# CASE STUDY: STORMWATER MANAGEMENT ON THE GEORGIA TECH CAMPUS IN ATLANTA

QUICK FACTS:

**Project:**
GA Tech Campus

**Location:**
Atlanta, GA

**Notes:**

Georgia Tech's innovative storm water management system earned a coveted LEED Gold Certification from the U.S. Green Building Council for sustainable site development using environmental materials from local sources. The experience and its ultimate result not only achieved the university's goals for storm water retention, but set a new standard that's still being used for similar projects.

**Lightweight aggregate possesses a number of unique characteristics ideal for sustainable water treatment and promotion of plant growth. After nearly a decade, these properties continue to be useful for storm water management on the Georgia Tech campus near downtown Atlanta.**

"This is a project that I've watched over the years since installation," says Stephen Brooks principal of SOLIDAGO Design Solutions, Inc. "I have been impressed with the high survivability of the material as well as the significant growth rate, especially compared to areas that did not receive the engineered soil media. Given the long term success of this project, my firm uses this as a reference project to showcase the critical importance of regenerating a healthy soil condition post construction."

When construction on the Christopher W. Klaus Advanced Computing Building began nearly ten years ago, Georgia Tech and those involved in the site's development, set out to achieve a competitive environmental benchmark in storm water management. Today, the dense urban campus boasts a diverse ecological environment that preserves over 50% of the site as open space.

Brooks was vice-president of landscape architecture and urban planning firm Ecos Environmental Designs when this project was completed back in 2006. "It turned out to be a perfect fit," Brooks says. "We were able to achieve the needed infiltration rates while maintaining the right amount of moisture, combined with good organic content to support proper soil biology for ample plant life."

Brooks says the project presented an opportunity to use new solutions, embracing the university's challenge to replicate pre-development hydrology, preserve the site's native ecology, and emphasize open green space. "Through a collaborative effort with the Environmental Protection Agency Region 4 and the Georgia Department of Community Affairs, we partnered with ERTH Products to engineer a soil mix for a bioretention and landscape area.," says Brooks. "The goal was to capture and infiltrate or re-use storm water while minimizing run off on the site's dramatic grade change," he says.

Back in 2006, Georgia Tech's primary goal was to develop a retention system that would capture the first flush, or the first 1.2 inches, of each rain event and hold it on site as reclaimed irrigation water. The 414,000-square-foot building sits on a 6.2-acre site with a 30-foot grade change from the rear of the building down to the front. With a relatively small site and a large building, including a three-story, below-grade parking structure, the remaining open space was heavily impacted by construction activities. The soil quality was ideal for building support, but lacked the necessary infiltration for adequate storm water management.

The bioretention area of the site used 350 cubic yards of engineered soil, containing 40 percent clay topsoil, 20 percent sand, 20 percent ERTH food compost, and 20 percent expanded clay lightweight aggregate, manufactured through a rotary kiln process in which selectively mined clay is fired at 2000 degrees Fahrenheit.

"This process produces a consistent and predictable, high-quality ceramic aggregate that is structurally strong, physically stable, durable, environmentally inert, lightweight, and highly insulative," says Jeff Speck, of Trinity Lightweight. "As a filter medium, lightweight aggregate increases surface area and allows fast, free drainage, helps remove or reduce toxins, and absorbs nutrients for long-term, sustainable water treatment."

For site developers and storm water management professionals, the product improves soil's functionality and service life, saving material, labor and transportation costs.

Lightweight aggregates support the physical requirements needed for developing engineered soil mix, according to Scott King of ERTH Products. "This design allows for good surface infiltration of storm water, along with high groundwater holding capacity, while not creating a continuously saturated soil, which would be detrimental to plant life," King says. "Lightweight accomplishes this and provides long-term soil structure with pore space for air, water and nutrient exchange in the soil profile."

---

TRINITY LIGHTWEIGHT

Trinity Lightweight is the largest producer of rotary kiln expanded shale and clay lightweight aggregate in North America and is a leading supporter of research, independent testing and field studies to improve the manufacturing process and expand the beneficial uses of the product.

**www.trinitylightweight.com**