

Cincinnati OTR Condo for Sale and Apartment for Rent Acoustical Checklist

January 8, 2015

If you have driven through the Over the Rhine (OTR) area in Cincinnati (or a similar neighborhood in another city) recently, you know that there are lots of buildings that have been or will be renovated for housing. These buildings will look like new, and will feature modern décor and amenities. The average buyer or renter will undoubtedly like what they see. There is, however, something that cannot be seen which poses a potential risk for resident dissatisfaction – the lack of audio privacy between adjacent units and the intrusion of noise from sources outside of the residence. Here are some typical complaints voiced by tenants:

“I can hear my neighbors talking (and making other noises) in their bedroom / bathroom / kitchen.”

The lack of speech privacy between adjacent units results when the demising walls and / or floor/ceiling have been constructed using designs and materials that are less effective than are required to achieve privacy.

“Can my neighbors hear me talking (and making other noises)?”

See above.

“When my neighbor turns on his/her TV or stereo system, I hear every beat of the music.”

While attenuation of speech between adjacent units poses a significant problem, this problem is dwarfed by the challenge of adequately attenuating amplified music. The transmission of low frequency “bass” notes in particular requires even more massive demising construction.

“I can hear my neighbor walking on the hard-surfaced floor above me.”

Adequate attenuation of floor impact noises originating in the unit above you requires special construction to isolate the finished hard-surfaced flooring from the subfloor and ceiling below.

“I can hear music and noise from a nearby bar or other commercial establishment, even though the source is located some distance from my unit.”

If you live in a “mixed use” development that includes a bar, restaurant, fitness club, or retail store, sound from these sources can find its way up to residential floors above, through elevator shafts, stairways, and mechanical system chases. If the business features outdoor seating, noise can also enter your unit through windows, whether they are open or closed. Typical insulated windows can only provide a certain amount of sound isolation between the inside of your unit and the external noise source.

“Noise from traffic on the street keeps me awake at night.”

See above.

“Noise from the heating / air conditioning system is disturbing while I try to sleep.”

Heating and air conditioning (HVAC) equipment may be located within the residence at a location near primary living space. Short, uninsulated duct runs may not provide sufficient distance to attenuate noise from the system fan. The result may be a noticeable increase in the ambient background noise level within the unit.

“When someone is in the corridor, I can hear them talking and walking, at all hours of the day and night.”

The entry door to the unit may be too thin and not adequately sealed at the top, bottom, or sides of the frame. In some situations, the acoustical deficiencies of the doors to multiple units results in sound transmission through the corridor doors.

“When I am in my living room, the echos and reverberation make it sound like I am in a big box.”

If the interior surfaces of the room are all hard (e.g., drywall, glass, flooring), your room suffers from a sound absorption deficiency. With very little to soak up sound after it is generated, it continues to bounce around the room for some time.

“I was told that my unit / building was constructed in accordance with all residential building code requirements, including sound isolation requirements. Yet, I am disturbed by noise originating in adjacent units.”

You can rest assured that your building was likely constructed in a manner that meets codes. Here are requirements from the current Ohio Building Code:

1207.2 Air-borne sound.

Walls, partitions and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class "(STC)" of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.

1207.3 Structure-borne sound.

Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class "(IIC)" rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E 492.

Unfortunately, the building codes only require compliance with minimum design standards. In addition, the codes do not address noise caused by HVAC systems, appliances, plumbing, elevators, or exterior noise sources, per se. Residents of buildings that merely "meet code" are almost always not satisfied, and this is particularly true in regard to sound and impact noise isolation. Most residents of upscale multi-tenant buildings construction seek sound and impact isolation performance that exceeds minimum standards. In fact, the best residential buildings often target performance that is ten times better than the minimum design standards!

“The lease or purchase agreement prohibits building occupants from making noise that disturbs other residents, but nothing is done to address my noise complaints.”

To assure control of noise from other spaces within the building - including adjacent residential units and other commercial uses - it is imperative that unit owners and leasees must agree to abide to reasonable noise level limits. Contracts should include specific decibel level and time-of-day restrictions, as well as locations where noise tests may be conducted. If the building owner fails to take action to control noise, the only recourse may be enforcement of the local noise ordinance by city officials. But **BEWARE** - lease or purchase contracts do not place noise level limits on most normal activities of building occupants, such as speech conversations, walking on floors, use of plumbing fixtures, appliances, heating/AC systems, elevators, door closures, etc. These and other noise issues should be addressed by the building owner during construction.

What can be done to prevent the types of acoustical problems discussed above from spoiling my peace and quiet?

Before you sign the purchase or rental contract, you should visit the unit with a friend, and conduct your own testing for acoustical problems. Go at times when privacy concerns and potential noise intrusion problems are most likely to occur. This is usually after 9 PM. If the adjacent unit is unoccupied, ask the owner to let you in so that you can conduct tests to see if you can converse through the party wall. If the unit above is unoccupied, ask the owner to allow your friend in so that you can hear foot traffic on hard-surfaced flooring, operation of appliances, toilets, sinks, cabinet drawers, etc. are audible. Ask your friend to talk in the corridor near the entry door. Open exterior windows and check for intrusive noise sources. If present, see if the noise is audible with the windows closed.

If you are fortunate, the building’s owner and architect will have addressed potential acoustic problems in the renovation design stage. The demising construction will include adequate mass and airspace to sufficiently isolate each unit from adjacent tenant spaces. Plumbing fixtures and appliances are inaudible in adjacent units, particularly in multi-story buildings. Exterior windows will have been selected to specifically attenuate the known exterior noise sources. Attention to sound absorption needs will have kept interior reverberation to a comfortable minimum.

If your building’s owner and architect have not dealt with potential privacy and noise problems in the renovation design stage, the cost of retrofitting a solution after the unit is occupied may be too costly and therefore prohibitive.

If you currently own or are about to design or build a multi-tenant residential building, restaurant, fitness club, nightclub, or retail store, I invite you to contact me concerning acoustical / noise control design services. My company website is at Spectra Tech Ltd. We can [conduct onsite acoustical testing, and work with your project team to design for privacy and noise control.](#)

Contact information:
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Acoustical Checklist

For Prospective Condominium, Apartment, & Mixed Use Commercial Occupants

- Walls between adjacent units sufficiently attenuate sound**
- Floor and / or ceiling sufficiently attenuate sound**
- Floor / ceiling sufficiently attenuates footsteps on hard surfaces in unit above**
- Entry door sufficiently attenuates noise from corridor**
- Exterior windows sufficiently attenuate noise from exterior sources**
- HVAC system operates at a sufficiently low noise level**
- Appliances (dishwashers, washing machines, etc.) in use in adjacent units are quiet**
- Building stairwells, elevator shafts, and mechanical chases sufficiently attenuate noise
from other sources in the building**
- Interior finishes of unit provide sufficient sound absorption**

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