

WINDOWS CASE STUDY

Secondary windows help lead the way to LEED certification

Built in 1922, Romney Hall was the original athletics facility on the Montana State University (MSU) campus in Bozeman, Mont. The 66,000 sq. ft. building began extensive renovations in 2019 to transform a maze of existing spaces into 17 classrooms (with over 1,000 total seats) that now serves the entire student body. The space now also offers dedicated spaces for the Writing Center, Math Center, Veterans Center, and the Office of Disability Services.

MSU decided to take the renovations as a valuable opportunity to significantly increase whole-building energy performance in pursuit of LEED certification while also committing to maintaining the aesthetically pleasing and historically important appearance of the building's façade. They found their solution with commercial secondary windows, also known as Low-E storm windows, insulating panels, or secondary glazing systems. These products easily and more cost-effectively attach to existing windows to increase energy efficiency and occupant comfort in a variety of ways, including by reducing thermal transfer, outside noise, drafts and glare.

Easy installation, plentiful benefits.

The secondary window installation was finished in just over a week, with each of the 42 windows requiring about 40 minutes to complete. Installing secondary windows is so simple that the only training typically needed is an example installation. And since the products completely retain the original exterior aesthetic, the secondary windows were virtually unnoticeable to building occupants and passersby.

Project Overview



Building Type
University



Location
Bozeman, MT



Window Area
1,444 sq. ft.



Year Built
1922



Existing Windows
Single-pane, wood and steel frames



Windows Installed
Single-pane inserts



A series of post-installation tests proved the efficacy of the secondary windows across a range of performance metrics. Even as outside temperatures dropped below a frigid 10 °F, secondary window glass surface temperatures were 11 °F warmer than a room with only single-pane windows, a significant improvement for occupant comfort. The secondary windows further improve occupant well-being by reducing outside noise transmission from 63.4 decibels to 57.5 decibels (5.9 dB), similar to going from moderate traffic noise to the sound of rainfall.

Installation outcomes.



Reduced noise. 5.9 decibel reduction in outside noise levels.



Decreased air leakage. 11% decrease in air leakage, resulting in more comfortable classrooms even in frigid weather.



Efficient installation. Averaging 40 minutes per window, including several large and custom-sized applications.



Increased comfort. Improved thermal comfort including near windows.



Seamlessly blended aesthetic. Secondary windows perfectly match the existing windows to maintain a consistent façade.

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