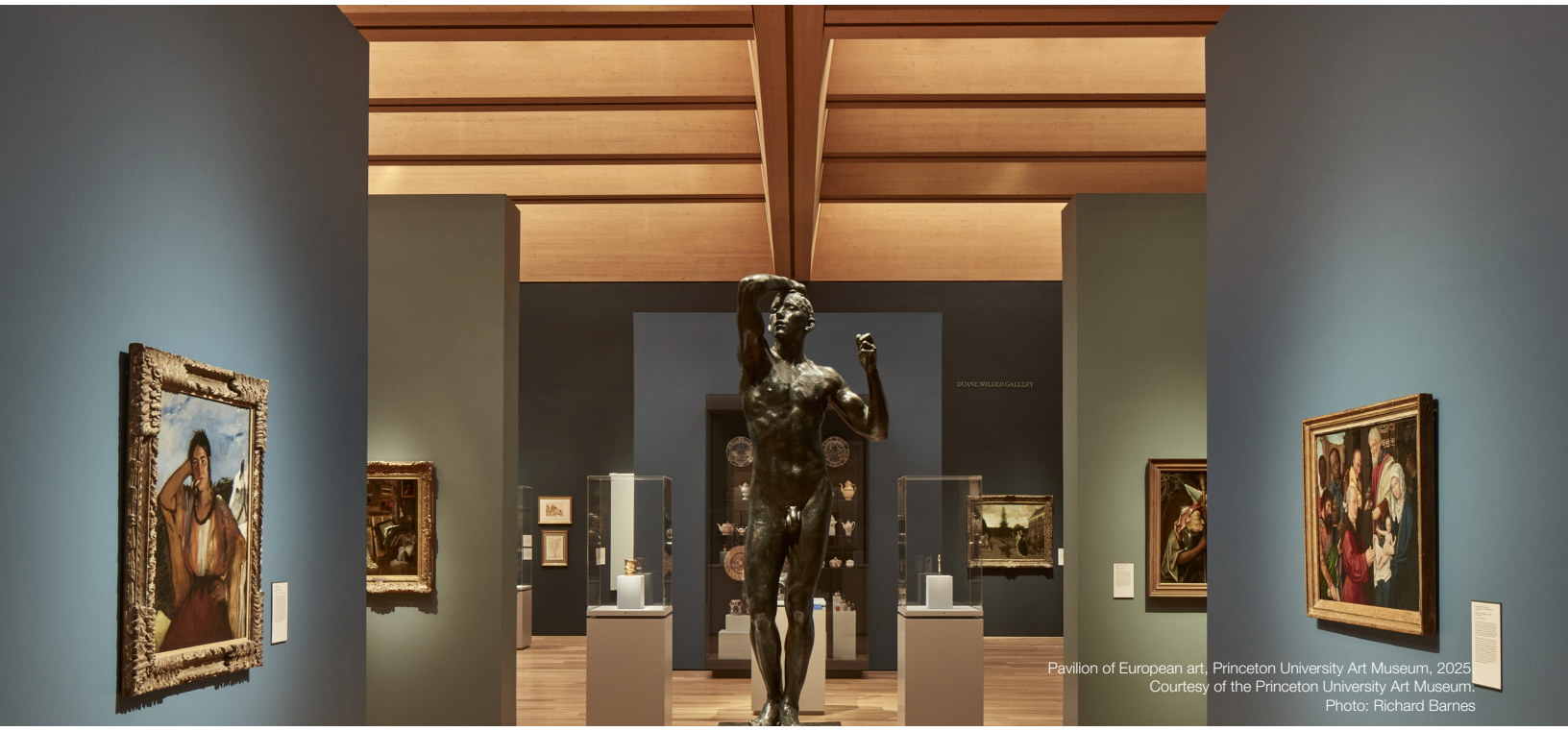
Princeton University Art Museum

Case Study

SOLATUBE
A Kingspan Light+Air Company



Pavilion of European art, Princeton University Art Museum, 2025
Courtesy of the Princeton University Art Museum.
Photo: Richard Barnes

CLIENT
Princeton University Art Museum

LOCATION
Princeton, New Jersey

SOLATUBE PRODUCT(S)
(Qty: 144) Solatube SkyVault M74DS with Collector, Daylight Dimmer and Thermal Insulation Panel

SOLATUBE DISTRIBUTOR/INSTALLER
CBG South

INSTALLER
Aetna Roofing

DESIGN ARCHITECT
Adjaye Associates

EXECUTIVE ARCHITECT
Corgan

BACKGROUND: The new Princeton University Art Museum features expansive galleries and gathering spaces that serve as a community hub for the arts and humanities. Replacing the former art museum, fine arts library and Department of Arts and Archaeology, the 146,000-square-foot museum includes nine connected pavilions at the heart of the campus, expanding the University's space for the exhibition, conservation, study and interpretation of art. The museum showcases pieces from the University's extensive art collections under one roof, featuring thousands of years of art from around the world.

CHALLENGE: One of the project's most critical design concerns included illuminating the facility's four corner pavilions without damaging the delicate, high-value objects on display. Featured artworks needed to be illuminated in a manner that honored their historic and artistic value, while also enhancing their details for the human eye to study without strain or discomfort. This had to be achieved while minimizing reliance on electric lighting, which can create uneven or less natural illumination for artwork, and with controlled daylight diffusion to help minimize ultraviolet and infrared wavelengths that can contribute to cumulative artwork deterioration.

The design further prioritized energy efficient lighting systems, aligning with the University's sustainability goals.

In addition, the galleries required balanced, vibrant illumination with minimized solar heat gain, supporting both artifact preservation and reduced HVAC loads.

SOLUTION: To address these lighting concerns, the project team integrated advanced daylighting technology throughout four of the museum's large pavilions. They installed 144 SkyVault M74DS Solatube Tubular Daylighting Devices (TDDs) with collectors, thermal insulation panels and dimmers above a translucent ceiling to harness and deliver an abundance of high-quality, natural daylight throughout the galleries.

This approach provides balanced illumination for the artworks on display, as daylight accurately renders all wavelengths of light within the visible color spectrum, ensuring true-to-life color rendition and enhanced visual clarity.

The Solatube TDDs are also engineered to screen ultraviolet rays and infrared wavelengths, brightening the gallery spaces while preventing damage to the fragile and historic art pieces. Solatube TDDs minimize glare, supporting comfortable viewing conditions and reducing eye strain while observing artworks.

By incorporating thermal insulation panels, Solatube TDDs help minimize solar heat gain, which also helps reduce HVAC demand.

RESULTS: The pivotal application of Solatube TDDs in the Princeton University Art Museum resulted in bright, energy-efficient galleries that provide a refined, soothing ambiance where visitors can comfortably experience the museum's collections. The TDDs distribute vibrant daylight across the displayed pieces while supporting artwork preservation, and without introducing unwanted solar heat gain.

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