



Project Spotlight: Virginia Museum of Fine Arts

Matt Elder

When the Virginia Museum of Fine Arts set out to transform its space with a “bigger, brighter, and more welcoming” program, it did so with a very specific vision: transparency achieved through major expanses of glass. There is no better building material than glass to provide optimum transparency in the building envelope, and London based architect Rick Mather, in partnership with Richmond-based SMBW Architects, designed the largest expansion in the museum’s history to bathe occupants in natural light.

“Many building materials and techniques in this project are fairly innovative – like the high performance exterior glass – that create a better environment,” Mather said in a recent VMFA interview. “At the same time [they] are energy efficient...more appropriate and sustainable” [1].

Enclos provided 44,000 square feet of building facade as the central theme of the expansion program, in what the museum is calling a “virtuoso handling of transparency and natural light.” The facade program was delivered under comprehensive design-assist and design-build services, in which Enclos specializes.

CLOSE UP

owner Commonwealth of Virginia

architect Rick Mather Architects / SMBW Architects

gc The Whiting-Turner Contracting Company

completion 2010

contract value \$12m

program 6-stories; 165,000 sqft expansion

building type cultural

technology type Glass Fins, Large/Special Glass, Offshore Sourcing, Skylights, Special Geometry, Stick Systems

facade 44,000 sqft of exterior wall, including 20,000 sqft of unitized curtainwall with handset Indiana Limestone and 20,000 sqft of stick built custom glass curtainwall

glass oversized glass curtainwall units as large as 6 ft x 24 ft; oversized glass measuring 8 ft x 16 ft; typical glass makeup consists of 1-11/16 inch thick low-e laminated insulated glass with a custom grey frit pattern to cover insulating glass spacers; provided by Eckelt Glass GmbH

description this 2011 RIBA International Awards winning project is the largest expansion in the museum's 75-year history

Figure 1: The McGlothlin wing uses Indiana limestone to blend the new building structure with the existing 1936 structure. Image by Bilyana Dimitrova, courtesy of Virginia Museum of Fine Arts.

BIGGER

VMFA is a state-supported, privately endowed museum whose current expansion belies its humble origins. VMFA opened the original museum in 1936 amidst the Great Depression with a brick and limestone building designed by Peebles and Ferguson Architects. The museum was founded with the mission of collecting, preserving, exhibiting, and interpreting art, and has been pursuing this mission for three-quarters of a century, experiencing steady growth in both artworks and patronage over the years. With no expansion of the facility over the last quarter century, additional space was badly needed to accommodate the growth.

Mather's renovation includes a 165,000 square foot expansion that adds to the museum's existing 380,000 square feet. The new facility doubles museum space for traveling exhibitions, adding 120,000 square feet, and provides an additional 53,500 square feet for

the museum's permanent collections. It is the largest renovation in the museum's history. The James W. and Frances G. McGlothlin Wing is the largest of the redevelopment structures, and is able to accommodate up to three exhibitions at once. The McGlothlin Wing includes a 150-seat lecture hall and 4,000 square foot Art Education Center that will provide educational programs for nearly 50,000 Virginia children, or 129 of the 132 school districts within the state.

Enclos provided a diverse collection of exterior walls for the new campus style complex. The design-assist phase involved extensive collaboration between the Enclos team and the design architects in determining structural performance, materials, and system detailing of the custom unitized curtainwall with handset limestone infill, the custom stick-built systems consisting of structural stainless steel T's with oversized glass, and

the skylights. Custom exterior glazed window wall systems include a combination of stainless steel and glass fins. Wall unit modules varied throughout the project, with the largest unit measuring 6 feet by 24 feet, and oversized glass spanning 8 feet by 16 feet.

"The Enclos engineering team could write a book on the design/assist phase of this project," says Bill Smith, Enclos project manager for the museum. "Especially when you consider the various wall types and complex designs."

Enclos has long been utilizing the design-assist process with leading architects on landmark projects across the nation. The service has proven to be effective in mitigating the risk posed by unique and complex facade designs, and the use of emergent materials and specialized technology, as with

the VMFA facade program requirements. Prior to installation, Enclos conducted extensive mockup testing to validate the performance of the custom designed wall systems. A 16-step program tested air and water infiltration, structural, wind load, and thermal behavior. All cladding systems performed within the required parameters without incident. Through the procurement process, Enclos flexed the muscles of its global supply chain to combine highest quality with optimum economy for the materials utilized in the VMFA's extraordinary facades. Offshore sourcing included satin finished stainless steel fins incorporated into the stick-built system, typical and oversized insulating glass, patterned overhead and elevator glazing, granite skirting, and the buff Indiana limestone that wraps the exterior facade. The curtainwall units were assembled at an Enclos East Coast manufacturing facility, and shipped to the Virginia building site where they were received by the firm's field installation crews.

GONE GLOBAL

Numerous project materials had to be procured out-of-state to meet design requirements. Enclos put its global supply chain to work for VMFA.

Key suppliers include:

Accent Architectural (Baie-d'Urfé, Quebec, Canada): Glass handrails

Bybee Stone (Ellettsville, Indiana): Buff Indiana limestone

Eckelt Glass (Austria): Oversized and typical insulated glass

J.E. Berkowitz (Pedricktown, New Jersey): Exterior glass entrances and interior glass doors

Pedras Salgadas – Corporacion Ingemar S A (Spain): Granite skirting

Shanghai Yaohua Pilkington Glass Co., Ltd. (China): Overhead and elevator glazing

Thapanin (Thailand): Satin finished stainless steel fin (featured on stick build system)





Figure 2: The McGloathlin wing includes a first floor cafe, second floor gallery, and a third floor restaurant. Each provides a view to the surrounding Sculpture Garden.

BRIGHTER

At the heart of Mather's redesign was the idea of maximized transparency. Combining expansive areas of glass in the new facade with limestone to blend the new structure with the existing, a harmonious balance was achieved between the old and new.

"Major expanses of glass allow natural light to pour into the heart of the museum," said Alex Nyerges, VMFA director, "and will welcome visitors with a look at three floors of art and activity inside." [2].

This three-story view to the interior is provided by a 40 foot tall glass wall – aptly titled the "East Window" – which overlooks North Boulevard and stands as an open invitation to passers-by. A glass-enclosed stairwell located on the north facade – appropriately referred to as the "Glass Beacon" – glows via artificial lighting at night to draw attention to the museum's entranceway. Both the East Window and Glass Beacon were initially base-loaded, with the dead load of the glass wall applied at level one. A mid-course redesign required the wall systems

to be suspended from the roof structure in order to minimize the profile of the stainless steel T-section primary structural members, thereby limiting them to the resistance of lateral loads. In addition, the McGloathlin Wing's third floor includes a 9,500 square foot Conservation Center that is clad with glass windows and skylights to maximize daylighting.

At the heart of the expansion is the three-story light-filled Louise B. and J. Harwood Cochrane Atrium, acting as the museum's main thoroughfare. The atrium connects the McGloathlin Wing to two existing wings, and provides entranceways to a library, gift shop, restaurant, café and art galleries.

A glass roof distributes natural lighting throughout the atrium and into adjacent areas. Enclos also provided this unique and structurally demanding feature, along with exterior entrances and stainless steel canopies. An extensive interior package including glass doors and glass railings rounded out the scope of work.



Figure 3 (above): The "Glass Beacon" lights the museum's entranceway.

Figure 4 (below): The "East Window" displays within the museum from the exterior. Images by Bilyana Dimitrova, courtesy of Virginia Museum of Fine Arts.



MORE WELCOMING

The tie between old and new building materiality is the Indiana limestone, which blends the original 1936 building facade with the recent expansion. The use of this material, however, necessitated highly crafted work processes in both shop and field to match the unique ashlar pattern of the stone between adjacent panels. The requirement resulted in most of the stone being handset in the field by Enclos installation crews.

VMFA’s expansion program also includes a 3.5-acre sculpture garden, outdoor plaza, and parking deck for 600 vehicles (partially hidden by the sculpture garden). The museum anticipates its membership to grow or surpass its all-time high of 20,000 members by 2012.

The museum expansion opened to the public on May 1, 2010, to universal acclaim. The VMFA renovation provides a dynamic, fresh public face, dramatically showcasing the artworks within. The dramatic, highly-glazed facades are integral to the achievements of this ambitious project.

REFERENCES

- [1] Mather, Rick. “Architect Rick Mather Q&A.” Virginia Museum of Fine Art. Web. March 8, 2011.
- [2] Nyerges, Alex. “Expansion at VMFA is Largest in Museum’s History.” Virginia Museum of Fine Arts. Web. April 10, 2010.



Figure 5 (right): Enclos provided an extensive interior package, including glass railings.

Figure 6 (below): The expansion relocates the museum’s entranceway to face the Boulevard. Images by Bilyana Dimitrova, courtesy of Virginia Museum of Fine Arts.



Figure 7: The three-story atrium’s skylights shower museum visitors with daylighting. Image by Travis Fullerton, courtesy of Virginia Museum of Fine Arts.