



HILL COLLEGE HOUSE | UNIVERSITY OF PENNSYLVANIA PHILADELPHIA, PA.

New & refurbished glazing for a midcentury modern landmark

By: Amanda Gibney Weko

CASE STUDY

Glaziers

Curtain Wall & Interior Glazing:

AGI Member: National Glass & Metal Company, Inc. | Horsham, Pa.

Historic Window Refurbishment:

Window Repairs & Restoration, LLC
Gloucester City, N.J.

Team

Architect: Mills + Schnoering

Architects, LLC | Princeton, N.J.

Construction Management: INTECH
Construction, Inc. | Philadelphia, Pa.

Key Dates

Built: 1960 | Renovated: 2017



Interior atrium (all post-renovation photos © Aislinn Weidele / Mills + Schnoering Architects)

MODERN FORTRESS

If you think the brick structure at 33rd and Walnut Streets looks a bit like a fortress, you're not mistaken. Midcentury master architect Eero Saarinen designed the building – the University of Pennsylvania's first purpose-built women's dormitory – to shelter and protect its female inhabitants. A landscaped "moat," pedestrian entry bridge, and metal roof "crenellations" on the 195,000-sf building call to mind a castle, but the dynamic and brightly lit interiors surrounding a vast central atrium are meant to recall a hillside village. With more public and common areas than any other Penn residence, Hill College House fosters a vibrant community, strengthened recently with an \$80 million renovation by Mills + Schnoering Architects, LLC (M+Sa).

INTO THE 21ST CENTURY

No major renovation had been performed at Hill since it was built in 1960. The recently completed renovation brings the building into the 21st century with systems and amenities while retaining its unique character and fabric.

"Our approach respects the original Saarinen Hill College House design, preserving its legacy," said M+Sa Partner-in-Charge Michael Mills, FAIA. "Our choices were inspired both by the integrity of the architecture and by the contemporary student experience, with a design meant to balance the two in a welcoming, accessible student residence."

The 15-month renovation included new MEP systems and the introduction of air-conditioning, dining facility expansion by 50 percent, conversion of all bathrooms to gender-neutral individual toilet and shower rooms, new elevator and lifts for full accessibility, a new roof and insulation, and restoration of two outdoor courtyards.

GLASS TEAM EFFORT

The extensive renovation team included two glazing contractors. National Glass & Metal Company, Inc. replaced Hill's aging atrium curtain wall and performed an interior scope. Window Repairs & Restoration, LLC, was responsible for historic window refurbishment.

CURTAIN WALL

National's main scope involved replacing glazing at the upper portion of the building atrium. According to President Joe Clabbers, the existing curtain wall was one-quarter-inch single-pane monolithic glass attached to a steel skeleton of vertical I-beams with a "zipper wall" gasketed glazing system.

The original replacement scheme called for demolition of the entire steel and glass system and replacement with internal steel-reinforced curtain wall. However, the design team wanted to preserve the look of the original steel fins. National's team of Clabbers, Project Manager Karl Volk, and Foreman Mike Paciocco conceived and executed a modification to a typical structural glazed cassette system. The technique used 3M VHB structural tape to affix the new J.E. Berkowitz glass to cassette frames with modified details to work in the historic steel. On the interior, National provided aluminum trim details to simulate the gasket system profiles as closely as possible. The result incorporated new glass for improved energy performance within the preserved steel framework.

INTERIOR GLAZING

Hill features a multitude of social spaces including 19 lounges overlooking the central atrium. Although louvered window shutters bring natural light from the atrium into each lounge, solid doors and walls prevented light from filtering into hallways. One of the marked changes M+Sa made to Saarinen's design is the incorporation of glass panels along the hallway side of each atrium lounge. The interior glazing brightens the hallways and provides visibility to the activity in each lounge. National used Technical Glass Products articulated snap-cover framing and glass in this application.

National also repaired glass zipper walls between the large third-level study and club lounges and the atrium, an unusual old system that incorporated heavy H neoprene gaskets and a center spline. Additional scope included new glass entry doors and side lites, and new bathroom mirrors.

400+ REFURBISHED WINDOWS

Window Repairs & Restoration, LLC, was responsible for removal, refurbishment, and refitting of over 400 original metal-framed windows. No stranger to historic restoration projects, the company has worked on Philadelphia City Hall, Independence Hall, and the Fairmount Water Works. Owner Raymond DePiano explained that the process at Hill College House was more complicated than most. "We had to remove each window frame from the opening," he said. "In most other restorations, the frame remains in place."



Top: exterior from entry bridge showing historic windows that were refurbished; bottom: study lounge with repaired zipper wall interior glazing

Foreman John Fiorelli oversaw the process. After removal, each frame and window was sand-blasted and repainted before reinstallation. The original single glazing was replaced with heavier quarter-inch laminated glass to improve thermal and acoustical performance. Hardware presented a challenge, as the original style was no longer available. The Window Repairs & Restoration team had new hardware remade to match and then retrofit the windows accordingly.

LEGACY PRESERVED

Hill College House reopened to 500 students in August 2017. The comprehensive renovation preserves the legacy of Saarinen's architecture, while affording today's students a comfortable home on campus. The combination of new systems, building envelope improvements, and sustainable approaches has put Hill on track to achieve LEED Silver certification or higher.