

Vendor Trends

Improving energy efficiency in historic buildings

Many historic buildings cannot and should not be torn down to be replaced by new, higher-performing materials. Yet the need for energy efficiency is not just popular, it's necessary. Denver is a leading city when it comes to adopting green initiatives (such as the Denver Green Roof Initiative), but its love for historic preservation is intertwined with its environmental concerns. This makes interior storm windows an ideal solution for residential and business buildings.

Denver Landmark Preservation “helps preserve the well-loved character of the city and its neighborhoods.” While this is a laudable endeavor, it can feel counterintuitive, making it difficult to update historical buildings to make them more energy efficient and desirable to new occupants. How do building managers keep current tenants happy? How do property owners manage cost? How does resell value factor in?

Forty percent of a building's energy is consumed by heating and cooling, so checking air sealing and insulation is the go-to for energy efficiency, according to a Department of Energy report. Regulating temperature with windows in historic buildings is challenging, if not impossible. While many property owners immediately will reach the conclusion that window replacement is best, this isn't always the case. Old windows come with old-growth wood frames. Because old-growth wood grew slowly, instead of the rapid-growth wood that is cultivated specifically for construction today, its rings are closer



Kathryn Foster
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together, creating a denser wood. When cared for, or restored properly, it can last for generations.

Storm windows add insulation and temperature regulation without requiring window replacement, and thus construction. They also keep original windows

where they belong – in the building they were designed for, adding to its value. Unfortunately, exterior storm windows detract from the aesthetic and curb appeal of a building, ultimately undoing their purpose. Exterior storm windows attach to the window frame using a wood or aluminum casing via screws and caulk. This is not only unsightly during the time they are installed, but can cause lasting damage to an historic building.

Interior storm windows can provide all the same energy savings as exterior storm windows, while not causing any damage or hurting curb appeal. Interior storm windows, sometimes called window inserts, are custom made for the window and pressed into the inside window frame. They increase resell value because the upgrade and energy savings stay with the building.

LCOR project manager Joseph Casillo wanted to keep intact what made his landmark building inherently beautiful: moldings, fixtures, wavy glass and old-growth wood

frames. At the same time, modern efficiencies save money and bring convenience to tenants. He decided to incorporate interior window inserts into the upgrade of his New York landmark building. New York has stricter landmark laws in place than Denver, but he faced many of the same concerns.

The windows in this landmark building were already over 100 years old and let drafts and grime in. They were also no help in stopping NYC city noise. Casillo wanted to provide comfort to his tenants without having to rip out, restore and reinstall each one of the windows in his multifamily building. Casillo used window inserts, which required no construction and adhered to all of New York's Landmark Preservation Commission regulations.

They can't be seen from the outside (curb appeal still intact) and are barely visible from the inside. He said the tenants have noticed a difference in drafts and noise and he expects the “green” addition will help facilitate sales.

In another example closer to home, James Henderson, a local chief financial officer, lives in a condominium just west of Denver facing downtown. His unit is on the fifth and sixth floor and has floor-to-ceiling windows that have a gorgeous view of Denver, but also of Interstate 25. While the view was a huge selling point for the condo, the highway noise was not. Henderson learned that others in his building used the window inserts to dampen the traffic noise. He thought this was a good idea, especially because of how dif-



A new insert being placed into a window frame in a historic building

ficult replacing such large windows would be given the apartment's location on the fifth and sixth floors.

“We looked at this as a more inexpensive way to address the sound than actually replacing the windows themselves,” he said.

Henderson said he was looking for a solution that would help while he lives in the unit and improve resell value. “Someday when we do decide to resell – the quieter, the better. When people come in it's going to be, ‘Oh, look how quiet it is and we're right on the highway.’ That definitely was a consideration beyond just quieting the unit for our own use.”

Please see Foster, Page 23

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Diaz

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mated easily ahead of time as options are reviewed.

Unless investors are presented with

cost-effective alternatives, opportunities often are missed to acquire a building that may be easily improved to attract higher lease rates or reposition for sale. If you are considering these

types of properties, look at a variety of ideas earlier in the due diligence process and don't default to decades-old assumptions about what can or cannot be done. It could mean the difference

between getting a profitable deal done or not participating at all.

The photos on Page 12 represent two common examples in our market. ▲

Beatty

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any loss of adherence that may have occurred due to the hail event, but also they can physically test the roof to

determine if it can perform as designed and possibly keep your warranty intact.

In summary, natural disasters, such as the hailstorm that decimated the Colorado Mills mall, aren't the only cause

of pain for a building owner. Once the storm ends, the real question begins with respect to roofs, their performance and possibly their warranty. The uplift chamber is a great tool to evaluate roof

assemblies after installation as well as prior to and after storm events to determine the uplift capacity and to assist in answering any lingering questions regarding effects of a storm. ▲

Lubaszka

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savings. AR and VR are removing expensive and unpredictable design interpretations. Now, contractors can walk a site before building, and the process of fabricating the final ele-

ments will feel like déjà vu.

Fourth, AR will change the traditional way in which facilities are managed. Critical pieces of sprinkler, mechanical and lighting equipment can quickly be scanned by maintenance personnel wearing AR glasses.

A new employee at an unfamiliar property will be able to wear glasses that can call up operations manuals and instructions on how to fix device failures. These instructions will be interactive, either through using a remote expert explaining which but-

tons to press or through dynamic animations showing how to turn a valve.

These visualization technologies are a new form of communication that will save all stakeholders time and money through the life cycle of a building. ▲

Konst

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particulates in Ice Slicer versus a mix of white salt and sand, or sand alone. This equates to less air quality issues in PM-10 and PM-2.5 areas. The use of aggregates (like sand) can create many air quality concerns. Cleanup costs with sand often are prohibitive. Connecticut Department of Transportation switched to a complete chemical winter maintenance program and are saving \$2.5 million per year in cleanup costs. In the Denver area, costs near \$175 per ton

have been seen for cleaning up sand.

• **Which is better for the environment: sand or salt?** Road salt makes the rivers and lakes more full of alkalinity, which has bad effects on the plant and animal life near them. Salt also corrodes steel and other metal structures. As discussed earlier, sand filters into rivers and lakes to make them fill up more. Also, sand often is mixed with salt so all the problems with salt apply to sand as well. So neither of them is great for the environment. Protecting our streams is one of the primary

reasons alternatives should be chosen, as they are less harmful to aquatic life than white salt because they do not contribute as much to biological oxygen demand.

• **What are the conclusions?** Overall, both sand and salt have their purpose, but because of heavy cleanup requirements, it often is cheaper to use an alternative chemical deicer, ensuring the use levels are accurate to minimize ill effects. Denver area engineering/public works departments are required under legal mandates, which are regu-

lated by the Regional Air Quality Council, to comply with certain application rates. Limiting the application rates reduces the quantity of particulates in the air and the amount of chemicals and sand deposited in wetlands and waterways. Because of these air quality impacts, the use of sand or abrasives in snow control has been virtually eliminated in the Denver metro area. Finally, when it comes to safety a concern with sand is that when it is used on pavement, sand can act like marbles and cause slip and falls. ▲

Foster

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Colorado is rich with historic neighborhoods. To keep the diversity of architecture intact – a patchwork blanket of adobe, Victorian and art

deco – it's not just the curb appeal of individual buildings that we need worry about. Each building has its place on the face of Colorado's urban landscape and it's our collective duty to protect each one.

These window inserts can help keep Colorado's history intact while bringing its buildings up to date. Energy efficiency, tenant comforts and preservation should not be at odds, and with modern technology

there's no reason they need to be. Interior storm windows is just one step in keeping our properties intact and comfortable so these beautiful buildings can be appreciated and inhabited for generations to come. ▲



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