



Reuse and Renovation: Successful Mill Renovation Goes Beyond Aesthetics

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Faced with a housing shortage and the added expense of urban infill projects, developers are transforming abandoned mills in gateway cities into high-end loft residences. This nationwide multi-family trend looks to satellite suburbs across the rustbelt and sunbelt regions and presents a low-carbon alternative to

building on greenfield. Firms like The Architectural Team and Alexander Finegold Architects have developed expertise in renovating former mills and re-imagining how to better utilize these existing structures for multi-family and mixed-use.

“It’s a perfect storm of housing demand and the post-Covid remote workforce era,” explains Scott Maenpaa, project manager at The Architectural Team in Boston, a firm that specializes in mill reuse and renovation. As demand for part-time office space closer to home increases, Maenpaa observes a shift towards true mixed-use adaptive reuse projects with retail on street level, offices in the middle and residential above. Conveniently located on the outskirts of large cities, the reuse of extremely carbon-intense structures is a boon to multi-family housing, the local economy, and the carbon economy. As these new urban hubs, downtowns, gateway cities and “Zoom Towns” develop, their sizes and location fit a “10-minute city” model—one that provides residents with entertainment, housing, workplaces and retail within close proximity.

These old, sturdy mill structures, some up to 200-years-old, were once staples of early American manufacturing. With their large spans, they are ideal for consumers seeking high ceilings, open floor plans and an industrial chic looks. “The character and aesthetics of these buildings are so appealing to people,” says Maenpaa. However, practical considerations for a successful multi-family development reach far beyond aesthetics. Factors such as energy efficiency and acoustic remediation require extreme attention and expertise to ready mill buildings for new life.

Old factory floors, windows, and walls require a number of renovation considerations in order to meet acoustical comfort levels that suit the expectations for sound separations in high-end, multi-family housing. Old floors with thick, chestnut planks that are 10-12-in. wide and very long are striking and rich in history. But acoustic bridging through this old flooring presents a major concern. In some cases, cracks between the plank flooring lead directly into the unit below.

“The flooring plane does a lot of the heavy lifting when remediating mills to adhere to residential codes and expectations of sound separations in multi-family housing,” explains Bill Devin, Business Unit Manager, Acoustics Division at REGUPOL America, a global leader in acoustical solutions.

For best acoustic remediation practices, Devin suggests REGUPOL sonus curve 25mm., a dimpled product that is installed dimple side down with polyethylene sheeting. “It acts like a rubber gasket with isolating rubber strips around the perimeter.” After it is in place, contractors pour three or more inches of concrete. This acts as a new subfloor resting on rubber bearings which serve as a rubber sound isolator.

“The dimple structure leaves air pockets which reduce the amount of contact with the surface area of the timber subfloor,” explains Devin. This allows the concrete to have more deflection and increased acoustical performance. “The floor is basically sitting in a pool of acoustic isolating rubber. Because it’s not rigidly connected, this floating floor helps guarantee the peace and quiet expected of high-end residential real estate. It also allows for amenities such as fitness centers, and office and retail as mixed-use development, without disturbing tenants.”

This system adds 3” in height and added weight of almost 45 lbs. per sq ft. Fortunately, these sturdy structures were engineered to hold heavy machinery and goods so typically do not require structural reinforcements. After floors are rehabbed in this way, residents may choose a hard surface like hardwood or tile flooring, without disturbing neighbors with their footfall.

Oversized windows and openings coupled with exposed brick construction are iconic, but not acoustically desirable. One way to address airborne sounds coming from outside disturbances and prevent noise pollution is double-pane windows. They provide added energy efficiency while sealing units off to outdoor airborne noise.

Finally, developers often leave exposed ceilings and bricks inside, and build dividing walls in the interior spaces to house mechanical, electrical and plumbing components. Architects can further address acoustic strategy and reduce mechanical noise by using larger ducts, suggests Sayali Wazalwar, acoustics researcher for GBBN Architects. “That decreases the air velocity in ducts going through the diffuser, and that makes less noise.”

Technical equipment in buildings is essential for providing air, water, heat, and electricity and is usually housed in dedicated mechanical rooms in basements, roofs or other floors. However, sound and vibration nuisance must be considered when planning for building services. Airborne and structure-borne sound isolation can be accomplished using elastomers installed under machine foundations, equipment frames, or floating floor constructions. REGUPOL vibration and REGUFOAM vibration isolation materials help mitigate machine vibration. They provide damping, decoupling, mass, and absorption plus offer the necessary properties to create precisely customized solutions for sensitive applications.

By weaving these historical buildings back into the fabric of a community it knits a thread of history. This practice also boosts aspects of community resilience by providing safe, clean abundant housing and eliminating environmental hazards. Old mills may contain hazardous materials such as asbestos and lead paint that will be remediated by developers. “And then they’re no longer a threat to

residents of the building or the community,” remarks Maenpaa. One final safety benefit, explains Maenpaa, is that because they are not accessible, fire departments will often let old, abandoned mills burn if they catch fire. Giving them new life as a pillar of the community reduces fire risks for a municipality.

Finally, renovation and reuse are some of the most economical choices developers can make, rather than constructing a new building. “A ton of embodied energy was exhausted when they built them,” reminds Maenpaa of mill buildings. Developers may realize as much as a 20% cost savings over new construction because there’s no demolition, and they’re not paying to bring in more materials.

CAPTION: The Cable Mills development designed by Finegold Alexander Architects involved the renovation of the historic Water Street Mill complex in Williamstown, Mass. Eight buildings totaling over 96,000sq. ft. included converted restoration of the abandoned properties into a revitalized mix of lofts, apartments, and condominiums. The units feature exposed bricks, high wood beamed ceilings, and contemporary finishes. Nestled in the Berkshire Mountains along the banks of the Green River, it has become a unique part of downtown Williamstown.