quiet time

hushing the hubbub in multifamily design.

Source: residential architect Magazine
Publication date: 2004-08-01

By Nigel F. Maynard

It goes without saying that doing an attached multifamily project is a world apart from designing a custom home. After taming site conditions, an architect must tackle such key issues as structure and energy. Less obvious but equally important: noise transmission, a consideration that has become increasingly more significant and something that no architect can afford to ignore.

“As you move into different pockets of the country, the issue is becoming more high profile,” says John LoVerde, an associate principal at Veneklasen Associates, an acoustical consultation firm in Santa Monica, Calif. “What I've seen is that the policies [have changed] and the amount of design that goes into buildings has grown.”

Bill Sanders
For his first multifamily project, Avenue Lofts (2004) in Fort Lauderdale, Fla., architect Michael J. Krupnick set HVAC units on springs, insulated plumbing pipes, and used cork underlayment (sandwiched between two layers of concrete) to decrease sound transmission.

Kristin Gonsar agrees. “Units that are isolated for sound are important to the comfort of the end user and speak to the quality of the project,” says the project architect with San Francis-co–based Seidel/Holzman, a firm known for its award-winning multifamily projects.

Though the issue of noise is nothing new, its significance has risen in direct correlation to the growth in high-end urban infill development and condo projects. Today's buyers expect a certain level of quality and see a quiet unit as a must-have feature. At the same time, the stylistic shift toward open floor plans and away from carpeting toward wood and hard surface flooring makes controlling sound that much harder.

California appears to be center stage in the new battle. Following 10 years of sluggish growth, the state has seen an increase in multi-family development, and new codes address noise concerns in that building type. “It is a hot topic on the radar,” says Sandra C. Stewart, a construction attorney and partner in the litigation department of Los Angeles–based Cox Castle & Nicholson, a firm that represents developers. Historically,

Stewart says, builders and developers have not faced large acoustics-related claims, but a recent state statute giving unit owners more rights is about to change that.

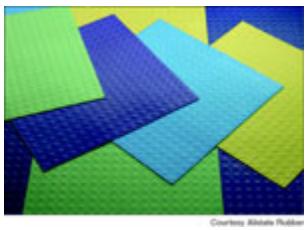
“Prior to Jan. 1, 2003, different jurisdictions had different noise regulations, and you applied different legal standards,” so a case was difficult to prove, Stewart says. “This law simply adds a new awareness and new hook for a claim, so instead of proving four things, a person now only needs to prove one.”

Noise has become a critical concern for Michael J. Krupnick, a Corrales, N.M.–based architect who is now doing attached housing. “It's something we have looked into seriously now that we are doing this type of work,” he says. And how he handles sound depends on the type of building. For example, Krupnick's most recent project, Avenue Lofts, was a heavy-mass concrete structure that provides some built-in sound insulation, but he still took other precautions. He insulated the plumbing pipes, caulked the sill plate, and set the HVAC units on springs. Cork underlayment, solid-core doors, and carpet in the common halls muffle noise. “The assembly is very good, but you still hear high-heel footsteps,” Krupnick says. “Impact noise is very hard to [solve].”

Though Seidel/Holzman occasionally hires consultants to review construction assemblies, the firm has developed tried and true specs. Its party walls usually include a metal resilient channel separated by a 2-inch air space, and acoustic isolator pads keep items from touching. “We also use acoustic sealant around all gaps in the wall to prevent sound from passing through,” Gonsar explains.

A veteran of multifamily projects, DJR Architects in Minneapolis knows a thing or two about what type of assembly works. “The sound rating for footsteps and dropped products is the most important [acoustical] aspect of a building,” says Scott Nelson, an architect with the firm. “And the floor-to-ceiling assembly is the biggest issue we focus on.” The firm prefers cork or Gyp-crete poured cementitious underlayments to help deal with footsteps. Moreover, a 1-inch air space between double walls on separate plates makes a big difference in controlling sound, Nelson adds.

“Noise certainly is something that we have to be conscious of,” says Washington, D.C.–based architect Eric Colbert. To that end, Colbert also constructs his walls and ceilings with a resilient metal channel that is screwed to the framing members to isolate sound. Insulated cast iron plumbing—instead of PVC—provides greater sound control, and because everyone wants wood floors these days, Colbert specs a cork underlayment to squelch footsteps.



Courtesy Allstate Rubber
Brasilia rubber flooring from Allstate mutes the sounds of walking, and with more than 100 colors, the 24-by-24-inch tiles offer cool design options.

Wall and floor assemblies may be the most important elements in noise control, but special acoustical products can also help hush the hubbub. Two such products from Sunnyvale, Calif.–based Quiet Solutions are QuietRock soundproof drywall and QuietWood plywood underlayment. Both products contain viscoelastic polymers “that turn acoustic energy into heat, which stays in the separation wall,” says company chairman Marc Porat, Ph.D.

Northfield, Ill.–based Knight-Celotex offers SoundStop, an organic fiberboard that installs behind drywall to help prevent sound transmission; West Trenton, N.J.–based Homasote Co. makes 440 Sound Barrier cellulose fiberboard and Nova Cork—a finished interior panel consisting of cork laminated to the 440 product; and Toledo, Ohio–based Owens Corning's QuietZone line has a wall framing system with a builtin resilient metal clip.

There's also a smorgasbord of cork flooring from Dodge-Regupol in Lancaster, Pa., Natural Cork in Augusta, Ga., and WE Cork in Exeter, N.H. Sound absorbing rubber products are also available from Allstate Rubber in Ozone Park, N.Y., To Market in Oklahoma City, Okla., and Hacker Industries in Newport Beach, Calif.

Windows are now more specialized for sound as well. Companies such as Philips Products in Elkhart, Ind., North Brunswick, N.J.–based Silver Line, and Tacoma, Wash.–based Milgard Windows offer units that boast multiple glazing and construction that reduces exterior noise.

Given what's at stake, experts say architects and builders need to scrutinize design elements carefully. “We tell our developer clients that this is an area [they] definitely want to micromanage,” says attorney Sandra Stewart. It's also a good idea to hire a consultant for difficult projects, she says. Installation is equally important, as it's often the source of problems. “You should have a protocol to verify that products are being installed correctly,” Stewart says.

Courtesy Owens Corning

Owens Corning's QuietZone acoustic wall framing features Tembec engineered lumber and Selectem LVL with a built-in resilient metal clip to reduce sound transmission.

Acoustical consultant John LoVerde says footsteps and plumbing noise are what his firm gets calls on the most in court cases, so he recommends that architects pay particular attention to these areas. Don't locate a kitchen near a bedroom, he warns. A stacked design in which areas of like function are together works best. “Eighty percent of the problems are taken care of when you know your adjacencies,” he says.

And while it may be tempting to “value engineer” when the budget gets tight, architect Scott Nelson says this is always a bad idea. “It's not that expensive to make sure units are properly isolated, and it's an area you don't want to skimp on.”

But neither should you simply settle for the most expensive sound isolation system, LoVerde advises. It is important to know when to put in the expensive system, when to go beyond the code, and when not to go overboard. “It's all about controlling sound in a way that makes sense for the building,” he says.