

MOMENTUM

SPRING 2017

FOCUS ON INFRASTRUCTURE



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Supporting Campus Growth at Georgetown University

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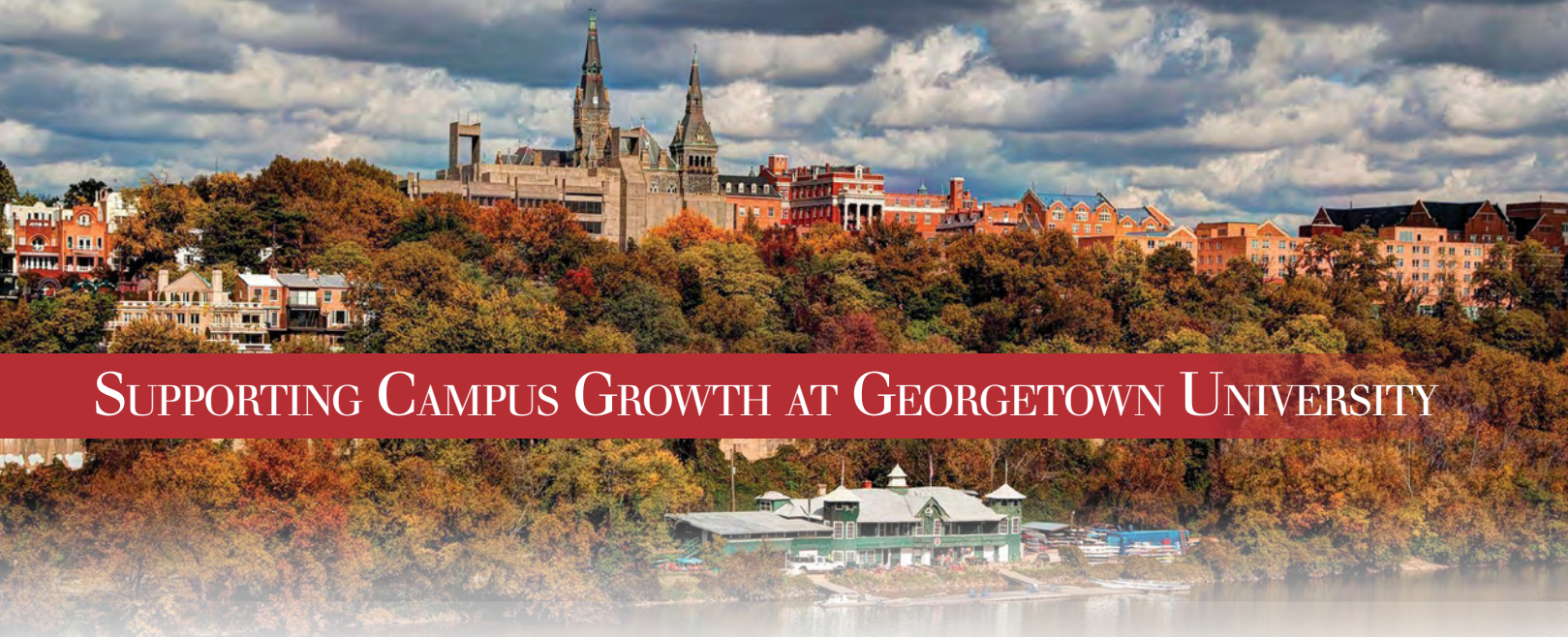
A 35-Year Partnership

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Trends in Campus Infrastructure



Mueller



SUPPORTING CAMPUS GROWTH AT GEORGETOWN UNIVERSITY

Established in 1789, Georgetown University is one of the world's leading academic and research institutions. The university's main and medical campuses, consisting of more than 50 buildings, are set on 104 acres in Washington, D.C.'s historic Georgetown neighborhood.

Over the past three decades, Mueller Associates has supported the university with planning and engineering to upgrade and expand its infrastructure to accommodate campus growth. That planning effort continues today, as university administrators prepare for the addition of a new MedStar Surgical Pavilion as well as new residences and student life facilities.

Long-Term Planning

Mueller began working with Georgetown University in 1982, providing MEP engineering for the Intercultural Center. After completing two additional projects on campus, Mueller was selected in 1994 for a central utility plant study to develop long-term recommendations. The study has been followed by numerous plant and related utility distribution projects over the past 20+ years.



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3,000-ton duplex chiller installed in 2005

In 1997, the first phase of the central plant renovation and expansion work was completed. This first phase added new cooling towers and pumps; converted a tower area into a plant building addition to house chilled water generating and electrical equipment; and added two 2,000-ton chillers, chilled water distribution and condenser water systems, five substations, and a new chilled water distribution piping system. The second central plant project was operational in 2005 and expanded plant capacity by an additional 4,000 tons via the addition of three new 3,000-ton chillers and the removal of two vintage chillers. The third central plant project, completed in 2009, added a 3,700-ton chiller.



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5,000-amp, 480-volt network switchgear installed in 2015

In 2010, Mueller prepared an electrical master utility plan, and later engineered a chilled water plant replacement and an electrical infrastructure replacement project, both on the east campus. With ongoing inspections and monitoring of equipment by plant personnel, a fourth central plant project became operational in 2014, adding a new deaerator and boiler feedwater system to replace equipment at the end of its useful life. In 2015, Mueller completed the fifth plant project, involving an ambitious central chilled water plant expansion that included a 3,700-ton duplex chiller addition, replacement of two 1,600-ton cooling towers with three 2,570-ton cooling towers, and a new 480-volt electrical distribution network.



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3,700-ton duplex chiller installed in 2015

Preparing for the Future

With major new development projected for the campus, Mueller recently completed a Master Utility Plan that will help the university prepare for the addition of the 475,000-square-foot MedStar Georgetown Hospital Surgical Pavilion, now in design, as well as other new construction. Supporting utilities for this significant expansion will be required in approximately two years. The plan addresses sustainable measures to improve and expand the capacity, flexibility, reliability, and capability of the central plant to serve the chilled water and steam requirements both in the near term as well as the long term. Initial implementation of the plan is set to begin early in 2017.

"Over the years, our challenge has been to replace and upgrade aging equipment within the footprint of the central plant," says Steven Gillis, PE, who oversees Mueller's work for Georgetown University. "The planning process requires vigilance to be sure that we're focusing on the most efficient solution for the university's needs. Energy efficiency, minimizing maintenance, and developing designs that avoid utility disruptions are key. We've been fortunate to collaborate with Georgetown's facilities staff over the past two decades to optimize campus infrastructure and help the university prepare for the future."

"Mueller Associates is my 'go-to' team for any utilities emergency or central plant expansion MEP needs," says Xavier I. Rivera Marzán, Director of Utilities & Energy Programs at Georgetown University. "We have worked together through four central plant expansions and campus electrical plans. Recently, we worked on our campus electric and mechanical standards as well as a utilities master plan that envisioned the long-term needs of the campus and a new hospital pavilion."

"Whether it's a regulatory question or a request for information during construction, Mueller provides a quick and professional response," Marzán says. "With Steve Gillis and Ken Rock on the team, it is as if we have an MEP subject matter expert on the Georgetown University staff. No request is too big or too small. They take the time to listen, research, and provide thorough professional insight and solutions. They are great problem-solvers and creative engineers with a forward-thinking approach. They have developed institutional knowledge that has proven effective and a time-saver."

A 35-Year Partnership Enhancing Academics and Campus Life

In addition to long-term support to improve campus infrastructure, Mueller Associates has provided MEP engineering studies and design for numerous renovation projects at Georgetown University. Projects currently underway include:

- Feasibility study for renovating the Lauinger Library's third-floor public spaces, including the lobby, reference areas, and the Pierce Reading Room. The project follows the recently completed renovation of the library's Special Collections Research Center, led by Bowie Gridley Architects (see photos below)
- Design for the renovation of the Copley Crypt Chapel and St. William Chapel, with Geier Brown Renfrow Architects.

For a complete list of Mueller Associates projects for Georgetown University, visit www.muellerassoc.com.



Trends in Campus Infrastructure

A Q&A with Mueller's Infrastructure Team

Mueller's team of specialists in campus infrastructure is led by Steven Gillis, PE and Kenneth Rock, PE. The team has completed large-scale infrastructure projects for Georgetown University, Wake Forest Baptist Medical Center, University of Maryland Baltimore County, Northrop Grumman Corporation, Coppin State University, and many other clients. The following Q&A explores their assessment of current trends in infrastructure planning and design.

Q *What are the priorities in working on major campus infrastructure improvement projects?*

A We believe in fully understanding the long-range plans and goals for each project, while focusing recommendations on systems with the best life cycle cost that meets available funds. This certainly includes overall energy-efficiency, but we also review the anticipated life of equipment, maintenance issues, and the ability to work within the available space constraints of a project. We look at the big picture—e.g. centralized versus decentralized HVAC service, and ways to improve efficiency by upgrading or servicing equipment—as well as the smallest of details, such as maintenance service valve locations and optimized access to equipment.

Q *When might a decentralized approach be appropriate?*

A A decentralized approach to heating and cooling might be an option for a new or expanding campus. You can incorporate a high-efficiency condensing hot water boiler system and high-efficiency chillers and save substantial pumping energy and piping infrastructure costs. The challenge is to determine the best solution that meets the long-range goals and budgets for a particular campus or project, considering the multiple pros and cons associated with a centralized versus decentralized plant approach.

Q *Your team focuses a lot on equipment maintenance. How important is that?*

A It's vital to the energy-efficiency mission, and it can be an important factor in cost savings. We're always looking to reduce energy consumption within the buildings and minimize the need to add generating and distribution equipment for heating and cooling systems. Diligence in maintaining cooling coils, pumps, and controls can play a significant role in keeping energy costs down and maximizing life cycle costs.

AWARD-WINNING DESIGN

Five of Mueller Associates' projects have recently been honored with major design awards from the AIA at the state and local level. Read more about the winning designs at www.muellerassoc.com.

1. Baltimore Museum of Art
2. Smith Library at Mount Vernon
3. Friends School of Baltimore Performing and Visual Arts Center
4. Chesapeake Shakespeare Theater
5. UMBC Performing Arts and Humanities Building



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