

A Newsletter from **Stewart Acoustical Consultants**

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*Important: Please see our [eLearning and Continuing Education Survey](#) on the 2<sup>nd</sup> page*

## Welcome Back Chris Barnobi

Chris Barnobi worked for us while a senior at NC State in 2008, and then went to Virginia Tech to work on an M.S. in Mechanical Engineering with specialization in acoustics. Combining his interests in music and engineering, Chris brings a passion and understanding to his work. At Virginia Tech Chris received the John Lee Pratt Fellowship, and was appointed a Graduate Research Assistantship under Dr. Chris Fuller in the Vibrations and Acoustics Laboratory. The research he conducted focused on reducing jet engine noise. He has finished both the course work and research for his M.S. Chris is currently revising his thesis for defense.



### Important Acoustical Standards and Code News

**Healthcare Acoustics** – Two important new documents were released in January:

***Sound & Vibration for Health Care Facilities January 1, 2010, Version 2.0, Including New Guidelines for NICUs*** is a completely revised 80-page document commissioned in 2006 to serve as the comprehensive “reference standard” for the *2010 FGI-ASHE Guidelines* (see below) and is cross-referenced to it. Version 2.0 supersedes previous editions 1.0 & 1.1. It is completely revised, updated and re-designed in a user-friendly format to provide completely detailed information, constructive advice for designers and engineers, reference tables, case study photos, charts and graphs. *Sound & Vibration* is intended to be used alongside the 2010 Guidelines. *Sound & Vibration* has already been adopted as the sole Reference Standard for two LEED “Environmental Quality” credits in the *Green Guide for Health Care* ([www.gghc.org](http://www.gghc.org)) and *LEED for Healthcare* (in draft). A copy of this document can be ordered for \$90 at this [link](#).

***2010 FGI-ASHE Guidelines for Design and Construction of Health Care Facilities*** is accepted as building code by over 42 states, 7 U.S. federal agencies and several foreign countries. This is the first edition in the 60-year history of the Guidelines to include comprehensive acoustical criteria (see above) for all aspects of noise, sound systems, speech privacy and building vibration. A copy may be ordered for \$168 at this [link](#). Do not forget that the Department of Health and Human Services announced that effective November 30 it has embarked on a stepped up enforcement of healthcare privacy rules and put into effect strongly increased penalties for failure to comply.

### Classroom Acoustics

**NEW standard ANSI S12.60 Part 2 - Relocatable Classrooms** - covers acoustical requirements unique to relocatable classrooms and is now available FREE [here](#). Dr. Stewart was a member of the working group including many representatives of the modular building industry who developed this standard.

**FINAL DRAFT on ANSI S12.60 Part 1 covering acoustics for site built schools** - Work is progressing on a revision of what will now be ANSI S12.60 Part 1 covering acoustics for site built schools.

Key changes to S12.60:

1. Exterior Noise Isolation - A major change eliminates the prior requirement for STC 50 exterior walls, making the exterior isolation requirements fit the environment of the school.
2. Much of the informative material in the first edition is being moved to a separate document leaving the standard addressing requirements.
3. Readily Adaptable Classrooms - Classrooms and core learning spaces under 10,000 cubic feet must be made readily adaptable to 0.3 seconds
4. Hallways – Hallways used only for conveyance now required to meet 45 dBA (ancillary).
5. Classroom Sound Systems – are required to be adjustable in sound level to not disturb adjacent classrooms and provide even coverage.
6. Core learning space clarifications – Significant effort to clarify what is a core learning space.

The final draft is due out for a 30 day ballot around March 26 in expectation of final approval by the beginning of May. Sign up for our blog at [www.green.sacnc.com](http://www.green.sacnc.com) for further details on what the standard includes. If approved, it is expected that the US Access Board will propose to the International Codes Council, ICC, that it become part of the 2012 International Building Code.

## International Green Building Code

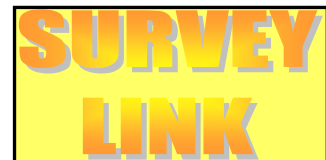
The International Green Building Code Draft document has included S12.60 for noise level requirements, and has a table of NC Ratings for various other spaces. This will be the first green building code and it will include acoustics from its inception as planned.

[LEED USER website](#)...This website offers a great place for open discussions about LEED with experts and novices communicating and learning from each other. There are sections devoted to the [acoustical prerequisite](#) and [Enhanced Acoustics Credits](#) for LEED for schools.

**New Targeted LEED for Schools Services (Lower Cost)**– To meet the needs of our clients we are now offering a targeted plan to reduce cost on LEED for Schools acoustical prerequisites and related credits. This plan requires involving us early in the design process to shape key design concepts. The basic classroom design and features of the central heating and air conditioning system are reviewed with modifications made before these features are employed throughout the building. The architect and mechanical engineer must also provide some basic underlying data for the classrooms in a format that we can analyze very quickly. These efforts can in some cases reduce our scope and related fees by up to 40%. Please contact Joe Bridger at [joe@green.sacnc.com](mailto:joe@green.sacnc.com) for more information.

## **IMPORTANT: eLearning and other Continuing Education Opportunities** –

With the major changes in acoustical requirements for green buildings (especially schools and healthcare) and anticipated future changes in design requirements/goals other projects, a great need exists for education about acoustics and noise control. We recently worked with NC-ASA and USGBC Triangle to provide the Green Acoustics and LEED seminar. We know that LEED AP's entering the LEED v3 credentialing maintenance program (CMP) need continuing education. This has always been true for architects and engineers to maintain their licenses. We are looking at becoming an education provider for such classes online through live and on-demand webinars, self-directed online courses, and of course live events. We need your input to determine the level of interest in and type of such coursework. Please click on the survey link and take just a few moments to help us. Thank you



**Tribute to Prof. Paul deForest Emerson, PE** - Paul D. Emerson, former Professor and Head of Textile Machine Design at N. C. State University passed away at 91 on November 22, 2009. Paul was a pioneer and leader in the field of noise control for textile machinery, a valued friend and mentor of Dr. Stewart. This is a link to a [photo of Paul](#) working in his laboratory shortly after joining the NCSU faculty in 1968. Paul will be remembered for his dedication to students and colleagues and his recognition of the practicality and feasibility of noise control in an industry where many said it could not be done. Several years ago, the National Council of Acoustical Consultants invited Laymon Miller, another major pioneer in noise control, to give a full day lecture on his many experiences and advice to current practitioners. He mentioned that a wise colleague in North Carolina had once told him that the three most important tools for noise control in industry are the screwdriver, wrench, and oil can. That had to be Paul, and it was.

**Update – The Temporary White House Auditorium – They want to make it permanent** – The users like the new auditorium ([last issue](#)) so much and see the shortcomings of the prior space that they are looking to make this space permanent! With this link to [C-SPAN](#) you can hear what happened the first time they used the auditorium.

**Implantable Hearing Aid** – The most common type of hearing loss is sensorineural in which the inner ear or cochlea is weak but the eardrum and middle ear are functional. Those affected normally wear hearing aids that amplify the sound reaching the eardrum. The [FDA](#) has just approved an implantable hearing aid. The new technology takes the signal from the eardrum which functions as a microphone and amplifies it as an electrical signal before sending it to the cochlea. The signal can be processed to more ideally match the pattern of hearing loss of the individual to give them more natural hearing.

**Super Test Lab** – NWAA Labs has leased a former nuclear reactor production facility to develop a major new acoustical lab in Elma, WA. Very large reverberant rooms will allow testing to lower frequencies than other facilities. They will be aiming for a new record for the quietest place in the world in their new anechoic chamber, hoping to get to -15 dB. This is helped by the very quiet site with large buffer area and five-foot-thick concrete walls. Ron Sauro of NWAA has been doing research on the effects of the shape, size and edges of absorptive panels on their absorption. Ron's research has promise of a systematic way to relate actual observed absorption to these factors and not just the surface area of the panel.

**And Another Big Test Lab - [Johnson Controls](#)** has announced the opening of the worlds largest test chamber for testing air handling units (AHU's) in accordance with AHRI 260 and AHRI 430 at its Grantley Technology Center in York, PA.

**Major Acoustical Conference in Baltimore in April** – The [Acoustical Society of America](#) and the Institute of Noise Control Engineering will hold a joint meeting in Baltimore April 19-23. The General Chair for the INCE portion of the meeting, [NOISECON 2010](#) will be Michael Lucas of Ingersoll Rand in Davidson, NC. (History – Noral Stewart was co-chair of NOISECON 81, held in Raleigh.)

**ASHRAE testing Duct Liners** – With concerns expressed about the use of fiberglass duct liners, recent years have seen the introduction of a number of new duct liner materials. Unfortunately, the makers of these materials have not tested them for their ability to reduce sound traveling down ducts. ASHRAE has a current research project to test a variety of these new duct liner materials. It is hoped that results will be available for inclusion the 2011 ASHRAE Handbook chapter on Noise and Vibration Control.

## New Acoustical Products

**New Acoustical Wall Covering Material** – SoundTech of Grand Rapids, MI has developed a wall covering material that is thin, can be painted several times, and which is about 50% absorptive near 1000 Hz with an NRC of .35. While this [SoundCoustic](#) material is not highly absorptive overall, it does provide significant absorption in the region most important for the control of crowd noise in social and dining situations. By layering the material, they have achieved these results with a thickness of only ¼ inch. Though not nearly as effective as thicker treatments, there are applications where it could provide significant benefit.

**Armcel duct liner** – [Armcel](#) based in Mebane, NC has announced new absorption test data for their duct liner and a new “conformable” version that can easily conform to the corners of ducts. The new data shows improved sound absorption and a shift of peak absorption from the 1000 Hz band to the 500 Hz band. While this should help with reduction of noise transmitted down the duct, the absorption is still not comparable to other duct liners at most frequencies and no down-the-duct sound reduction test data are available. The products will be included in the ASHRAE testing that is underway. Another potential benefit of these products is reduced sound radiated from the walls of ducts. These materials weigh more than other duct liners. While the benefit is intuitive, no test data are available.

**Bandit Low-Frequency Absorber from MBI Products** – Traditional acoustical wall panels absorb primarily high frequencies, sometimes leaving rooms very unbalanced. The [Bandit](#) system creates an absorptive surface that is primarily absorptive at lower frequencies. While available in 2, 4, and 6 inch thicknesses, the thicker systems provide the stronger enhancement of bass absorption. These systems are intended to be installed inside a wall cavity between studs and covered with an acoustically transparent finish.

**WAVE resilient clip for wood-frame ceilings** – Kinetics Noise Control is introducing a new resilient clip system specifically for ceilings of wood frame structures. It is based on a leaf spring principle with enhanced performance where it is needed at low frequencies in wood frame structures. However, it has no rubber element so that some degree of isolation of the floor is essential for high-frequency performance. This system must not be used in cases where the floor surface is not at least minimally isolated from the subfloor.



**Ecose Fiberglass and other Green Absorbers** – As mentioned in our last issue, fiberglass manufacturers are introducing Formaldehyde free products. Many makers of acoustical wall panels and other products including [RPG](#), [Kinetics](#), and [Golterman and Sabo](#), are now using the [Ecose](#) fiberglass from [Knauf](#) in their products. MBI Products has introduced a [Greenline](#) of products. Recycled cotton absorbers are available from [Acoustical Surfaces](#) and recycled polyester EcoTech panels from Auralex.

**New HVAC Products** – [Price Industries](#) long known for grilles and diffusers has greatly expanded their product line, offering terminal units and silencers. They have invested heavily in new laboratories, personnel and research. Their research is showing that common noise controls applied to terminal units do not always give the performance expected, and thus they are offering terminal units with silencing as a package with performance ratings for the package.