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Sounds of Silence

Noise abatement in urban multifamily buildings

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Initiatives to redevelop and renew previously blighted and/or densely populated urban areas are giving multifamily builders new opportunities for work, but many of these projects also involve heightened noise-abatement issues that must be considered to avoid creating a building full of irritated tenants. Nearby freeways, street-level construction and, most significantly, other neighbors can quickly turn a \$500,000 luxury condo into a chamber of endless noise that results in homeowner

lawsuits and expensive retrofits. To avoid this sort of cacophonous catastrophe, multifamily builders must be up to speed on the latest technologies, materials and noise-abatement design standards before initiating new urban projects.

"It's important builders recognize there is a noise problem in the first place. Noise is not usually a big concern for contractors because the ultimate goal is usually trying to build the building for

a certain amount of money per square feet, when, in most cases, the tenant would happily pay more for a quieter living environment if they knew the option existed," says Lahnne Johnson, president and founder of Acoustiblok Inc.

Since many of the available tracts of land targeted for urban residential development are in notoriously loud



THE 48-FLOOR KO'OLANI IN DOWNTOWN HONOLULU USES INSULATED GLASS. SOUNDPROOF DRYWALL AND ACOUSTIBLOK LINING TO ACHIEVE STATE-OF-THE-ART NOISE REDUCTION FOR THE 370 STATE-OF-THE-ART LUXURY CONDOMINIUM.

locations—near freeways, airports or industrial zones—the first thing to consider is usually the site itself.

“Orientation to things like highways or railroad tracks will dictate how acoustically resilient the exterior shell needs to be,” says Todd Beiler, principal with D. L. Adams Associates, an acoustical engineering firm with offices in Denver and Honolulu. “Then you have to look at the structure of the walls and floor/ceiling spaces, and any sounds that may be generated by mechanical equipment like the air handling units or chillers.”

In relation to the building envelope, windows are the most critical noise-reduction element.

“Exterior walls are typically very well insu-

lated, so windows are always the weak link for sound transmission from the outside. In that regard, laminated glass significantly out-performs standard glass when it comes to sound insulation,” says Beiler.

While site location and resilience of the structural envelope have a lot to do with minimizing a building's sound levels, the biggest cause of noise complaints in most every multifamily structure—whether hotels, apartments or luxury condos—are the upstairs neighbors.

“The thing that causes the most headaches for building owners and residents is the floor and ceiling assembly. People tend to expect some noise from the street level or from mechanical systems, but noise from the upstairs neighbor is more annoying than

anything else,” says Beiler.

Minimizing vertical noise transmission requires contractors to consider the complete floor assembly from top to bottom.

“Floor finish is one of the biggest factors for sound transmission. Obviously, stone and tile floors are the most challenging. Other things to consider include whether or not there is some sort of resilient or acoustical dampening layer underneath the floor, what the subfloor structure is, and how or if the ceiling is suspended,” says Beiler.

Designers of the recently finished Ko'olani, a 48-floor, 370-unit luxury condominium tower in Honolulu, spared no expense when it came to ensuring the comfort and privacy of residents. To eliminate potential sound transmission from upstairs neighbors, the Ko'olani was built using Acoustiblok material as a subfloor soundproofing layer.

“Many architects will specify installation of noise-reduction barriers between units and floors only to have them value-engineered out by the

How quiet is it, really?

The Sound Transmission Class (STC) rating system is the industry standard for measuring the sound transmission qualities of windows, doors, floor/ceiling assemblies and other partitions. Typical dual-pane windows from almost every major manufacturer have an STC rating of between 27 and 29, which is insufficient for filtering out the noises of an urban environment.

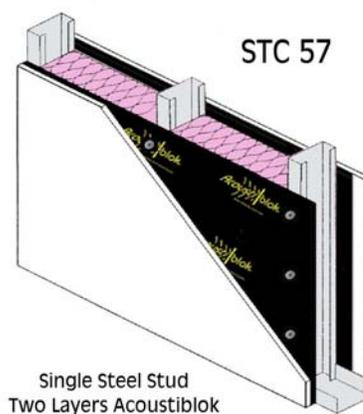
Most manufacturers now offer “high-STC” windows with STC values as high as 42 or more, which amounts to more than 50 percent less noise. In extreme situations or retrofits of existing buildings, secondary “soundproof windows” can be installed that achieve STC 50 and higher. With the rise in home theaters, shared walls in multifamily settings should be a minimum of STC 60 to 65, though most zoning laws require only STC 50.

Floor/ceiling impact noise is generally measured using the Impact Insulation Class (IIC) system.



Acoustiblok

Acoustiblok is an 1/8-inch-thick (3mm) advanced polymer sound isolation product that can be easily installed without construction changes. Simply cut it with a box knife and staple or screw it to metal or wood studs. According to independent studies, a layer of Acoustiblok installed on each side of wall studs will reduce sound transmission more than 24 inches of concrete.



Single Steel Stud
Two Layers Acoustiblok



STC
66

contractor who may go with cheaper materials—such as extra layers of drywall. But noise-dampening products are superior because they use specialized polymers that transform sound vibrations by turning them into inaudible friction energy," says Johnson.

Advanced new materials are making it easier than ever for builders to eliminate sound problems between units and from outside.

Keeping the communal peace can also be achieved using advanced soundproofing products from companies such as Soundproof Windows, a maker of secondary noise-eliminating windows perfect for re-

model and post-occupancy situations.

Regardless, when building urban multifamily structures, a good rule of thumb is that, when given the option between "loud" and "not loud," most people will be happy to pay a little more for "not loud."