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Momentum

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Engineering a Productive Partnership

Mueller's 25-Year Relationship with Northrop Grumman Yields Creativity, Dependability, and Trust

Mueller's long-term client relationships have consistently resulted in cost-savings, innovative design solutions, and reliable infrastructure performance. *Momentum* explores two such relationships that have spanned many years: Northrop Grumman and Georgetown University.

In 1979, Mueller Associates was tasked with a complex assignment: mechanical/electrical engineering for a project called the E3A Test Area, an assembly and testing site for the U.S. Air Force's Airborne Warning and Control System (AWACS) program. The work was notable for several reasons— the test site provided an intensive engineering challenge, with custom air and water cooling systems, and involved close interaction with the client and the government throughout the design process to ensure that the systems would meet stringent requirements for the testing equipment.

Today, 25 years later, the project also represents an important milestone: the work on the E3A Test Area would ultimately become the first in a series of more than 500 projects completed by Mueller for Northrop Grumman, a *Fortune 500* defense industry giant. Mueller has supported Northrop Grumman's Electronic Systems sector and Westinghouse (acquired by Northrop Grumman in 1995) on a broad range of assignments at numerous sites throughout Maryland and as far away as Chihuahua, Mexico.

A Critical Knowledge of Buildings and Operations

Mueller's work for Northrop Grumman over the years has included such diverse projects as system design for manufacturing, assembly, and testing spaces; laboratory retrofits; clean room engineering; and comprehensive infrastructure upgrades. Many projects are designed to support the company's new and evolving programs or capital improvement needs, including such current work as new penthouse radar testing lab additions, and infrastructure upgrades that include expanding the central heating plant and the underground hot and chilled water utility distribution systems at the Advanced Technology Laboratory in Linthicum. Another current project involves the design of a new antenna test building featuring shielded construction and a 60-foot-high anechoic test chamber.

Although much of Mueller's work for Northrop Grumman has been completed as a prime consultant, the firm also occasionally works under subcontracts. As an example, Mueller recently provided engineering services for a 100,000-square-foot expansion to the Central Services Building (pictured below) near Baltimore-Washington International Airport. The $12-million design-build project was completed with Roy Kirby & Sons Inc. and CSD Architects.

"With over 500 projects to date, at more than two dozen facilities, we've seen a lot of interesting work from Northrop Grumman," says Gene Nerf, PE, president of Mueller,

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Photo: Alain Jaramillo

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who has managed the work since the days of the E3A Test Area. "Mueller has been a good fit because we know their sites and infrastructure systems, we understand their rigorous requirements, and we recognize the compressed timelines involved in getting their programs up and running."

Bob Stryjewski, manager of facilities engineering for Northrop Grumman, agrees that Mueller's working knowledge plays a key role in expediting the work: "I don't have to explain the types of systems—Mueller knows it and they have the documentation. Our schedules are critical—we're looking for a quick turn-around in engineering time, with a high degree of accuracy on the drawings. The fact that they know the facilities as well as they do is a big advantage to us. And at any one time, they may have as many as six projects underway—Mueller is able to provide a number of teams so that we can proceed with several projects simultaneously."

Nerf credits Northrop Grumman's facilities engineering team with a strong understanding of the complex challenges involved with many of the assignments. "They are willing to give each project the attention it requires to ensure that it's successful," he says. "We collaborate on every assignment and it often seems as if we are an extension of their group."

Georgetown University Prepares for Growth

Long-Term Infrastructure Solutions Conserve Budget, Optimize Efficiency

In 1994, facility executives at Georgetown University turned to Mueller Associates to study the aging central chiller plant on campus and develop a plan for near- and long-term infrastructure improvements. A decade later, with the second major phase of infrastructure construction nearing completion, Mueller's design strategies have successfully enhanced system capacity to support the university's ambitious program. Georgetown is now well positioned to accommodate campus expansion for many years to come.

"Mueller's expertise in the field and knowledge of Georgetown University have really helped us over the years—they are very thorough in their solutions," says Xavier I. Rivera, acting director of Georgetown's utilities department. "Their team has a strong ability to create engineering solutions that meet our needs in terms of schedule, budget, and in working with the existing plant site."

A Careful Fit

Georgetown University's prominent urban setting in northwest Washington, DC has often challenged campus planners to devise creative infill strategies, and infrastructure upgrades have proven to be no exception. Mueller's 1994 feasibility study proposed improvements to the existing central chilled water plant and increases to the system's refrigeration capacity.

"We advised removing the university's old cooling towers and converting the brick structure that housed them into a new plant addition that now accommodates the chilled water generating and electrical equipment," says Mueller Principal-in-Charge Gary Johnson. "We were able to work within the existing brick envelope, which was vital to the success of the project and to the overall phasing of the improvements."

The first phase of construction, completed by the Whiting-Turner Contracting Company in 1998, increased the plant's capacity to 12,000 tons. "Our approach enabled the university to continue to maintain much of their existing equipment for as long as possible," says Project Manager Steve Gillis. "Some of the equipment was dated, but it was still running well for the time being. We wanted to optimize their system and provide the most cost-efficient approach while utilizing the older equipment for standby or peak-sharing operations."

Continued Expansion

Georgetown University's continued growth has required additional infrastructure expansion, and in 2002, the university asked Mueller to design another plant upgrade. Whiting-Turner is nearing completion of this two-phased project, which will expand capacity by 4,000 tons.

Mueller's innovative approach optimized the existing footprint by adding three 3,000-ton chillers to replace two aging steam turbine chillers. "It was a complex design, but we were successful in working in three chillers along with all of the pumps and switchgear without expanding the plant's floor area or disrupting service to the campus," says Gillis.

Work under this latest phase also includes upgrades to the secondary distribution system and a new electrical distribution system that will improve the load balancing on the five available Pepco campus feeders.

"Steve Gillis and the Mueller team have really accommodated our needs. We have no additional land, and it's a challenge to keep everything running while upgrading our systems. Mueller has worked with this constraint very effectively. Overall, we have a much more efficient and reliable system."

—Xavier Rivera, Georgetown University

Mueller's recommendations for Georgetown University's campus infrastructure have included careful infill strategies on the historic grounds, earning the approval of the U.S. Commission of Fine Arts. The engineering solutions have substantially increased capacity without expanding the plant's footprint. Photo: Curtis Martin