

Sound Thinking

New noise control guidelines help avoid construction litigation.

Don Logay

The building codes and guidelines for construction have been an accepted part of civilized society for nearly 4,000 years. The earliest, written around 1800 B.C., were included in the “Code of Hammurabi” which contained 282 basic dictates for everyday life — crafted by the sixth king of Babylonia — literally carved in stone and putting forth severe punishments for non-compliance.

Of these strict rules, five (numbers 229 through 233) specifically dealt with iron-clad consequences for shoddy construction, such as: “Rule 229. If a builder builds a house for someone, and does not construct it properly, and the house which he built falls in and kills its owner, then that builder shall be put to death.”

While a bit harsh by today’s standards, the basic intent of building codes and guidelines remain the same, which is to both promote and ensure structural safety and to ultimately enhance livability.

FOUR MILLENNIA AND COUNTING

The specific rules of how to best standardize construction to accomplish these simple goals have changed dramatically — along with civilization — century after century and through each turbulent millennium.

In the 1400s, for example, the building

codes of Paris and London were heavily directed toward health issues and preventing disease. In the mid-1800s, controlling urban sprawl and congestion became an issue and the major cities of Europe began limiting the number and height of buildings, as well.

Here in the United States, a patchwork of make-sense building regulations that date back as far as George Washington and Thomas Jefferson have slowly evolved through numerous tailored regional and community codes to today’s acceptance of a central uniform regulatory basis.

Most recently, various model codes — such as the Building Officials Code Administrators International (BOCA — used on the East Coast and in the Midwest), the Southern Building Code Congress International (SBCCI — used in the Southeast) and the International Conference of Building Officials (ICBO — covering the West Coast and some of the Midwest) — combined their efforts and in 1994 formed the International Code Council (ICC) to develop a single set of coordinated national model building codes without regional limitations.

THE INTERNATIONAL CODE COUNCIL (ICC)

Today’s ICC continues to evolve and it is continually updating, improving and developing new codes and guidelines for the construction of both residential and commercial buildings — and most U.S. cities, counties and states that adopt codes subscribe to the ICC International Codes.

The International Codes also serve as the basis for construction of federal properties around the world, and as a reference for many nations outside the United States.

So, why all the history and background? The International Code Council has just introduced a new set of updated guidelines for acoustics and controlling sound transmission that will ultimately impact every ar-

chitect, designer, contractor, owner, tenant and/or property manager — in one form or another — for many years to come.

MORE VOLUME AND MORE TROUBLE

We have recently experienced a few decades of incredible change in lifestyle that include many new factors (such as sound systems, video games, amplified instruments and home theaters with surround sound, for example) that have collectively and dramatically increased the levels of ambient noise over time.

We also live in an ever-increasing litigious society and today, serious disputes arising over structural acoustical issues are more commonplace than ever.

Still, today’s current commercial International Building Code (IBC) which is over 750-pages — and the multifamily International Residential Code (IRC) which is more than 550 pages — only dedicate three sentences in each code manual to the topic of acoustics and to the design criteria that is today, one of the leading causes of litigation for property owners and managers.

And while sincere efforts are being made by owners, managers and contractors to address these issues — and to adhere to or even surpass existing noise control building code standards — the number of claims and law suits pertaining to sound transmission continue to mount.

Unfortunately, as shopping center managers and contractors are also aware, these requirements are generally inadequate to meet common tenant or client expectations. They are aware that acoustic remediation is one of the top legal issues in the construction industry today and acoustical consultants now indicate that more than 50 percent of their work is currently based on dispute resolution.

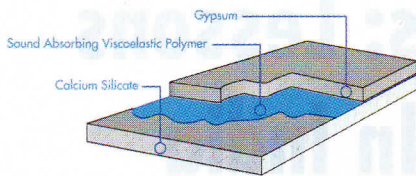
TURNING DOWN THE VOLUME

In response to this, the ICC and the acoustical community have joined forces



Sound dampening drywall is as easy to install as regular drywall.

Photo courtesy: Serious Materials



A cut away of sound dampening drywall.

to draft the first-of-its-kind Guideline for Acoustics (ICC G2-2010), which was just introduced in early November 2010.

“Minimizing noise exposure and enhanced acoustical isolation is

recognized as an important part of human health and environmental quality,” notes Drew Azzara, vice president of global services for the International Code Council. “It is also significant toward green construction practices and systems.”

“The ICC is constantly engaged in incremental improvements in its products

and services driven by market conditions and stakeholder input,” Azzara adds. “This new guideline publication is an example of ICC’s responding to market needs by the development of relevant and timely information focused at creating better buildings and safer communities.”

It is an important step forward in multi-tenant building design and the new guideline establishes new and greater requirements for “acceptable” and “preferred” performance.

The laboratory performance of walls and ceilings should be five to ten STC points higher and field performance should be seven to 12 points higher. This is a significant change and will require a complete rethinking and redesign of acoustically rated walls and ceilings.

[Note: An STC or NNIC rating is a single-number rating of a material’s or assembly’s ability to resist airborne sound transfer at the frequencies 125-4000 Hz. In general, a higher STC Rating blocks more noise from transmitting through a partition or wall than a lower one.]

While the guideline is not an enforced code requirement at this time, it does establish a ‘best practices’ standard for acoustical performance — and one can anticipate that this document and new suggested STC levels can and will be used as the basis of future legal rulings.

OPPORTUNITY KNOCKS (BUT QUIETER)

Last fall I had an opportunity to “field test” this new and imminent acoustical guidelines information. While preparing

an article on a trendy SoHo New York historic restoration retail construction project, I asked both the project designer and general contractor if they were aware that new noise control guidelines were about to be introduced.

Neither was aware of this new information. However, both wasted no time in ordering the new ICC guidelines and factoring them into their projects.

“Sound transmission between adjacent spaces has long been an issue for design of retail, office, medical, industrial and multifamily projects,” states Bill Morgan of Morgan Design Associates. “As designers in the fields of retail, office, industrial and residential, we do attempt to reduce sound transmission whenever we can, but it is not always in our control due to the design of structures and HVAC/ systems in shopping centers, industrial parks, medical offices and multifamily housing.”

“In addition, sound transfer between outside noises and interior living/office environments is an increasingly important factor that should be taken into account in all future designs,” he notes.

“Since reviewing the proposed design requirements, we have begun research on new products and have found several we didn’t know existed,” Morgan adds, “including sound deadening drywall which we will certainly incorporate into our next design opportunity.”

The contractor on the Soho retail project — Adrian Johnson, president of ELAN General Contracting, Inc. — also noted, “We are well aware of the issue of sound transmission in the shopping center environment. Complaints from adjacent tenants regarding voice transmission, music, tool noise, odors.... both during construction and/or after tenant improvements... are commonplace. This is primarily due to the lack of sound mitigation in demising walls between tenant spaces, and/or the transfer of sound between HVAC and venting ductwork servicing multi-tenant spaces. Some shopping centers do have criteria for sound transmission and some do not.”

“However, awareness of these new guidelines,” notes Johnson, “will certainly help to eliminate critical issues caused by unabated sound transmission.”

“I have always considered noise pollution as one of the world’s deadliest sins,”

he adds, “I even wrote my thesis in graduate school of environmental studies on jet aircraft noise pollution in San Diego.”

Both Project Designer Bill Morgan and ELAN General Contracting’s Adrian Johnson agree that this new legislation will eventually play a major role in the design requirements for larger structures with multi-tenant situations and that architects and structural/mechanical engineers will need to familiarize themselves with these new requirements to avoid potential lawsuits in the near future.

CAN YOU HEAR ME NOW?

We also spoke with Dr. Brandon Tinianov, chief technology officer for Serious Materials, Inc. — a leader in sound control technology for the built environment — for insights and updates on state-of-the-art noise control for both today and tomorrow.

“There are a few different solutions for building at code plus. A first approach is to design a deeper wall using staggered stud or double stud framing. This can add from five to ten STC points, but that may not be enough or the project may have wall thickness limitation,” says Tinianov.

“If you add a sound damping drywall to the assembly, you can add an additional five to ten points and effortlessly achieve an STC rating of 60 and above, which is what is really needed in order not to hear music or noise from neighboring units that share a demising wall,” he states.

“Using confirmed, fire-rated, sound damping drywall in your assembly will make noise and fire codes more compatible and ultimately optimize your construction for safety and noise comfort,” he notes.

In conclusion, Dr. Tinianov observes, “All owners, managers, operators and contractors should be aware of these new acoustical guidelines and should discuss these new requirements with their architects and acoustical professionals immediately.”

“A change has come,” he adds, “and the best prepared teams will see the lowest risks.”

With this in mind, we also add: a word to the wise (make that “litigation-wise”) should be sufficient. **SCB**

Don Logay is an award-winning writer and former editor-in-chief of three national professional construction industry magazines. He also created the widely quoted annual Cost vs. Value Study for remodeling investment and return.