

MOMENTUM



Mueller

Winter 2013

RESTORATION COMPLETE AT NATIONAL ACADEMY OF SCIENCES

Listed on the U.S. National Register of Historic Places, the National Academy of Sciences headquarters is now a showcase for sustainable technology.



A comprehensive modernization of the National Academy of Sciences (NAS) headquarters on the National Mall in Washington, D.C., has successfully restored and expanded the organization's circa-1924 neo-classical building. Working with architect Quinn Evans Architects, Mueller Associates provided mechanical, electrical, and plumbing engineering services for the project, which incorporates an array of sustainable technologies and strategies.

Detailed Surveys

Building systems in the 190,000-square-foot landmark were outdated and inefficient, and the NAS sought a state-of-the-art approach for energy upgrades while ensuring the integrity of the historic architecture. According to Mueller Vice President Todd Garing, PE, LEED AP, the Revit® model developed early in the design process became a critical tool for the team. "The Revit model was

absolutely essential," Garing says. "The project involved a lot of detailed survey work, including many on-site investigations. The model then allowed us to route the systems without compromising historic building elements. The basement was especially challenging, as it is a tight space with very low ceilings. We needed to coordinate closely with the entire team."

Adding Comfort and Efficiency

Mueller introduced a number of innovative energy conservation measures to the NAS renovation. New equipment includes a 560-ton modular centrifugal water-cooled chiller, four cooling towers, and distribution pumps. Two steam converters with distribution pumps extract heat from high-pressure steam supplied by the U.S. General Services Administration. The building is now conditioned by 11 variable air volume central air-handling systems, with a new humidity control system protecting the academy's archive collection.

Energy-conserving features also include solar thermal domestic water heating, dedicated outside air systems for office areas, steam condensate heat recovery, and a dedicated heat recovery chiller.

Sustainable Display

The renovation incorporated all new electrical and flexible lighting systems with local control panels, occupancy sensors, and building automation system sequencing. Courtyard skylights feature a 29,000 kWh solar array of building-integrated photovoltaics that produce electricity and help reduce energy consumption. Data from the photovoltaics is featured on the building's display system.

"We are always pleased with Mueller's work," says Larry Barr, AIA, principal with Quinn Evans. "The integration of contemporary systems was challenging, yet the solutions developed by Mueller were elegant and graceful and had minimal impact on the building's historic fabric."



NEW SCIENCE & ENGINEERING BUILDING UNDERWAY AT THE UNIVERSITY OF DELAWARE



©Ayers Saint Gross



©AC Photo

“Our goal was to make sure the building serves the university well into the future, with systems that are robust, durable, and adaptable,” says Earl Purdue, AIA, LEED AP BD+C, principal with Ayers Saint Gross. “These systems will adjust well to future needs with the infrastructure capacity for expansion and replacement in the years ahead.”

Construction is nearing completion on the new Interdisciplinary Science & Engineering Building (ISEB) at the University of Delaware in Newark. Mueller Associates, which has completed numerous projects for the university over the past decade, is working with architect Ayers Saint Gross on the 200,000-square-foot classroom and laboratory building.

The L-shaped structure features instructional and research wings connected by a three-story bridge.

The facility will house classrooms, offices, instructional labs, microscopy/imaging suites, a materials lab, and a 9,000-square-foot clean room with Class 10,000/1,000/100 areas. The project also includes a new campus chilled water plant that will feed into the central campus chilled water distribution system.

“The building systems are designed to provide the university with maximum flexibility and redundancy for its research programs,” says Tom Syvertsen,

The University of Delaware’s new Interdisciplinary Science and Engineering Building is scheduled to open this spring.

PE, LEED AP, mechanical project manager for the Mueller team. “There are a lot of laboratory systems including acid waste and ventilation, compressed air, natural gas, lab vacuum, deionized water, and reverse osmosis. It is a highly technical project that has required close collaboration and careful systems integration using Revit.®”

NEW CAMPUS PROJECTS IN DESIGN

Mueller Associates, Inc.
Consulting Engineers

1401 S. Edgewood Street
Baltimore, Maryland 21227
410.646.4500
www.muellerassoc.com

Mueller Associates is currently working on two new university projects on Maryland campuses. At the University of Maryland in College Park, Mueller is teamed with Ayers Saint Gross for the design of the 95,800-square-foot Edward St. John Learning and Teaching Center. The academic building will accommodate 2,000

students in a variety of instructional settings with a centralized technology service unit. The new building will also house a Satellite Central Utility Building to provide chilled and hot water to four adjacent buildings.

Design is also about to begin on the New Center for Natural

Sciences, Mathematics & Nursing at Bowie State University. The building will provide 101,300 square feet of classroom and specialized science laboratory space for teaching and researching in biology, chemistry, and physics. Mueller is working with the architectural firm of Perkins+Will on the project.