

A Newsletter from *Stewart Acoustical Consultants*

7406 L Chapel Hill Road, Raleigh, NC 27607  
Ph. 919-858-0899 Fax 919-858-0878

*Celebrating 31 Years of Service*

## Happy Holidays!

From all of us and our extended family of associates, we want to wish everyone a happy holiday season, Merry Christmas and Happy New Year.

## We're Moving – Across the Parking Lot

After six years at our current location we realize we do not have room to grow. Thus, at Thanksgiving we will be relocating to larger quarters across the parking lot from our current location. The new address will be

**7330 Chapel Hill Road, Suite 101, Raleigh, NC 27607**



### **Joe Bridger, LEED AP**

Principal Consultant and Associate Principal Joe Bridger has become a LEED Accredited Professional. This indicates that he has demonstrated knowledge of the basic principles of energy efficient and environmentally conscious design of buildings.

### **Big Changes in Healthcare Acoustics and Speech Privacy for Healthcare**

The Department of Health and Human Services has announced that effective November 30 it will embark on a stepped up enforcement of healthcare privacy rules and put into effect strongly increased penalties for failure to comply. The healthcare industry has much work to do in both new design and existing facilities to comply with these privacy requirements where speech can be overheard. Also, in January the new Guidelines for Design and Construction of Health Care Facilities will be published the Facilities Guideline Institute. Concurrent with that a new version of the acoustical guidelines on which these are based will be published by the joint ASA/INCE/NCAC committee on healthcare acoustics, speech privacy, and LEED.

## **Formaldehyde-Free Fiberglass including Duct Liner**

Many people have been asking about formaldehyde-free fiberglass, especially for duct liner. It is here. Both Knauf and Manville offer some formaldehyde-free products and Knauf offers formaldehyde free duct liner in both the board and roll versions. The Knauf products most importantly are "Certified for indoor air quality as a low emitting product by The GREENGUARD Environmental Institute to both the GREENGUARD Certification Program<sup>SM</sup> and the more stringent GREENGUARD Children and Schools<sup>SM</sup> standard." We have also learned that Kinetics Noise Control is now using the Knauf fiberglass in all their products.

## **Building Code Update**

An effort has begun under the leadership of Dr. Brandon Tinianov of Serious Materials to produce a "Codes Plus" document discussing airborne and impact sound isolation. This document should provide important guidance to designers and code officials in interpreting the currently sparse language in the code and could lead to a code revision.

## **Beware of Noisy Toilets**

With the push for low water consumption the manufacturers are now offering toilets with less than 1.3 gallons per flush. However, some of these are extremely noisy, louder than a typical toilet by 20 dB or more. This is a major difference. While there is some concern about the loud noise in the bathroom or rest room, the greater concern is isolation of the sound from adjacent spaces where people do not want to hear the toilets flush. A common toilet is quiet enough that normal walls can reduce the sound to inaudible in many adjacent spaces. However, the extra noise of these new toilets makes them audible even with good walls in many quiet spaces. Unfortunately there are no standard test methods or data readily available to identify what will be a noisy toilet. Examination of a working sample is the best known insurance.

## **In Memory of David Purcell, Acoustical Consultant of Asheville, NC**

David Purcell, of Quality Environments in Asheville, NC died Tuesday April 21, 2009, following a long illness. David graduated from Savannah High School in 1965, and from Georgia Tech in 1970 with a Bachelors of Mechanical Engineering. He worked at the Newport News Ship Yard as a Design and Test Engineer before and then joined American Enka in Asheville as a Corporate Engineer before founding Quality Environments. He was a member of the American Society of Energy Engineers, and a long time member of the North Carolina Chapter of the Acoustical Society of America.

## **Our Work Noticed on C-SPAN**

Among our current projects is the renovation of several facilities adjacent to the White House including auditoriums and television studios. As a part of this, a new temporary auditorium has been constructed on the grounds. It was used for the first time on October 7 for a conference on energy that was televised on C-SPAN. About 16 minutes into the meeting a gentleman in the audience arose to make a comment. He could be heard clearly without a microphone but someone was rushing a mic to him. When he got it he asked, "Can you hear me all right?" At that point Carol Browner on podium interrupted him to say "Do you know this is the first time anyone's used this new facility? And if you've been in the old facility, you couldn't hear in the old facility, so apparently one of the things they fixed was the acoustics."

## **Classroom Acoustics Standard under revision**

ANSI S12.60 the standard for classroom acoustics is currently under revision to clear up a few identified problems and put it in a form that it could be incorporated into building codes.

## **Federal Green Schools (with classroom acoustics) Legislation makes progress**

The 21st Century Green High-Performing Public School Facilities Act (HR 2187) passed the House in May, and is awaiting action in the Senate Committee on Health, Education, Labor, and Pensions. This bill provides over \$6 billion (the \$6.4 billion stripped from the Stimulus Bill) for Green Schools (High Performance Schools). The bill includes acoustics funds for acoustics under Indoor environmental quality "...such as day lighting in classrooms, lighting quality, indoor air quality (including with reference to reducing the incidence and effects of asthma and other respiratory illnesses, **acoustics**, and thermal comfort." and the LEED rating system (which includes acoustics).

## **Specifying UL Listed Designs – Variations in Acoustical Performance**

It is common practice on architectural drawings to refer to specific UL listed designs to meet fire-resistance requirements. The way these UL documents are written makes it very difficult to evaluate and find the right one for acoustical needs. A specific listed design will typically list many different options that provide similar fire-resistance, but that are acoustically very different. We are concerned because we have observed a few cases where architects have simply referred to a copy of the UL listing for specifying the details of a wall or floor-ceiling, without specifying which options they have chosen. This leaves the design very incomplete. Someone looking at the drawings cannot tell whether the intent for instance is to use resilient channel or hat channel which may both be listed as options. These are acoustically very different. We are concerned that some people may think that all the options listed in a UL listing are acoustically similar. They are NOT. It is essential that the architect provide a specific drawing or specification that details the exact wall or floor-ceiling construction with all the details that make a difference acoustically.

## **New EPA Rulemaking on Hearing Protection Devices**

It has been long recognized that the method specified for rating hearing protection devices by the EPA has many problems. The standard on which it is based has been withdrawn and replaced. The method provides no way to rate some products, and it is impossible for firms that market their products on the internet to comply with the labeling requirements. Thus, the EPA is in a rulemaking process to update the rules for rating and labeling hearing protection devices. The notice was published in the Federal Register on Wednesday August 5, 2009. <http://www.epa.gov/fedrgstr/EPA-AIR/2009/August/Day-05/a18003.pdf>

## **Sounds of the Past- and some new ones**

Have you thought about the sounds of your youth that you do not hear any more except possibly in old movies? Some examples: typewriters, rotary phone dials, the ringing bell of an old phone, the pop of flashbulbs, gurgling percolators, glass bottles in a soda vending machine, the ka-ching of a manual cash register, the shutter and film advance of a film camera, the scratch of chalk on a blackboard, the clatter of a home movie projector, a carousel projector changing slides, and mechanical pin-ball machines. Even the sound of footsteps is now dominated by the softer sound of predominantly rubber soled shoes. New jet engines are significantly quieter than older ones. The sound of most car doors closing is less metallic than older cars. Hybrid cars are quieter at low speeds. So what are the new sounds? Microwave ovens, electronic chimes to signal various functions, and musical ringtones on phones are a few.

**Internoise 2009 in Ottawa**

Joe Bridger and John Gagliardi attended Interoise 2009 in Ottawa in August. Joe presented a paper with Mathew George on HVAC control for LEED certified schools and John presented a paper on sound absorption measurement related to his work with Technicon Industries. The following are some of the other papers of interest. The meeting was hosted by Institute for Research in Construction of the National Research Council of Canada. Among the work presented by the hosts were papers by David Quirt and Trevor Nightingale on sound isolation in buildings emphasizing the role of flanking, and papers by John Bradley on classroom acoustics and speech privacy. John Loverde and Wayland Dong of Veneklasen Associates continued their series of papers on issues related to sound isolation in multifamily structures. In this paper they compared the performance of Dietrich RCSD resilient channel with other channel designs and evaluated the effect of shorted screws on resilient channel performance for airborne sound. Ron Sauro and Michael Vargas of NWAA Labs with Gary Mange of Western Electroacoustic Laboratory presented more details of the work Sauro is doing to relate sound absorption of a sample of material not just to its surface area but to its perimeter as well. George Hessler of Hessler Associates presented work on his experience measuring ambient sound in quiet areas. Timothy Johnson and Chris Menge of HMMH presented measurements comparing the sound of a NASCAR race at Lowes Motor Speedway to the sound of the new dragstrip adjacent to it.

**Dow SafeTouch**

Well, while wandering through that big home improvement store I wish my father had bought some stock in 50 years ago, I come across a new fibrous insulation product. As best I can tell the only advantage it claims over other materials is that it does not cause an itch. However, it does appear to be equivalent to fiberglass or mineral wool for sound absorption. We understand it is more expensive. [www.dowsafetouch.com](http://www.dowsafetouch.com).

**The Gorilla Goal – Our link to Basketball**

NC State Engineering graduates may have seen a short article in the recent Engineering News concerning development of the Gorilla Goal – a basketball goal made of high strength steel that can take a strong load imposed by a player hanging on it without permanently bending. Dr. Frank Hart who is mentioned in the article was the founder of the acoustics program and the person who recruited Noral Stewart into acoustics as an undergraduate. Around 1977 Frank asked Noral, who was then a graduate student, to examine a proposed mount for a basketball goal that was to help prevent the breakage of glass backboards. This had been suggested by a manufacturer of goals and backboard systems because of a run of broken backboards especially during NBA games. Noral quickly realized the mount would have to be made of high strength steel to allow it to bend without permanent deformation, but that there were basic flaws in the mount design also. Later, others developed a successful spring loaded mount. Discussions revealed the parallel problem of concern about damage to the hoop itself. This was much more widespread than broken backboards. Noral realized and suggested this could be prevented by simply making the hoop out of high strength steel, something that had never been done. A prototype was made and tested at the plant. During this visit, Noral met the tall lanky sales manager for the firm, a young man named Bobby Etheridge who was about to embark on a political career. Nothing came of the idea for a few years until Dr. Stewart had graduated and Dr. Hart was asked to investigate the goal concept some more and refine it. Then, sometime in the early mid 80's at the ACC tournament, there was the debut of the Gorilla Goal.