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civil + structural ENGINEER

CELEBRATING THE DESIGNERS OF THE WORLD AROUND US

KEEPING FABRIC STRUCTURE MAINTENANCE TO A MINIMUM

LONDON'S CHANGING NOISE AND VIBRATION
CYBER ENGINEERING AT WEST POINT
REBUILDING PARADISE



In dry areas, timber retaining walls can be a good choice since they can hold back the soil just as well. They may not be ideal in humid areas since the timber would rot. They are the most inexpensive option though, costing about **\$15 per square foot**.

Do You Need a Structural Engineer?

We would strongly recommend that you consult a structural engineer especially if your property is on a steep-sloped area or an area with poor grading.

The complexity of some site works related to retaining wall construction may need the help of a professional. An engineer would come up with a functional wall design with structural strength in mind.

The technical analyses that would be conducted by the engineer include determining the height of the water table and determining the ground bearing capacity. This is done during a site investigation.

The engineer will help you determine the best retaining wall type, length, and height. He or she will assist you in installing the drainage pipes in the right place to keep water off the structural members.

After designing the wall, the structural engineer will carry out checks to ensure it is structurally sound. Overall stability will also be checked to make sure the structure is stable and safe.

Conclusion

Retaining walls function for more than just aesthetic purposes. They can play a major role in providing structural strength to your project. As you consider constructing one, keep in mind that your property may require extra protection from soil erosion or flooding in order to protect its foundations and other structural members.

Consult a professional if necessary, choose the right building material, and protect your property from structural failure.

ARMY CORPS HELPS USMA WEST POINT CADETS PREPARE FOR WHAT COMES NEXT

By JoAnne Castagna, Ed.D.

JAMES GAGLIANO HAS CARRIED a valuable lesson with him that he learned 37 years ago as a cadet at the U.S. Military Academy at West Point, New York.

"One of the most lasting and indelible images that I have retained since my graduation involves a crusty, old senior, non-commissioned officer and Vietnam War veteran who taught Military Science," said Gagliano.

"He cautioned us young cadets about the old adage--'generals always fight the last war'" This means that military strategy often focuses on what has happened rather than what will happen.

That warning has remained with me across my military and law enforcement careers. I learned that you have to anticipate what could happen and that imagination and daring are essential leader traits," said Gagliano, who has served as a counterterrorism operator in Afghanistan and as part of the Federal Bureau of Investigations' elite counterterror unit.

Like Gagliano, the academy is also anticipating what could happen next for its cadets.



Left: James A. Gagliano at his West Point Graduation in May 1987. Right: James A. Gagliano as New York Federal Bureau of Investigation Senior SWAT Team Leader in 2003. Photos: James A. Gagliano.

The academy is working with the U.S. Army Corps of Engineers, New York District to begin construction on a Cyber Engineering & Academic Center that will prepare cadets for what comes next.

When completed, the center will replace outdated facilities at the academy and will be used by instructors to provide cadets hands-on core courses in science, technology, engineering, and math. The structure will have large, open workspaces where cadets and faculty, from different disciplines, can collaborate. The space will also enable them to grapple with cutting-edge technology and equipment, and creatively and critically tackle complex problems.

The goal is to inspire the cadets, ignite innovation, and develop them into the technically-competent leaders that are needed for the battlefield of 2030.



Rendering of the Cyber Engineering and Academic Center. Photo: Design Firm Jacobs Ewing Cole.

The center is one of many structures the Army Corps of Engineers has constructed on the 200-year-old campus that is 50 miles north of New York City on the Hudson River.

The 136,000 square-foot world class academic facility will sit on five acres of land near the south entrance of the campus and other academic buildings and dormitories.

Silas Bowman, project manager, New York District, U.S. Army Corps of Engineers said, "The center will be the first thing new students and their families will see as they enter West Point. The center will be the gateway to the academic center of West Point and will stand out as a beacon of gothic beauty on the exterior and the forefront of technology on the inside."

Gagliano can appreciate a new center like this for the cadets, being an educator himself. He's an adjunct professor, a doctoral candidate, and educates the public as an on-air cable news subject-matter analyst on law enforcement and counter terrorism.

He said, "The 21st Century battlefield is complex and amorphous, which demands that our military leaders have a clear understanding of emergent threats and process intelligence in terms of how we can dominate the nebulous realm of asymmetrical warfare."

The center will have four floors, a multi-story underground parking garage, and a walkway connecting the center to an adjacent academic building.

It will house the engineering department with classrooms for instruction on civil, mechanical, electrical, and cyber engineering. The center will also have laboratories for instruction on topics including thermodynamics, biomechanics, weapons, photonics, telecom, computer, sensors, artificial intelligence, and environmental and energy sustainability.

The center will be used for cadets to receive training on robotics and drones and will have a Robotics High-Bay Lab to allow indoor drone flight and robotics use.

When visitors enter the center, they will be welcomed by a three-story light-filled atrium. The atrium will be the hub of the center and will be surrounded by glass walls, providing visitors a window view into the Robotics High-Bay Lab.

The center's atrium entrance and the entire fourth floor will serve as collaboration space. The

fourth floor – with views of the Hudson River - will provide collaboration space and a setting for notable speakers and dignitaries to give presentations and hold meetings with access to high tech audio-visual equipment.

Gagliano said, "I cannot help but see the parallels between the old Thayer riding hall – where cadets used to be trained in equine warfare – and the modern-day high-bay lab for drones and robotics testing. West Point must stay abreast of evolving technologies and training opportunities for the young men and women who will be leading our next generation of American warfighters.

Just as cadets like George Armstrong Custer (c/o 1861) trained in equine warfare – horsemanship and cavalry operations – in the footprint that is Thayer Hall during the Civil War era, cadets today are being exposed to robotics and drones, their own version of "saddle skills."

He added, "Successful interdiction "left of boom" requires cutting-edge technological innovations for data collection, intelligence gathering, and weapons delivery. Drones are the answer. They are as necessary and ubiquitous today as pack horses were during 19th century warfighting."

Left of boom refers to the moments before an explosion or attack – a period when you still have time to prepare and avert a crisis.

Part of being prepared for left of boom moments is being able to work with others across disciplines. Collaboration among cadets and faculty will be encouraged and the center will be designed to facilitate this.

To further encourage collaboration, a 30-foot wide pedestrian enclosed bridge with an exterior rooftop will connect the center to Mahan Hall and span over Thayer Walk, the main pedestrian access way on the campus.

This bridge will not only provide an iconic entrance to the academy, but will encourage collaboration between the buildings.



Rendering of the Cyber Engineering and Academic Center's Robotics High-Bay Lab. Photo: Design Firm Jacobs Ewing Cole.



Rendering of the Cyber Engineering and Academic Center's Robotics High-Bay Lab. Photo: Design Firm Jacobs Ewing Cole.

While the inside of the center will have the latest technology, the outside will pay respect to West Point's past.

Bowman said, "The center will have the same gray and black granite exterior as the other historic buildings on the campus and will reflect the historic military gothic revival architecture of West Point with arches, buttresses, and a granite façade, while the interior is high tech and modern."

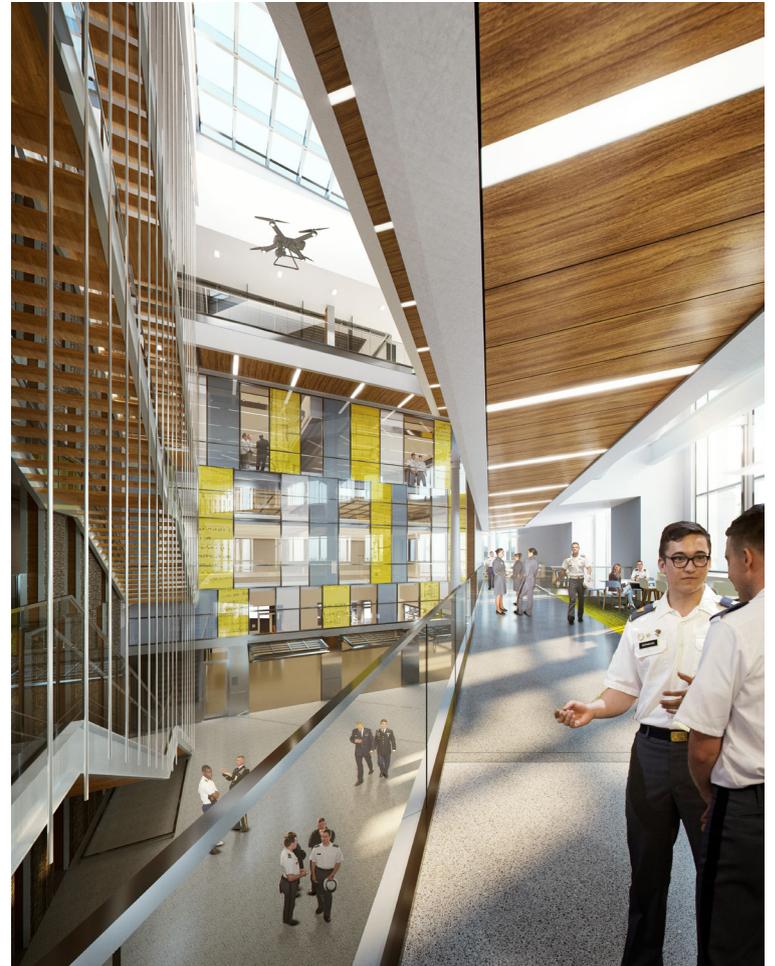
Modern also means the building will be energy-efficient and designed for Leadership in Energy and Environmental Design (LEED) Silver certified.

To meet this certification, the center will have high volume – low velocity fans in the Robotics High-Bay Lab and there will be solar panels on the roof.

Construction on the center is expected to be completed in the Summer of 2025.

The U.S. Army Corps of Engineers sees this new academic center as an important way to protect our Nation.

"The 21st Century battlefield is complex and demands that our cadets



Left: James A. Gagliano at his West Point Graduation in May 1987. Right: James A. Gagliano as New York Federal Bureau of Investigation Senior SWAT Team Leader in 2003. Photos: James A. Gagliano.

and future military leaders process emergent threats including cyber intelligence warfare. I believe this complex will continue to provide additional resources in helping them learn to safeguard our Nation's interests," said Lt. Gen. Scott Spellmon, 55th Chief of Engineers. "This modern academic facility will inspire collaboration across engineering disciplines in a way that can't be achieved in the current 1960s-style building space."

When Gagliano was asked why this center is important for United States citizens he said, "The modern battlefield, where military and civilian lives remain at stake and every action is consequential, is not the arena to test these systems and platforms. Make your mistakes and retreat to the drawing board during testing and train-ups. Or as Gen. Norman Schwarzkopf's adage goes – "The more you sweat in peace, the less you bleed in war."

DR. JOANNE CASTAGNA is a Public Affairs Specialist and Writer for the U.S. Army Corps of Engineers, New York District. She can be reached at joanne.castagna@usace.army.mil.