

# MOMENTUM



**Mueller**

Summer 2014

## SUSTAINABLE AND SERENE

LEED®-Gold Library Opens at Mount Vernon



Smith Library Photos by Robert Creamer

The MEP design at the Smith Library at Mount Vernon uses chilled water for cooling and dehumidification, with a dedicated stand-alone chilled water plant. Energy-efficient features also include a dedicated heat recovery chiller, an energy recovery ventilator, and a hot water heating system with condensing boilers.

With the opening of the Fred W. Smith National Library for the Study of George Washington at Mount Vernon, scholars have a new home for the study of the first President's books, manuscripts, maps, and letters. The 45,000-square-foot, three-level library features offices, meeting rooms, and climate-controlled spaces for special collections.

Set on 15 wooded acres across the street from Washington's estate along the Potomac River in Virginia, the library welcomes scholars of President Washington, the Founding Fathers, and Colonial America. A new 7,300-square-foot residence nearby offers two apartments and six guest suites for visiting scholars.

### Stringent Environmental Controls

Mueller Associates worked closely with the architectural firm of Ayers Saint Gross to design the LEED®-Gold facility, which involved strict environmental controls to protect the collections. The building has two rare-book rooms as well as a secure, oval-shaped vault that houses 103 volumes owned by George and Martha Washington.

"There are 68 temperature zones within the building," says Todd Garing, PE, LEED AP BD+C, principal-in-charge of the mechanical, electrical, and plumbing engineering (MEP) services for Mueller. "We incorporated three air handling systems into the design, including one system specifically dedicated to the special collection areas."

### Integrated Design

Garing also notes the challenge of working with limited space to route ductwork and piping. "Ayers Saint Gross designed the library to maximize ceiling

heights," he says. "There are two attic mechanical rooms, but they are tightly sloped. A Revit® 3-D model of the architecture, structure, and mechanical/electrical systems helped us coordinate and integrate the equipment into the attic spaces."

A reading room on the first floor is surrounded by two-story windows overlooking the serene landscape. The MEP design maintains a comfortable environment with demand-based controls for ventilation, temperature, and humidity; and a perimeter radiation system integrated into the architecture provides added comfort near the glass.

"Our goal was to reflect George Washington's ideals of character, order, balance, strength, precision, and elegance in the design of the buildings and grounds," says Adam Gross, FAIA, principal of Ayers Saint Gross. "With the help of our teammates from Mueller Associates, we were able to meet this goal."

*The design team collaborated to minimize disturbance to the library's wooded site. The building's air-cooled chiller was positioned on site but well away from the building.*





# PRESERVING THE FIRST FOLIOS

## Folger Shakespeare Library Upgrades Protect Shakespeare's Works



Great Hall, Folger Shakespeare Library. Photo by Carol Clayton.

After designing upgrades to enhance environmental controls in the Folger Shakespeare Library's lower-level vault area, Mueller engineered improvements for climate control in the Reading Room and Exhibition Hall. All of the projects have been completed on a compressed schedule to minimize the impact on visiting hours and operations.

The Folger Shakespeare Library in Washington, DC, is home to the world's largest collection of Shakespeare's works including 82 of the "First Folios," the first printing of the English writer's collected works. These rare

items, as well as other centuries-old books, manuscripts, playbills, and paintings, draw visitors and scholars from around the world to this renowned library and museum, set in a historic building on Capitol Hill.

With careful preservation of the collection in mind, the library has embarked upon a multi-phase improvement program that has included numerous upgrades to the building's air handling units. The circa-1932 building has mechanical/electrical systems that date to the 1970s, and a 2010 assessment by the Image Permanence Institute (IPI) suggested modifications to improve temperature and humidity control in the lower-level vault spaces, where the First Folios and other significant materials are maintained.

After preparing a detailed study that examined several options for dehumidification and air

conditioning, Mueller Associates designed the improvements, including a new air handling unit, pumps, piping, and control systems. "Humid summers and dry winters in Washington, DC, are challenging to the design," says Paul Czajkowski, lead mechanical engineer for the project. "The new air handling unit sub-cools the air to 35 degrees F to get the moisture out, using glycol supplied from the new chiller. The chiller was also specified and piped as a heat recovery chiller, so it has the potential to be much more sustainable and energy-efficient."

"The Folger Shakespeare Library is well known for its collection of Shakespearian works," says David Conine, the library's head of facilities. "Temperature and humidity control are key to maintaining valuable artifacts. We want to be sure to preserve the collection for future generations."

## LIBRARY RENOVATIONS AND NEW FACILITIES UNDERWAY

**Enoch Pratt Free Library:** Mueller Associates is teamed with Ayers Saint Gross and Beyer Blinder Belle for the comprehensive renovation of the 300,000-square-foot, circa-1933 Enoch Pratt Free Library in Baltimore. The modernization will expand library space, create a new wing for teens and young adults, restore the Central Hall, and incorporate all new building systems.

**Salisbury University Academic Commons:** At Salisbury University in Maryland, Mueller Associates is part of the design-build team of Gilbane Building Company, Ayers Saint Gross, and Sasaki Associates for

the development of a new four-story academic commons, event hall, and library. Construction recently began on the 220,000-square-foot building, which will house the collection of the Edward H. Nabb Research Center for Delmarva History and Culture. The resources include artifacts, maps, documents, and survey records that date to early explorers and the Colonial era.

**Georgetown University Lauinger Library:** At Georgetown University, Mueller Associates is working with Bowie Gridley Architects to renovate and expand the library's fifth-floor Special Collections Research Center. Environmental

control systems will protect rare and fragile resources, including collections from the original library dating to the 1830s.

**University of Baltimore Langsdale Library:** Mueller Associates has again teamed with Behnisch Architekten, design architect for the University of Baltimore's award-winning Angelos Law Center, to renovate the circa-1965 Langsdale Library. The comprehensive modernization of the 58,000-square-foot facility will remedy MEP system deficiencies; incorporate new technologies; and create flexible spaces for research, study, and library operations.

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