in their communications with colleagues within their own workspace and during their telephone conversations. Normal levels of speech should be unintelligible between closed offices and over 15 to 20 feet in open areas.

Now let's examine the sound transmission paths. There are four distinct paths by which sound is transmitted from source to receiver:

1. The direct route that is unimpeded between a sound source and a receiver.
2. The indirect path in which there is a material or structure between the sound source and the receiver but which lacks the density and/or mass to significantly reduce the sound energy.
3. The reflected path when a sound reflects off hard surfaces, such as walls, windows, floors and ceilings, and is received by the receiver even though the source is not in the direct line of sight.
4. And there is a diffracted path by which sound travels between source and receiver and goes around otherwise effective barriers in the direct path.

Knowing how sound travels, three basic remedial techniques can eliminate distracting noises and maximize speech privacy in office environments: Absorption, Blocking and Masking.



Reflected sound energy can be absorbed and blocked by introducing 'soft', porous surfaces. The liberal use of ceiling tiles with a high absorption coefficient, fabric covered furnishings, open area partitions and carpets will reduce the ambient sound level and speech intelligibility within an area.

Blocking with dense, heavy materials reflect the sound back towards the source and significantly reduce the amount of sound getting to the receiver. Hence, open area partitions require a dense, high mass material core with absorptive material on both sides and should be 5 ft and 6 inches in height wherever possible to reduce the diffracted sound paths.

The third remedial technique, which is the introduction of low level / broadband sound in the work area, is an effective way to reduce speech intelligibility. This is achieved through Sound Masking, which generates a sound spectrum that broadly, covers speech frequencies and is contoured to the human ear's sensitivity to sound. Hence, by rendering distracting conversations less intelligible, those directly involved in the conversation have a sense of privacy.

It is important to note that Sound Masking systems must be tuned after an installation, and re-tuned if and when an office area is reconfigured. A poorly tuned system not only fails to adequately reduce speech intelligibility but can actually become a source of annoyance in itself.

All three of the above noted materials and systems need to be considered in order to control the acoustic environment in the workplace. This is particularly important in 'open landscape' designs and where 'closed' office walls do not go fully up to the structural ceiling. The construction and height of area partitions, selection of acoustical ceiling tile, and the quality and flexibility of a Sound Masking system can mean the difference between success and failure in achieving an acoustically 'friendly' environment.