

A Newsletter from *Stewart Acoustical Consultants*

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## Happy Holidays

We want to take this opportunity wish everyone a happy holiday season.

## Feast or Famine – major projects to the rescue

Like many of you, we have suffered with a shortage of work for most of the last two years. This severely impacted our business. We have made a commitment to maintain our staff so we can meet your future needs when the economy improves. Fortunately, the success of several projects for the federal government has provided an opportunity to take on two large jobs, larger than we would normally do. This gives us a chance to boost revenues over the next few months, but means it will limit time to work on other projects. We will have to devote our resources strongly to these projects for a few months. We will do our best to accommodate your needs, but may have to turn down some jobs and may not be able to respond as quickly as we would otherwise.

## OSHA seeks to define Feasibility and enforce noise controls -

Historically, there has always been a question on what constituted a “feasible” noise control. After court battles, Federal OSHA many years ago embarked on a policy that where personal protective equipment and a hearing conservation program are cheaper, employers may rely on them, rather than administrative or engineering controls, unless noise levels are so high that PPE will not reduce noise exposure to acceptable levels. North Carolina which administers its own OSHA program did not initially adopt this policy. Federal OSHA is now proposing that “feasible” have its ordinary meaning of “capable of being done” giving due consideration to economics. OSHA proposes to consider controls “economically feasible if they will not threaten the employer’s ability to remain in business or if the threat to viability results from the employer’s having failed to keep up with industry safety and health standards.” Presumably, this means a return to enforcement of feasible noise controls when exposures exceed a dosage of 1 in accordance the measurement methodology in the OSHA regulation discounting sound below 90 dBA. This was published in the Federal Register on October 19, and comments were requested.

## Technology for a Quieter America

The National Research Council and the National Academy of Engineering have released a report that explores the most commonly identified sources of noise, how they are characterized, and efforts that have been made to reduce noise emissions and experiences. The report also reviews the standards and regulations that govern noise levels and the federal, state, and local agencies that regulate noise for the benefit, safety, and wellness of society at large. In addition, the report presents the cost-benefit trade-offs between efforts to mitigate noise and the improvements they achieve, information sources available to the public on the dimensions of noise problems and their mitigation, and the need to educate professionals who can deal with these issues. Among the recommendations are to develop improved methods to evaluate environmental noise, noting the serious deficiencies in the methods currently used. The almost 200 page study can be obtained from the National Academies Press in PDF form for \$34 or paperback for \$39.60 at [http://www.nap.edu/catalog.php?record\\_id=12928](http://www.nap.edu/catalog.php?record_id=12928)

## **International Green Construction Code – Major Problems**

Hearings conducted in Chicago in August resulted in very few changes to a very badly written section on acoustics for the International Green Construction Code. Around 20 members of the acoustical community submitted comments and recommended changes related to outright errors in the use of terminology and requirements that do not make any sense. The proposed code appears to be somewhat based on the acoustics section of the ASHRAE 189.1 standard, but with many additions by someone who does not understand acoustics. We have learned that the ASHRAE standard itself was adopted without the knowledge or review of the ASHRAE noise and vibration committee. Among the glaring problems added by the anonymous code writer is an interpretation of a table of NC levels for rooms that the sound level must be within the stated range. This for instance requires that concert halls have a minimum HVAC sound level of NC 25. The proposed code also includes provisions limiting sound crossing boundaries that will be in conflict with local regulations already in place in many locations. Another effort will be made to change the document but time is limited as comments must be submitted by January 3. The Acoustical Society of America and ASTM have both appointed Noral Stewart to lead this effort on their behalf.

## **FDA Approved?**

Acoustical consultants are seeing requirements from architects and industrial clients that products be “FDA Approved.” There is one very basic problem with this – the US Food and Drug Administration (FDA) does not and never has “approved” any noise control materials. So why to people think they have? Several material manufacturers advertise certain products as “FDA Approved.” What is the basis of this? In some cases it is just that the product has been successfully used in a project that had to meet certain FDA requirements. However, those requirements are for the overall performance of the space, not a specific product. In other cases a very old letter from the US Department of Agriculture (USDA) is cited. USDA regulates and inspects meat processing plants, including poultry. Prior to 1992, USDA would examine the chemical composition of products and label them “accepted” if there was not a chemical problem preventing use in a meat processing plant. This rarely got the product actually approved for use in such plants as often there were non-chemical problems. The FDA is part of the Department of Health and Human Services and inspects and regulates drug and non-meat food plants.

## **PVF Tedlar shortage**

One of the materials used to make acoustical panels for sanitary situations is polyvinyl fluoride (PVF) film, commercially known as Tedlar made by Dupont. This film can be shrink-wrapped onto fiberglass panels sealing them and providing a surface that is chemically acceptable for some uses where the more commonly used polyvinyl chloride (PVC) film. However, manufacturers are having trouble obtaining this film because it is also a critical component photo voltaic solar panels. To meet this demand, Dupont is expanding its capabilities to produce the material including new facilities at the Fayetteville plant.

## **Stewart Invited to Speak at AWCII Convention in Las Vegas**

The Association of the Wall and Ceiling Industry has invited Noral Stewart to present a seminar at its annual convention in April on sound absorption and sound isolation in buildings. Dr. Stewart will help educate wall and ceiling contractors on how they can grow their business through a better understanding of STC and NRC ratings and the construction of better walls.

## **Sound Traveling Curved Paths – Now you hear and now you don't**

Have you ever noticed a distant sound early in the morning or in the evening, but never in the middle of the afternoon? Have you heard that distant train horn in the night that you never hear in the daytime? Do you think it is just because other sounds are quieter? Well, that's not the whole story. Sound over long distances does not travel in straight lines. It is usually either curving upward, going to outer space, or curving back down onto the earth. This depends on the on the winds and on the variation of temperature with distance above the ground. Sound travels slightly faster in warmer air. Consider a situation where the temperature is decreasing with elevation above the ground. This is common on a sunny day when it is warm on ground. Sound that starts out toward you is a little warmer on the bottom side of the ray than on the top. This causes it to curve up over your head. However, around sunrise or sunset, the temperature is usually warmer up high than on the ground. Then the sound that would otherwise be going upward will curve back downward and it will be heard some distance away. It could curve down over barriers in the visual line-of-sight. We have recorded situations where an hour or so after sunrise the sound of a distant source just goes away over a period of a few minutes. A similar effect occurs with winds. Wind is always faster as you go further above the ground. Thus, downwind the sound will curve back down onto the ground. Upwind, it will curve upward. If you need to measure the sound of a source more than a few hundred feet away, it should be done downwind around sunrise or sunset. This downwind temperature inversion condition should be the basis of design for noise control. There are circumstances where a turbulent atmosphere can focus and concentrate sound in a specific location, amplifying it in unpredictable ways. This normally lasts for only a short time at a specific location, and then moves. Situations like this cannot be predicted or controlled and must be considered as something like a thunderstorm.

## **45 Years of Acoustics in North Carolina – Scholarship Competitions in the Spring**

The North Carolina Chapter of the Acoustical Society of America is planning its 45<sup>th</sup> anniversary meeting for the spring. The chapter holds two full-day meetings a year. While most recent meetings have been in Raleigh, this meeting will be near Charlotte. There will be a competition for student scholarships, including a \$2500 Royster Award. A program on healthcare acoustics and a tour of a significant architectural space are being investigated.

### **New Acoustical Products**

**USG Mars Healthcare Ceiling Panels**– USG has introduced a washable, scrubable ceiling panel that they recommend for healthcare and kitchen/food preparation areas. The panel is available in NRC 70 and 80 versions with a CAC of 35, has a high percentage of recycled content, low VOC emissions, and treatment for mold and mildew resistance.