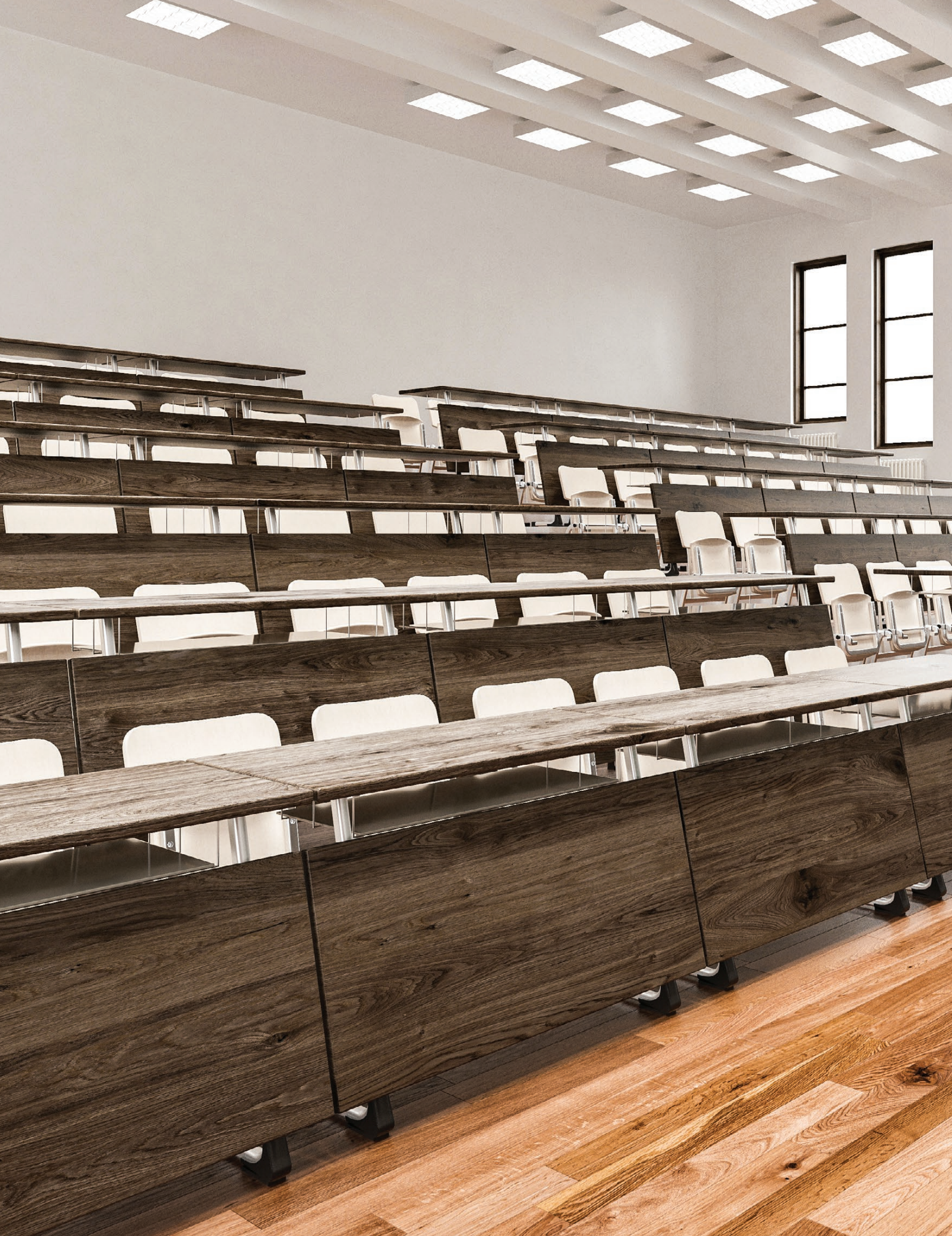
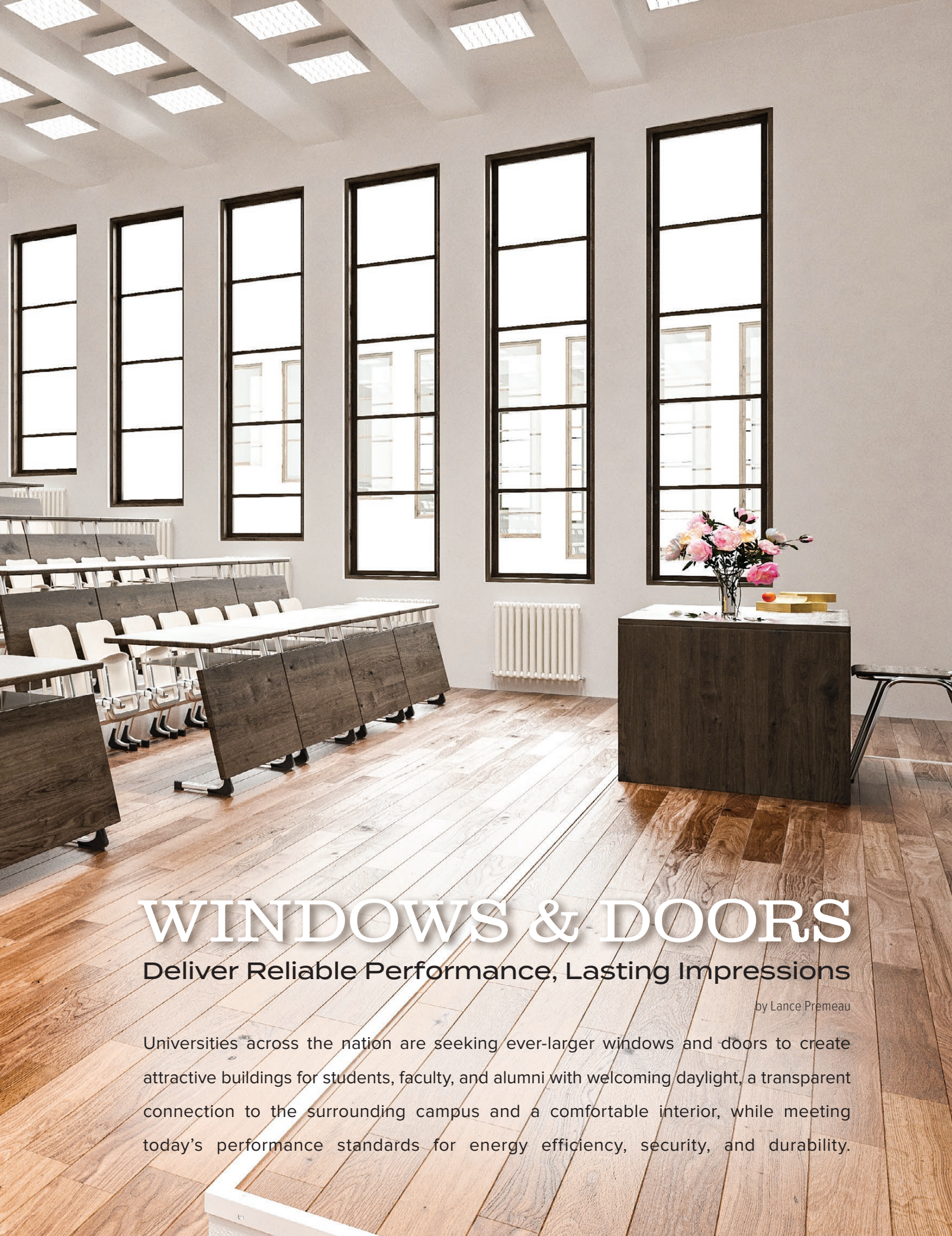




WINDOWS & DOORS

Deliver Reliable Performance, Lasting Impressions

by Lance Premeau

Universities across the nation are seeking ever-larger windows and doors to create attractive buildings for students, faculty, and alumni with welcoming daylight, a transparent connection to the surrounding campus and a comfortable interior, while meeting today's performance standards for energy efficiency, security, and durability.

Region, Weather, and Windows

In regions prone to extreme weather, extra considerations are necessary for hurricanes, earthquakes, winter storms or scorching heat. In moderate climates and as seasons permit, operable windows can provide fresh air. Natural ventilation can be achieved with large viewing areas.

Doors reaching 60-feet-wide and operable windows spanning 6-feet-wide by 10-feet-tall are increasingly specified for both new construction and renovation projects. In student residence halls, single hung and double hung windows are common for ease of operation, locking hardware and maintenance. In libraries, floor-to-ceiling openings may be configured using stationary casement window units with smaller, strategically positioned operable units.

In student unions and campus centers, folding doors or lift-and-slide doors open up expanses of exterior walls to extend the gathering area into the outdoors. In offices, windows or doors capture corner office views or naturally light open floor plans. Occupants facing southern and western elevations appreciate carefully selected glass to control unwanted solar heat.

Looks Matter

In historic buildings, for period charm coupled with modern performance, there are updated versions of weight-and-chain double hung windows. Decorative ogee lugs can enhance 19th century architectural details. True divided lites are most often used when historical accuracy must be maintained within a project. These individual panes of glass mimic the original design and construction of windows, using various lite designs to change the aesthetic of the building. Performance divided lites provide the historical aesthetic of the true divided lite with added energy performance benefits.

Many university buildings contain windows and doors that are not rectangular. Half-circle shaped or arched top units are quite common in buildings of all ages. There are window and door manufacturers that pride themselves on their ability to create nearly any shape or profile from many different materials. The flexibility to machine wood into endless profiles gives manufacturers an easy way to help architects and designers match specific details for unique projects.

Color can be an extremely important design consideration for a university building. The exterior of windows and doors can be finished to blend with the surrounding façade, such as brick or stucco, or to boldly accent a building, such as in the school's colors. If a custom color is needed, the process to match it is simple: The university provides a sample to the window and door manufacturer, and the manufacturer works with its finishing supplier to analyze and match the color. Different colors often are desired for the wood interior, including custom stains. Beyond aesthetics, the finish also contributes to the durability and longevity of window and door products.

Metrics for Door & Window Performance

The enduring performance characteristics of the building envelope are determined by local, regional and national building codes along with the architect, the building contractor and the university itself. Window and door performance can be measured through several different metrics, including air tightness, water tightness, structural strength, and sound transmission.

Products intended for use along the Gulf of Mexico, Florida, and the east coast might also need an impact rating, providing necessary protection during tropical storms. Proving third-party validation for product performance, windows and doors are thoroughly tested in accordance with standards outlined by industry organizations.

These include the American Society for Testing and Materials (ASTM), the American Architectural Manufacturers Association (AAMA), the American National Standards Institute (ANSI), the National Fenestration Rating Council (NFRC) and the Consumer Product Safety Commission (CPSC). The guidelines and requirements set forth by these organizations provide industry-wide testing and performance criteria.

Storm Windows for Safety and Silence

Acoustic performance within a classroom, lecture hall, library, or dorm room can have a profound effect on occupants' comfort and their learning environment. According to the American Federation of Teachers' "Building Minds, Minding Buildings: Our Union's Road Map to Green and Sustainable Schools," the National Academy of Sciences reported that "background noise levels in many classrooms are 10 times too loud" which "is impairing students' ability to learn and achieve" by affecting memory, attention and speech recognition.

Windows and doors installed on exterior walls are a critical design component to ensure the proper level of sound transmission. Storm windows are one avenue to decrease the amount of ambient outside noise transmitted through the opening. Laminated glass, which is a system of two panes of glass sandwiched and fused together with a plastic inner-layer, has very good sound-deadening attributes. It also helps deter unwanted physical entry through a locked window or door.

The laminated product will break eventually, but is designed to withstand repeated hits and will slow the entry of any would-be intruder. As security has become a top priority when discussing any educational building project, laminated glass more frequently is being specified for low-rise buildings and the lower levels of tall buildings.

For buildings integrating security sensors, window and door products can be modified or machined to the customer's specifications to more easily accommodate field-applied security products. Window and door products also can be specified with multi-point locks, providing a more secure opening versus those with a single locking point. Utilizing custodial locks and keyed hardware options on operable windows' interiors will limit how far the unit can be opened, unless a designated staff member unlocks it. Window and door manufacturers can collaborate with the building team and hardware specialists to supply the right hardware for the application, taking security, egress, and aesthetic requirements into account.

Low Maintenance, Lasting Impressions

Facility managers are charged with the ongoing task of maintaining the intended look and functionality of these critical components in a building's longevity. Today's window and door products make that task easier than it has been in the past. Protective, removable films can be factory-applied to the units' glass to reduce the

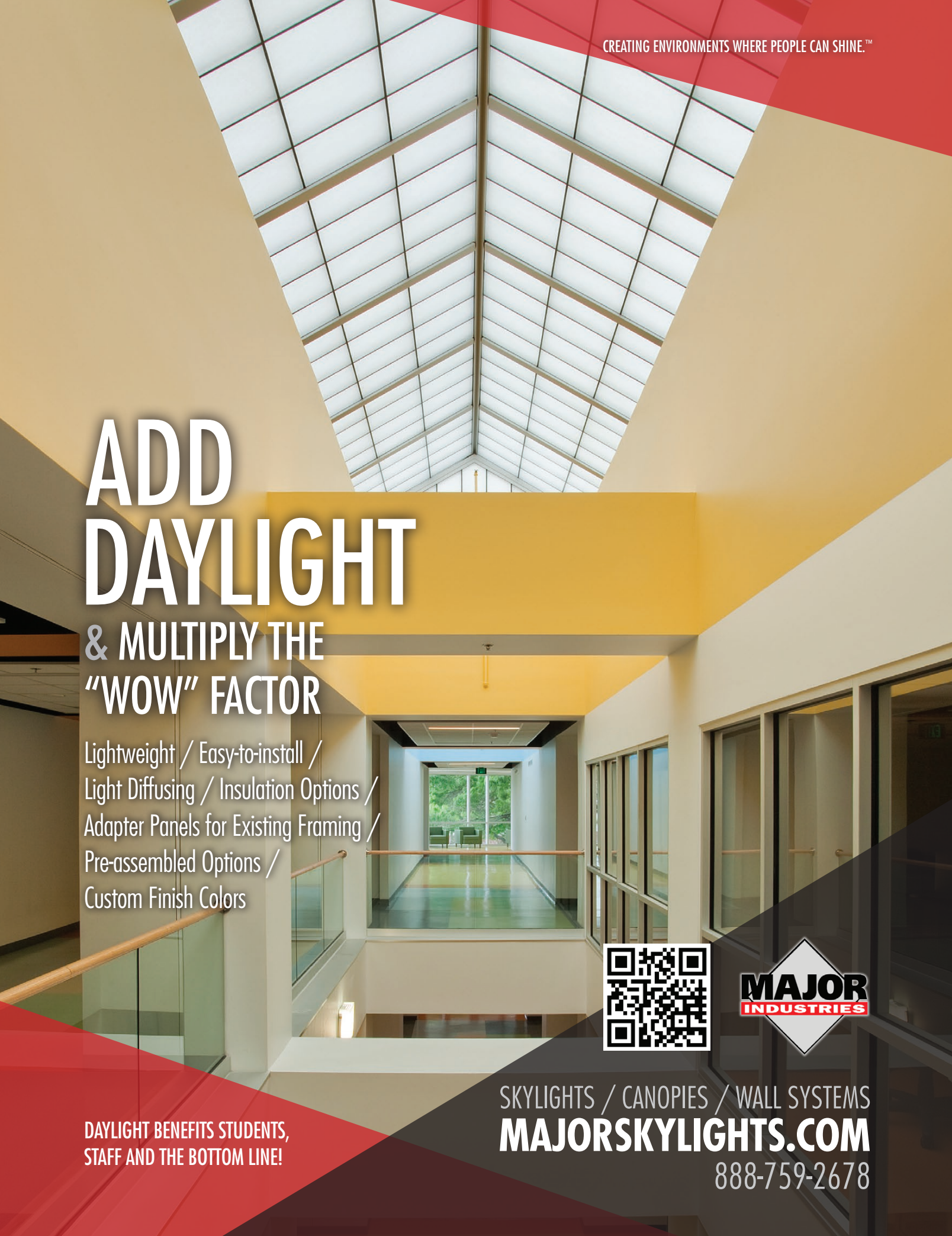
Photo courtesy Kolbe Windows & Doors

potential for damage caused during the normal course of installation and to greatly reduce the clean-up required.

For long-term cleaning considerations, some manufacturers offer a specialized exterior glass coating that has the ability to break down dirt and organic grime by the use of ultraviolet rays, allowing water or rain to simply wash it away. High-performance exterior paints and anodized finishes also provide long-lasting, low-maintenance benefits with minimal cleaning.

Today's windows and doors have evolved into products that can be specifically tailored toward meeting the design and performance goals of a university building project, whether it is a renovation, an energy retrofit or new construction. Their contribution can be measured both subjectively in value and aesthetics, objectively in performance and longevity, and, ultimately, by their lasting impression on all who visit the campus.

ABOUT THE AUTHOR: Lance Premeau, LEED® Green Associate, serves as Kolbe's Business Development Manager. He draws from 25+ years in the window and door industry and has contributed to thousands of new construction and renovation projects including residences, offices, schools and universities. Visit www.kolbe-kolbe.com for more information.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