



Lewis F. Powell Jr. U.S. Courthouse | Richmond, Virginia | Solarban® 60 Glass

ADVANCED GLAZING SYSTEMS TECHNICAL DOCUMENT | AGS-302

The R20 Secondary Interior Window Retrofit System

R20¹ Secondary Interior Window Retrofit System Design Recommendations

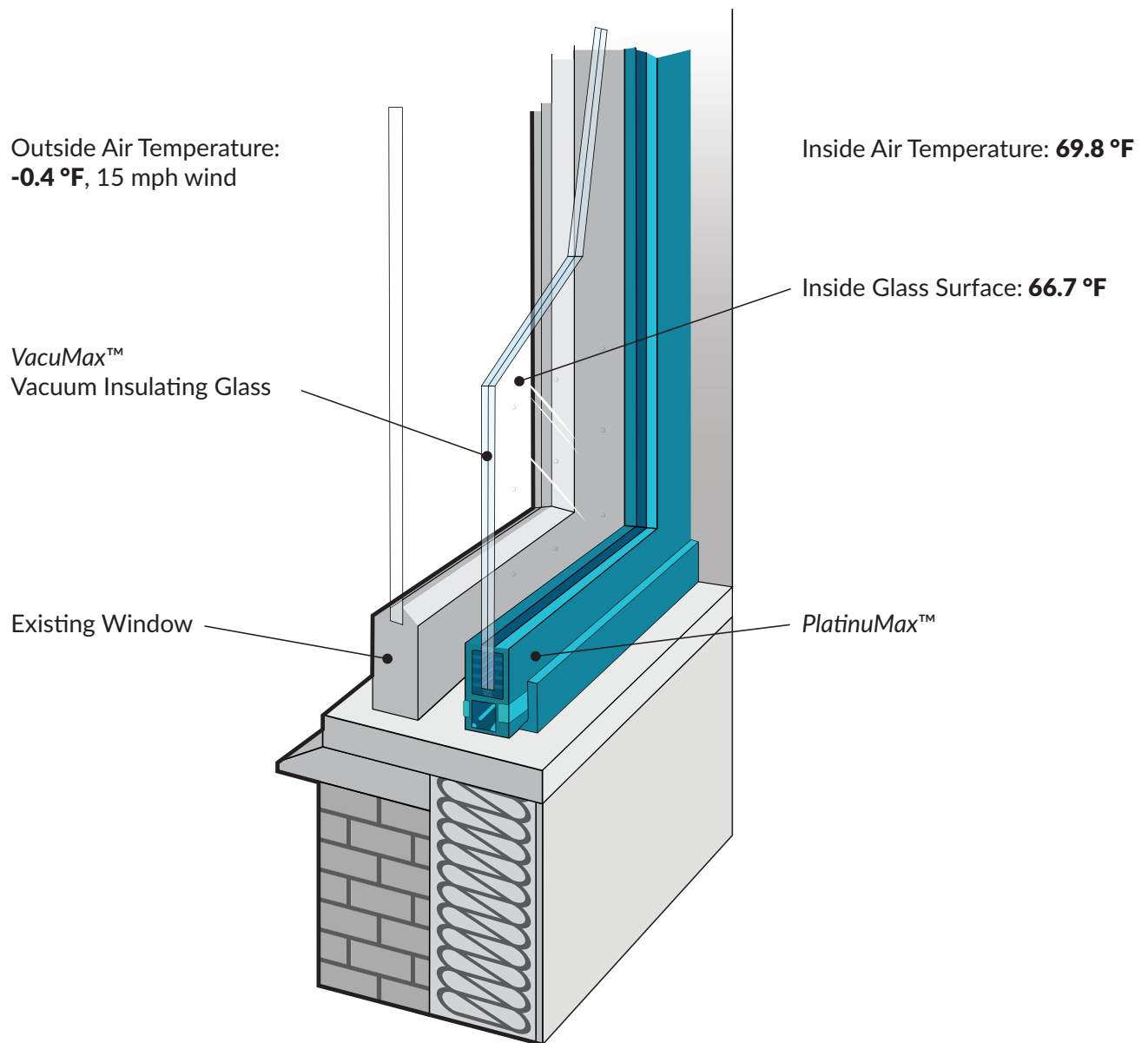
The R20¹ Secondary Interior Window Retrofit System combines two commercially available technologies – *VacuMax*[™] Vacuum Insulating Glass (VIG) by Vitro Architectural Glass and *RetroWAL*[™] *PlatinuMax*[™] Series, a Thermolite Window System by Advanced Impact Technologies Group—to deliver a thermally superior, cost-effective, and aesthetically pleasing retrofit solution.

This joint, *VacuMax*[™] VIG plus *RetroWAL*[™] equals *PlatinuMax*[™] solution mitigates the need for costly facade replacements incorporating underperforming insulating glass units (IGUs) and metal framing systems. The R20 product can be installed quickly behind the existing glazing, minimizing building interruptions while immediately improving solar, thermal, and acoustic control performance resulting in improved occupant comfort. The *PlatinuMax*[™] product also protects the existing facade while aiding in reducing overall fenestration maintenance costs.

The R20 system reduces a building's operational carbon footprint through enhanced energy savings performance and will satisfy current and future energy and building performance standards. Thanks to its superior insulating performance, the unit helps mitigate daily interior temperature fluctuations, reduce the overall heating and cooling demand for the building, lower operational costs and prolong HVAC equipment. The *PlatinuMax*[™] product also reduces interior glass surface condensation and, in turn, reduces instances of mold growth and/or window frame corrosion.

¹ R20 center of glass. System R-value varies based on size and framing configuration.

RetroWAL™ PlatinuMax™ Series Window System Components



VacuMax™ VIG

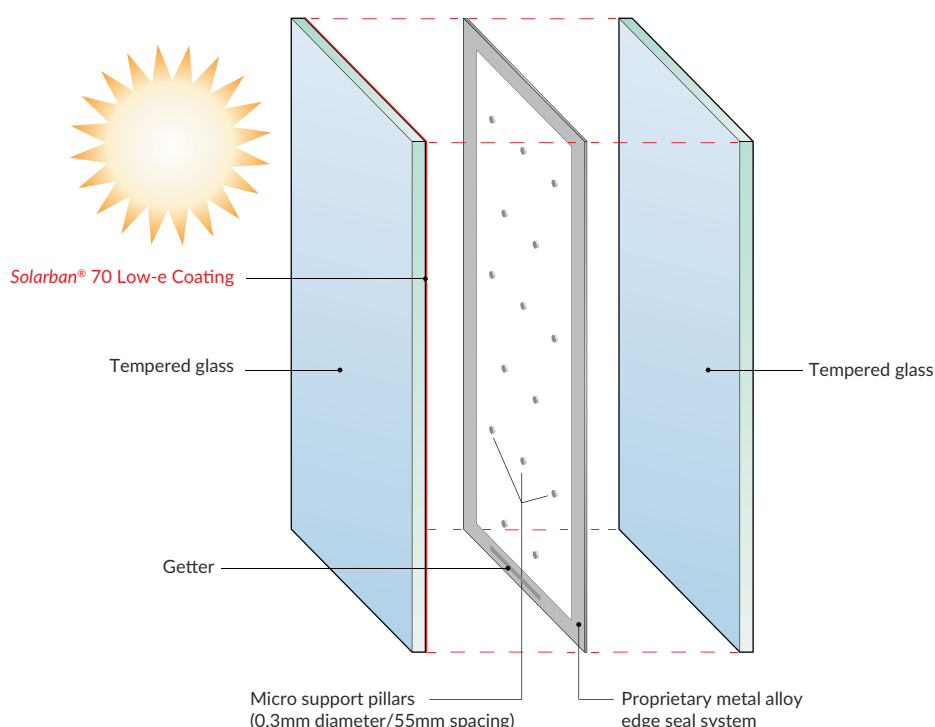
With center of glass R-values of up to R20, VacuMax™ VIG by Vitro Architectural Glass is the ultimate in thermal glazing, delivering R-values that rival the thermal performance of traditional walls. VacuMax™ VIG integrates with any traditional (and even non-traditional) glazing system to maximize insulation performance.

A VacuMax™ VIG unit is a well-engineered solution comprising two lites of glass, ranging from 4mm to 6mm thickness, separated by a non-leaded proprietary metal edge seal and a 0.3mm vacuum space. Its slim construction and light weight make it easy to incorporate into any traditional (and non-traditional) glazing system,

window frame, or curtainwall application. VacuMax™ VIG units are available with a minimum thickness of 8.3mm (with 4mm lites) and a maximum of 12.3mm (with 6mm lites) and are available in sizes from 12" x 12" (0.3m x 0.3m) to 60" x 118" (1.5m x 3.0m).

Manufactured exclusively with Solarban® 70 solar-control, low-e glass by Vitro, VacuMax™ VIG units enhance the performance of any glass configuration by effectively blocking thermal transmission, delivering thermal insulation performance that is 3–5x better than conventional insulating glass and up to 20x better than monolithic glass.

VacuMax™ VIG Components



RetroWAL™ *PlatinuMax*™ Series

Thermolite's RetroWAL™ interior window system by Advanced Impact Technologies Group is the most affordable and effective solution for improving the energy efficiency of curtainwall, storefront and window wall buildings. RetroWAL™ quickly and easily installs on the interior of a building's existing windows, keeping the original glass and frame in place, and eliminating the costly need for permits, scaffolding and tenant disruption. RetroWAL™ system frames attach easily to a window opening, forming an air-tight seal that reduces air infiltration by 50–90%.

The RetroWAL™ *PlatinuMax*™ Series is a super-insulating interior window system for the commercial building industry featuring the most advanced window technology on the market. In partnership with Vitro Architectural Glass, Thermolite's *PlatinuMax*™ Series utilizes Vitro's newest generation of *VacuMax*™ VIG to exceed by far the performance of traditional gas-filled insulating glass units.

The RetroWAL™ *PlatinuMax*™ Series includes two panes of fully-tempered safety glazing and a *Solarban*® low-e coating carefully separated by a small vacuum space. A matrix of micro-support pillars and advanced "getter" technology strips the vacuum-sealed space of air molecules. This virtually eliminates thermal conduction and convection, two of the three most common sources of heat loss in a window. Utilizing only 5/16th of an inch thick *VacuMax*™ VIG, the RetroWAL™ *PlatinuMax*™ Series can be conveniently placed in any small frame application where space is at a premium.

Applications

The R20 Secondary Interior Window Retrofit System can support any building that needs an energy-saving upgrade

for the fenestration portion of the building envelope. RetroWAL™ *PlatinuMax*™ is a solution that mitigates the need for costly facade replacements incorporating underperforming traditional IGUs and metal framing systems.

System Dimensions

The R20 system has a minimum size of 12" x 12" and a maximum size of 60" x 118".

Installation & Maintenance

RetroWAL™ *PlatinuMax*™ installs quickly and easily on the interior of an existing window system using minimal framing, fasteners and standard glazing tapes. Little maintenance is required, and regular cleaning is much the same as for traditional windows.

Project History & Timeline

In May 2024, the U.S. General Services Administration (GSA) selected The R20 Interior Window Retrofit System from AIT & Vitro for a pilot project at the Wilbur J. Cohen Federal Building in Washington, D.C. Following the successful selection of the RetroWAL™ *PlatinuMax*™ SGS for the Cohen Federal Building, the GSA decided to install the product on two buildings with the second building being the Patrick V. McNamara Federal Building in Detroit, Michigan. Both projects, the Cohen Federal Building and the McNamara Federal Building will serve as GSA High Impact Technology Field Validation program testing locations, and the Lawrence Berkeley National Laboratory will conduct testing and performance evaluations for each test site location.

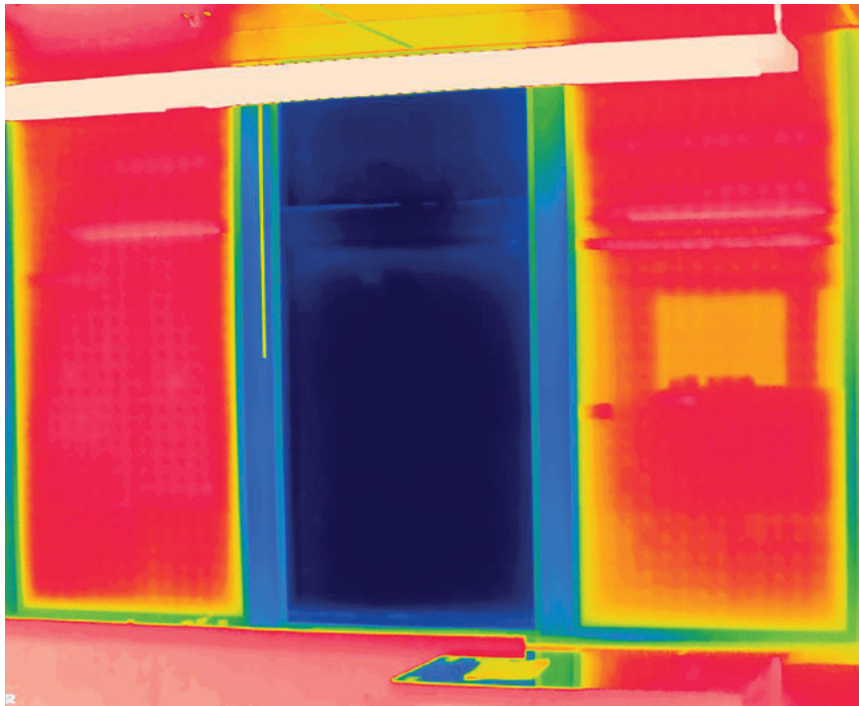
The Cohen Federal Building site measurements go beyond the system's intuitively obvious glass temperatures and heat flux. They include infrared (IR) thermography, air leakage and an occupant satisfaction survey.

The images below were taken in the Wilbur J. Cohen Federal building in Washington, D.C., during the installation of the Vitro/AIT RetroWAL™ *PlatinuMax*™ Series Secondary Glazing System in January 2025.

The IR Thermography image shows three windows of a window-wall system where the RetroWAL™ *PlatinuMax*™ Series is installed on the left and right windows and the center window is the original 6mm monolithic glazing. Significant improvement in thermal performance can easily be seen with the IR Thermography image below. The winter nighttime IR image shows much warmer interior glass surface temperatures of the left and right windows with the RetroWAL™ *PlatinuMax*™ Series installed. The center window is the original glazing, prior to the RetroWAL™ *PlatinuMax*™ SGS being installed and has significantly colder indoor surface temperatures.

Note that the RetroWAL™ *PlatinuMax*™ SGS has warmer surface temperatures for the entire window, including all glazing and framing components.

The Wilbur J. Cohen Federal building in Washington, D.C. is a U.S. GSA Historical Preservation approved installation. The second image is a photograph of the same three windows of a window-wall system where the RetroWAL™ *PlatinuMax*™ Series is installed on the left and right windows and the center window is still the original glazing. The RetroWAL™ *PlatinuMax*™ Series can be designed to accommodate historical sash and frame details that easily blend with the original windows with no changes to the exterior of the facade. The RetroWAL™ *PlatinuMax*™ Series system is also able to be hardened to accommodate forced entry or blast resistance ratings while maintaining the original building aesthetics.



January 2025 IR Thermography Image:

The middle window is the original monolithic glass prior to the RetroWAL™ *PlatinuMax*™ SGS being installed, where the RetroWAL™ *PlatinuMax*™ Series is installed interior to the original monolithic glazing on the left and right windows. Significant improvement in thermal performance can be seen with the image showing much warmer wintertime interior glass surface temperatures of the left and right windows.

Wilbur J. Cohen Federal Building, Washington, D.C., Planned Project Timeline

Milestone	Date
Finalized Measurement & Validation Plan	July 2024
Installation of <i>PlatinuMax</i> ™/Metering Equipment	January 2025
Initial In-Progress Data Review & Analysis Meeting	December 2025
Final Data Analysis Meeting & 70% Report	March 2026
Analysis & Reporting	April–July 2026
Public Report & Webinar	September 2026

Note: In 2025, performance data was collected at both project sites for an additional seven months while the GSA Center for Emerging Building Technologies evaluated which projects would continue. The RetroWAL™ *PlatinuMax*™ SGS project was selected to continue, and the report will be inclusive of the additional performance data.



January 2025 Photo: U.S. GSA Historical Preservation approved installation of RetroWAL™ *PlatinuMax*™ Series. This innovative solution is specifically designed to seamlessly integrate with historic sash and frame details, preserving the original appearance of windows while requiring no alterations to the building's exterior facade.

The center sash is the original monolithic glazing prior to the RetroWAL™ *PlatinuMax*™ SGS being installed. The left and right sash have the RetroWAL™ *PlatinuMax*™ SGS installed interior to the original monolithic glazing.

History Table

Item	Date	Description
Original Publication	11/11/2025	

For more information, please contact:

Vitro Architectural Glass

Paul Bush
Vice President, Technical Services,
Sustainability & Government Affairs
pbush@vitro.com
(412) 820-4926

Advanced Impact Technologies Group

Jeffery Besse
President
jbesse@ltisg.com
(727) 287-4620