

Preparing for a Century of Burials at Quantico National Cemetery

Quantico National Cemetery, the 33rd busiest national cemetery for interments, recently updated its plan for expansions within the next century.

With more than 1 million U.S. veterans living in the region surrounding Quantico National Cemetery in Triangle, Va., careful future planning is required to ensure the historic memorial site will be able to accommodate interments for the next several decades.

By John Martin, RLA

Established in 1983, Quantico National Cemetery (QNC) is one of 155 national cemeteries for U.S. veterans. The property serves as the final resting place for many veterans, military spouses, and children who resided in Washington, D.C., and Prince William County and Stafford County in Virginia.

Interments of veterans across the country have been slowly declining in recent years, but the current rate of burials at QNC—approximately 1,500 annually—is expected to continue for the next several decades. QNC is the 33rd busiest national cemetery for interments, according to the National Cemetery Administration, and is larger than historic Arlington National Cemetery, which is located just 32-mi north along Interstate 95.

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Contending and smoothing out the steep undulations of the existing terrain to no more that 3 percent slope around crypt sites presented the biggest challenge to designing the first phase of expansion.

In July 2018, the Norfolk District of the U.S. Army Corps of Engineers, on behalf of the National Cemetery Administration, contracted with a joint venture of Woolpert and RS&H to update the master plan for QNC. The updated master plan provides a roadmap for multiple phases of construction over the next 100 years to accommodate 118,150 interments on the 725-acre property. In addition, Woolpert and RS&H were retained to complete the construction documents for the first phase of expansion, which is currently underway and slated to be completed in early 2022.

Each phase of the expansion program (expected to occur approximately every 10 years, based on demand) will consist of creating space for 800 standard burials, 6,200 crypts, 1,500 in-ground cremains sites, and 1,500 columbaria. Work also includes supporting facilities and utilities, roads and storm drainage, site furnishings, and irrigation and landscaping for land development.

SITE TERRAIN CHALLENGES

Steep undulations of the existing, undisturbed terrain presented the biggest challenges to designing the first phase of expansion, which sits on approximately 15-acres. And since the expansion area discharges into environmentally sensitive areas, extra precautions will be necessary throughout the duration of construction work to ensure there are no negative impacts on any of the receiving jurisdictional wetlands or streams.

National Cemetery Administration restrictions called for slope grades of 10 percent or less overall, with no more than a 3 percent slope around crypt sites. Further restrictions called for grass near burial areas to be irrigated and to have no standing water. As a result, detention ponds to collect rainwater were not an option. In addition, the plan had to comply with water quality requirements set forth by the Virginia Department of Environmental Quality to minimize phosphorus and other nutrient loads in stormwater runoff into the nearby Chesapeake Bay watershed.

This relatively large plot of land was a challenge to design for, as it contained anywhere from a 10 percent to 50 percent slope. These precipitous terrain changes had to be



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smoothed out to form gentle slopes. Planning involved analyzing the site to identify areas within a predetermined sloped tolerance that would be buildable and balancing roadway elevations with sections to accommodate tie-ins. That analysis provided the information needed to determine where to install roadways to connect various sections of the cemetery, while also avoiding any natural streams and wetland areas. Bioretention facilities were utilized rather than detention ponds to manage stormwater runoff and comply with the requirement to have no standing water. Grass filter strips were used along roadways and bioretention basins near the drainage outlets to deal with stormwater runoff. These grassy areas will serve to help take out the nutrients before stormwater reaches the drainage canals where the bioretention basins are.

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The bioretention basins are basically heavily landscaped swales where the water flows through the brush and landscape features at a shallow slope to promote infiltration into the groundwater. However, these swales could not be located in the front area where the public accesses the interment sites, as this could cause muddy conditions for pedestrians and potential flooding after heavy rainfalls. The team used knowledge gained on similar federal construction projects where low-impact development features had been used to promote infiltration and maintain the predevelopment hydrology of the project area to the maximum extent technically feasible.

An example of previous lessons learned being put to use was evident in the automatic irrigation systems utilized to water grassy areas around interment sites. Such systems will be installed around crypts and gravesites to ensure the grass remains green throughout the year. These systems will help control costs and conserve water in the long run. Combined with the grading of the land into gentle slopes, the result will be a pleasant walking experience for those visiting the gravesites of their loved ones, and for others.

IN KEEPING WITH SOLEMNITY

Planning for the expansion at Quantico was unique in that it was a very challenging terrain to work with, but it was also important that the design maintained the character of the property and stayed true to its solemn nature. The essence of the cemetery can be found in the rolling hills and wooded areas that come up to the roads and separate the burial sites. Many who visit QNC do not know anyone who is buried there. The cemetery has become a place that tourists commonly visit to honor veterans and experience the quiet, reflective setting that pays respect to our nation's heroes.

The project team accomplished what it set out to do—work the built environment into the existing environment as much as possible, while also creating a welcoming and inviting space.

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A PERSONAL HONOR

For the team working on the expansion projects for QNC, it was a privilege and an honor. Many who worked on the master plan and construction have personal connections to the military through grandfathers, brothers, uncles, sisters, wives, and other family members. For Stephen Davis, National Cemetery Administration project manager for design and construction services and a U.S. Army veteran, putting the right plan in place was important to him for even more personal reasons.

"My wife and I are planning on being buried at Quantico," Davis said. "The cemetery is a sacred place where thousands of surviving families can visit the gravesites of their loved ones, pay their respects on holidays, and attend somber commemoration ceremonies. The master plan for QNC ensures that future interments can be accommodated there, while maintaining the natural aesthetics of the property with minimal impact to the environment."