



# GREEN AV & ACOUSTICS

*Conservation and sustainability holds top-of-mind awareness like never before. The Sextant Group presents the first of a series of articles exploring how audiovisual technologies and acoustics impact and interact with sustainable architectural design.*



## ACOUSTICAL DESIGN AND GREEN BUILDING INITIATIVES

*By Greg Coudriet*

Acoustical design is regularly impacted by green building initiatives and the LEED certification program. While this association may not be immediately apparent, these two design elements are related in many ways. The connection can be as simple as selecting

environmentally friendly acoustical products. It can also be subtle, such as mitigating sound isolation concerns that are created by other green systems. Either way, the frequent connection between acoustical and green design practices can impact any construction project including higher education, healthcare, corporate, government, K-12, and worship.

### LINKING ACOUSTICS & GREEN PRACTICES

The most direct association between acoustical and green design comes in the form of acoustical

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performance criteria that are required under the newly created LEED for Schools for New Construction and Major Renovations program. This program's acoustical considerations draw heavily on ANSI s12.60-2002 "Acoustical Performance Criteria, Design Requirements,

and Guidelines for Schools", widely recognized as the classroom acoustics standard. ANSI s12.60-2002 is based upon years of research by psychologists, educators, and professional acousticians. Specific acoustical criteria and design practices are required as a prerequisite under the LEED for Schools program. One or two additional LEED points can be earned by achieving higher levels of acoustical performance. These acoustic LEED points can typically be transferred to other LEED certification programs such as LEED for New Construction. This can allow designers to seek acoustical LEED points for any building that includes an instructional space, including corporate training centers, medical education facilities, and others.

### LEED OR GET OUT OF THE WAY

Many acoustical solutions require the use of specialty finishes or sound isolation elements. Acoustical finishes are usually comprised of a fiberglass core that is covered with an acoustically transparent facing made from



fabric, plastic, vinyl, nylon, wood, or metal. Sound isolation solutions frequently make use of acoustical sealants and isolators that may incorporate

fiberglass, neoprene, and asphalt.

Traditionally, these acoustical products are manufactured without regard for material sustainability or chemical off-gassing. Environmentally friendly products and solutions do exist; however, they are not always marketed as such. Selecting appropriate solutions often requires research and a consultant who is familiar with a project's acoustical and green design requirements. While LEED points are not directly awarded for this effort, the process can increase the overall percentage of environmentally friendly materials in a building.

## BALANCING ACT

The implementation of many LEED initiatives can unintentionally degrade acoustical performance. Green buildings often require designers to utilize new materials and rethink how traditional

**The successful integration of acoustical designs and green building practices can deliver LEED certification credits.**

buildings function. Unfortunately, many of these new and innovative approaches fail to provide the basic level of acoustical performance that has come to be expected from conventional construction.

For instance, a green building may incorporate extensive areas of transom glazing to

maximize the use of natural lighting. The building's air handling system may utilize natural air circulation or an under-floor air delivery system. Each of these systems requires a certain amount of openness in the building to function effectively. Unfortunately, this same openness can unintentionally reduce sound isolation.

Further, transom glazing and natural air circulation systems require high ceilings which often preclude the use of typical acoustical tile ceilings. Acoustical tile ceilings are often thought of as a cost-effective visual mask for a building's MEP systems. They are a necessary evil to many architects, who are eager to see them go away once the MEP systems are buried in a raised access floor. However, acoustical ceiling tile is the primary means of sound control in most buildings. Removing these ceilings

(and raising ceiling heights) often leads to excessive reverberation, noise build-up, and reduced speech privacy. In any case, solutions to each of these issues must be carefully addressed.

## CREATIVE SOLUTIONS

Conventional acoustical improvements can be cost-prohibitive when they are applied to a building wide system such as transom glazing or transfer air grills. Other traditional solutions are simply incompatible with the functionality of green building systems. For instance, duct silencers cannot be used to limit noise transmission through natural air circulation pathways. These silencers and other similar solutions would restrict airflow and compromise the functionality of the air delivery system. Solutions often require careful space planning, creative designs, and intelligent compromises to a building's acoustical design.

In summary, traditional acoustical solutions need to be modified in green buildings. Good designers seek out environmentally friendly acoustical products, and look to develop creative solutions to maintain acoustical performance in a building without negating the cost effectiveness or functionality of other green building systems. Successful integration of acoustical designs and green building practices can deliver additional LEED certification credits.



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