
THORBURN ASSOCIATES INC.
Acoustic and Technology Consultants
15 Years of Designing Quality Environments
eNewsletter

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Greetings!

Fresh blackberries begging to be baked into a pie and topped with homemade ice cream; cannonballs off the diving board and jet skiing at the lake are all coming to a close soon.

At TA we're trying our hand at making our own homemade ice cream as we salute the end of summer. Let us know what summer traditions you keep up with and if you have a great ice cream recipe, please pass it along. We'll vigorously taste test the recipes and post them on our website.

Where we'll be:

- [Campus Technology 2007](#) July 30-Aug. 2 Washington D.C.
- InfoComm's Future Summit in Bethesda, MD Aug. 17-18
- Building Industry Consulting Services International, Inc. ([BICSI](#)) Sept. 7-13 Las Vegas, NV
- [AIA North Carolina](#) Sept. 12-15 New Bern, NC
- American Society for Industrial Security ([ASIS](#)) Sept. 24-26 Las Vegas, NV
- TEA's Storytelling, Architecture, Technology and Experiences ([SATE](#)) Oct. 9-10 Orlando, FL
- [WFX](#) Worship Facilities Conference Oct. 24-26 Atlanta, GA

As always, it is our goal to make sure that Thorburn Associates is your single point of contact for all your Acoustical and Technology Design services. If you have an idea, question or suggestion, please drop us a note at TA@TA-Inc.com.

Focus on Acoustics: High-Rise Buildings

Determining proper acoustics for high-rise buildings involves: the intention of the space, speech privacy, background noise and sound masking. The goal is to select acoustical finishes that will meet the visions of the owner and the architect while providing a comfortable workspace.

Lobby acoustics depend on how the space will be used. Will it be a meeting and gatherings space where people want to converse or is it a pedestrian corridor?

Union Station in Washington D.C. is a great example of a grand and beautiful space--but hold a meeting or have more than a quick chat over coffee in the space? No way! It is too loud and too reverberant for conversation. The food court /lobby /atrium at the CNN Center in Atlanta is completely opposite: the level of volume lends itself to conversation. Both spaces are successful but with a different acoustical requirement. In the case of GSA SF, the lower lobby is the transitioning space with the upper skip-stop lobbies (one every three floors) designed as meeting and conversation spaces.



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Speech privacy is another issue within office buildings, including individual workspaces, inside conference centers and between offices. It affects the quality of work in the adjacent office – we have all overhead too much information from a coworker, however; the distractions of phones, multi-media computers and conversation directly impact productivity. In the acoustical design for GSA buildings, where spaces for counseling, attorney/client conference rooms, Social Security and medical care guidance, a high level speech privacy is vital .

Background noise can also adversely impact the workspace. Too little background noise and speech privacy is reduced, letting you hear what is going on not only one workspace away but also two and three away. Too much background noise and you cannot concentrate on your work. Noise can come from the person next to you, from traffic outside the office or from the equipment within the building. The goal is to provide a uniform background sound level that is not too loud or too quiet. The central core of the building is usually loudest, the center of the workspaces is quiet and the area around the windows is louder. Raising the sound levels in the center of the building helps mask the other areas. A green building like GSA SF that relies on natural ventilation is a challenge since there are no HVAC noises. The height of the building also reduces outdoor noise levels. This is a perfect example of when sound masking should be used in an office building.

Sound masking systems are designed to mask over phone conversations and other general office noise. Large open plan offices with workstations that are more than 50 feet away from the core areas are typically too quiet.

Sound masking blends the building systems' noise levels and the exterior noise levels with an electronic system in the middle. Designing a multi-zone system that is properly adjusted is key to getting the most successful operation. Furniture vendors have often provided a "one solution fits all" that is not reviewed by an acoustician nor can they be properly adjusted to meet the needs of the space. Similar systems have been proposed to start generating a babbling sound when a person picks up a phone to cover what they are saying. When pre-manufactured boxes and cans are installed, they cannot be adjusted and are usually turned off. When a properly adjusted system has been installed, it just runs and runs--TA has one system that has been in operation for over 15 years!

Traditional sound masking systems are located in loudspeakers above the ceiling. The loudspeakers are typically laid out in stereo zones. Zones are further segregated into different open plan areas, conference areas and other spaces for better control of the background sound level.

An acoustical engineer must commission background sound systems. Do not rely on system manufacturers or contractors. The key issue for the GSA SF building was the thermal mass slab. Without the benefit of an acoustical tile ceiling to help diffuse the sound, a design was developed where the sound -masking loudspeaker was installed as part of the indirect lighting fixture. This approach allowed for the correct number of loudspeakers needed for coverage and benefited from the slab's reflection--just as the indirect lighting system does--providing a truly uniform and non-directional sound field.

A comfortable and productive workspace greatly depends upon its acoustics. Those acoustics are controlled by a good design with extensive knowledge on the use of the space, how much speech privacy is desired, what the background noises are and a properly adjusted sound masking system.

The following are links to our website that your team might find helpful.

<http://www.ta-inc.com/newshtml/peach%20piracy.htm>
<http://www.ta-inc.com/newshtml/office%20acoustics.htm>
<http://www.ta-inc.com/newshtml/soundmasking.htm>

Project Highlight: San Francisco GSA Building

Lurita A. Doan, the Administrator for GSA remarked at the July 9th dedication of the San Francisco Federal building, "...the lessons learned here—including how to take bold, revolutionary ideas from conception to construction—will be applied to all GSA projects."

The San Francisco Federal Building was designed by Thom Mayne, principal of Santa Monica-based [Morphosis](#) and assisted by [The Smith Group](#) in San Francisco. Located on Mission and Seventh Streets in the [South of Market](#) neighborhood, the SF Federal Building is LEED certified.



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The 18-story facility is long and lean with almost all offices receiving natural sunlight. As well as reducing power needs for lighting, the building is naturally ventilated, further decreasing cooling and heating costs. The elevators operate on a skip-stop method of opening only every third floor. Stairs or disability accessible elevators are utilized to reach the other floors.

"This is another example of outstanding architecture in terms of integrated engineering, energy efficiency and delivering high-quality workspace," said the General Services Administration Public Buildings Service Commissioner David Winstead.

Tyler Rynberg, Thorburn Associates' Senior Acoustical Consultant for the project remarked, "The greatest acoustical challenge lies with the concrete wave slab in the ceilings. The ceiling is the most important element in achieving a reasonable level of speech privacy in a typical open plan office environment."

The concrete slab is formed in a wave pattern, curved to better diffuse the indirect lighting. Because of the requirements for a naturally ventilated building, no material could be applied to the concrete slab and a continuous acoustic tile ceiling cannot be suspended below the slab.

"In order to control acoustics, we worked with the designing of the wave slab so that the radius of the curve would not contribute to the focus of sound," states Rynberg. "The second part of improving speech privacy was in developing a sound masking system integral to the lighting."

Further acoustical treatments are evident in the use of perforated wood panels that help control the build up of noise in the 3-story lobbies, cafeteria and day care center.

To see pictures--<http://www.TA-Inc.com/pr-pics.htm>.

Product Review: Perforated Wood Panels

The need to adjust the acoustics in a commercial setting is apparent in many common areas. Common areas planned for only pedestrian circulation are now being converted into lobbies, break rooms and cafeterias that need a balanced reverberation time to create a comfortable, amiable atmosphere. Not enough reverberation and the room sounds dead; conversely, too much reverberation and the space becomes too loud for clear conversation.

For an aesthetically warm appeal as well as years of durability, perforated wood panels over a sound absorbing material offer many options. Wood panels have an advantage over fabric, as they are easier to keep clean.

The perforations are the key to controlling the amount of noise absorption. How big and how far apart the holes are determines the percentage of absorption.

The traditional approach to reducing noise with perforated panels is as a covering over fiberglass batts. A green alternative is using veneers from sustainable forests laminated to lightweight cores of sheet aluminum. Aluminum cores are non-combustible, will not support mold and do not warp when exposed to changes in humidity.

Additionally, the aluminum core itself contains recycled materials. The metal core is easily shaped, creating another medium with which to design interior space. So go ahead and dress up those walls!

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