

A Newsletter from *Stewart Acoustical Consultants*

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*In our 30<sup>th</sup> Year*

**Bridger Named Associate Principal** – We are pleased to announce the promotion of Joe Bridger to Principal Consultant, Associate Principal and director of educational, worship, and performance space acoustics. This recognizes his leadership role in these areas and enhanced role in business development and project management. Joe has spent his career with us starting with a summer job and working his way up as Analyst, Consultant, and Senior Consultant to his new position.



**LEED® growth goes geometric – Acoustical requirements for LEED® for Schools catch designers and owners off guard**- Fueled by concerns about climate change and rising energy prices, as well as a general broader interest in sustainable buildings and the environment, “Green” design and construction is growing strongly with many projects using the LEED® Green Building Rating System™ sponsored by the United States Green Building Council (USGBC). LEED® stands for Leadership in Energy and Environmental Design. Over the past 15 years this movement has been strongly adopted by corporations, non-profits, and government institutions alike. Now there is a special LEED® for Schools program.

**Schools major growth area**- We see the greatest interest in new school projects. Many school systems are either conducting pilot school projects, or adopting the LEED® system for all their school buildings. If you want to get a sense of the amount of news on LEED® for schools, go to [www.buildinggreenschools.org/news](http://www.buildinggreenschools.org/news). Many school districts and several states have adopted the LEED® certification as a requirement for all schools. There are 370 schools registered for the LEED® for schools program as of this writing (April 20, 2007 through now). NONE are certified yet. In the previous year over the same time period, there were only 161 schools (LEED®, but not LEED® for schools). In the two years before that there were 89 and 61.

**Caught off guard**- What many in the architectural community and these school districts do not realize, is that all schools registered for LEED® on or after April 20, 2007 must meet the LEED® for Schools acoustical requirements for reverberation time, noise blockage (STC ratings), and general background noise. Many architects already doing LEED® schools, under the general LEED® program may not be aware of or prepared for these new requirements. While the LEED® acoustics program is based on the ANSI S12.60 standard for Classroom Acoustics, the requirements are not exactly the same as in the standard, being less stringent in some regards. These requirements also caught the LEED® program off guard with the difficulty meeting them as originally written. The process is changing fast with alternative compliance paths, new interpretations of which rooms must meet requirements, and new decisions on just what will be accepted. Some recent interpretations are discussed on the next page.

**We take the lead** – Given this environment, Stewart Acoustical Consultants is taking the lead to provide assistance to architects and school systems participating in the LEED® program. We are monitoring developments in the process regarding acoustical requirements closely. Joe Bridger plans to become a LEED® accredited professional to be more knowledgeable of the general LEED® process. We are also considering firm membership in the organization to play a stronger role in development of the process and requirements.

**Easier LEED® for School Acoustical Prerequisites and Credits** – The LEED® program for schools has been revised to provide more options to achieve credits. Some of these options are easier to do than the original requirements, though they could result in classrooms that are not as good. The prerequisites and extra points for background sound level can now be obtained based on calculated levels of HVAC noise without regard to other sources. This is a concern because a calculated level of 45 dBA could result in actual levels even higher and the basic requirement of 45 dBA is far too loud for a classroom. With this interpretation, we strongly advise clients to go for the extra points with calculated levels of no more than 40 dBA or even 35 dBA. The credit for isolation between classrooms can now be met based on a measured NIC of 45 between similar rooms as those in the design. This might be met with walls less than the specified STC 50.

**Classroom Ceilings – an improved inexpensive mineral fiber ceiling**– Once the classroom acoustics standard was adopted, we found good mineral fiber ceiling panels that could meet the requirements in classrooms less than 10,000 cubic feet as long as the ceiling was at 9 feet or lower. Fiberglass panels were required for higher ceilings. Now, Armstrong has raised the bar by tweaking their mineral fiber School Zone High NRC panel to optimize the performance so it can meet the classroom acoustics standard for a ceiling height of 10 feet. This is a major advance in making good classroom acoustics affordable.

**Barnobi Graduates** – Chris Barnobi has received his BSME from North Carolina State University and has been accepted into graduate school in the mechanical engineering program at Virginia Tech. Chris will work with us a few weeks this summer and will be assisting us from Blacksburg as he pursues his MS.



**Stulgin Full Member of ASA** – Steve Stulgin has been accepted into full membership in the Acoustical Society of America.

**Unrealistic Wall Test Results** –The sound blockage ability and STC of a cavity wall can be improved when the gypsum layers on each side are well isolated from one another using light gauge studs, resilient channels or one of the new resilient clip systems. However, when only a single layer is used on each side the low-frequency performance is poor and the STC is often controlled solely by the performance at 125 Hz. That means the STC can vary widely from test to test of the same wall dependent on the 125 Hz result that typically varies widely. The low frequency performance can be improved even with the light weight if the air space is large enough. However, we are concerned that some suppliers are publicizing test results with small air spaces and a single layer of gypsum on each side with STC results that are not realistically representative of what can be normally expected. We have also noticed that a major supplier of gypsum is now publishing the highest test result they can find for wall designs rather than typical results. Users are cautioned to be careful about results that look too good to be true. The result may have been achieved in one test, but one test does not verify normal expectations.

**Fixed-Fee Contracts** – In our almost 30 year history over 95% of our jobs have been done on an hourly basis within a budget. Many clients have asked for fixed-fee contracts. Many jobs are difficult to estimate accurately, especially if we have little information or experience with a new client. However, we are finding many cases especially with large architectural projects for clients we know where fixed-fee contracts can work well. We will be expanding our use of fixed-fee contracts especially on architectural projects or well defined measurement tasks especially where clients prefer such.

**Two New Resilient Clips** – As interest in resilient clip systems for walls and ceilings increase, there are now two new suppliers in addition to Pac-International, Kinetics Noise Control, and the private label version of the Kinetics clip from Sound Isolation Company. One of the new clips is the CDM-ISO-QRW (left below) from the Belgian company CDM now represented by RPG Diffusor Systems. This one is attached by two screws similar to the Kinetics clip but is made so it opens up to accept the hat channel and is then closed. The other is the Genie clip (center and right) from Pliteq, Inc. This clip is more similar to the Pac Intl clip. The manufacturer of this clip claims it is significantly less expensive than the others.



**Fire Ratings of Absorptive Panels in Buildings without Sprinklers** – We are still trying to get the full story, but we are encountering problems getting approval for absorptive wall panels for buildings that do not have sprinklers. Historically, acoustical wall panels have been considered furniture unless they covered the full wall as a finish. They have been evaluated by ASTM E84. The building code now says they must be considered a finish if they cover more than 10% of the wall as is often the case. This imposes more restrictive requirements when the panels are covered with cloth. Either they must be E84 Class A and protected by sprinklers, or they must pass an NFPA 265 corner burn test. We are finding that very few panels have been subjected to this test and thus we have very few options in buildings that do not have sprinklers.

**Is that Material Really Sound-Absorptive?** – We have been through this before but we continue to encounter cases where people have used materials such as Homasote or Styrofoam for sound absorption. Homasote is a cellulose based product that looks very much like mineral fiber board, the base material for most acoustical ceiling panels and some wall panels. It has even been sold with the name “Soundasote” and can provide some degree of acoustical benefit as a barrier material or impact cushioning material, but provides very little sound absorption. However, like the proverbial jack of all trades, it is the master of none acoustically, and as a sound absorber is very poor. The confusion over Styrofoam apparently comes from the fact that it is a good thermal insulator, and the widespread misconception that any good thermal insulator is a good sound absorber. This is fed by the misuse of the term “sound insulation” to refer to sound absorbers that are also thermal insulators.

**Tinnitus Progress** – Researchers as reported by [ABC](#) have now concluded that the effect of Tinnitus where sufferers hear non-existent sounds originates in the brain rather than the ear. They have also developed new treatment methods using masking disguised in music that can train the brain to ignore the effect. Patients who wear an Ipod listening to the music of their preference with the masking mixed in as little as two hours a day are reporting success.

**Restored Historic Acoustics** – Another case of a restored historical courtroom with Nineteenth Century acoustics has been [reported](#) in Palm Beach County Florida. These old courtrooms with their high ceilings and hard surfaces did often have very reverberant acoustics. In some cases the reverberation may have been toned down with heavy curtains, and often the rooms were full of people since court was a major event in the old days. In those days people were more accustomed to such poor conditions and the lawyers learned to speak slowly so they could be understood better. However, that probably did not help the jurors understand the witnesses. The good news is that materials now exist that can create an appearance very similar to the historical finishes with much improved acoustics.

**Noise Effects on Blood Pressure** – It has long been known that noise could be an annoyance and irritation to people and that people who are irritated could have increases in their blood pressure as a result. However, [new research](#) in Europe is now indicating that the effect of higher sound levels on blood pressure could be a direct effect not requiring that the affected person even know of the sound. The researchers monitored the real-time blood pressure during sleep of people living near airports where the sound level increased frequently during the night as planes passed. They found that even if the subject remained asleep, their blood pressure would rise after a loud event. This research concentrated on changing sound levels, so it is not clear whether a higher steady level of sound would have an effect. The same researchers in a separate study concluded that people who had lived near an airport for five years had an increased risk of developing high blood pressure.

**Active Noise Control or Sound Cancellation** – People are always asking if we cannot use modern electronics to cancel out sound. In theory yes, and in some very controlled circumstances active cancellation can work very well for low frequency sound. Basically, the sound has to be in a duct or pipe or well-defined contained space where the cancellation can be imposed in the path or at the exit of the space. Though several companies have tried to commercialize the technology, most have not lasted except for headphones. For most applications, custom hardware and electronics are needed along with the custom design required. A company in Israel, [Silentium](#), is now offering some products with primary applications to silencing computer equipment and racks of equipment including servers. One product that may have more general application is a cancellation system built into a duct for ventilation systems. The limitation to this system is that it seems to be primarily for small ducts such as residential applications and may not be heavy-duty enough for larger commercial applications.

**Computer Interface for Larson-Davis 2800** – We recently learned that one of the updates in the early days of our Larson-Davis 2800 provided the capability to download data directly to computers rather than having to go through a floppy disk. Unfortunately, no one ever told us about this until we recently had troubles with the special disk drive used to transfer data. This direct transfer simplifies data management significantly.

**New Fee Schedule, Additional Insureds, Limos** – As it is June that means a new fee schedule is out that will to any new projects or continuing projects after August. As a result of a change in our insurance, we have had to reinstate a fee for adding clients as “additional insureds.” We also want to remind you that scheduling brief visits for mid-day when you are more than an hour or two from Raleigh can help us save you money by allowing us to use a limo for travel. We can hire a car and driver for much less than the cost of us driving under these conditions. This does not work when driving time is less than visit time or if we must spend the night for an early morning or evening visit.