

Project:
City of Atlanta Urban Stream Restoration

Product:
180EX non-woven geotextile

Function:



Erosion Control



Filtration



Separation



Drainage



Reinforcement/
Stabilization



Case Study

Urban Stream Restoration: Standing Up to the Toughest Weather Conditions

Project

In 2008, the City of Atlanta faced a large problem: the single-lane road that provides the only entry point to its SWAT team training center was likely to be lost completely to erosion. Although the road had been lined with concrete barriers as a stop-gap measure, it was clear that more substantial action was required to save it.

Because the road is situated on a narrow tract of land between an in-remediation landfill and Intrenchment Creek, and across the street from a sewer treatment plant, Atlanta city architects saw an opportunity to incorporate a modern habitat restoration program into the roadway rehabilitation.

Project Design

Since the existing roadway could not be moved away from the creek due to the adjacent landfill, and in consideration of a steep slope which would not allow for bank sloping or armament, these architects, working closely with design engineering firm CH2M Hill, created a plan that called for the creation of a gabion wall to protect the roadway. The plans also established the need for natural stream channel structures to provide a habitat for wildlife.

Atlanta-based Site Engineering, Inc., which holds the City of Atlanta annual stream bank restoration contract, began construction on the project in August of 2008 by working downstream to upstream to create an 800-foot-long temporary bypass channel for Intrenchment Creek. Before transferring flow to the area, Site Engineering lined the newly-excavated area with a

180EX is engineered to provide:

- **Reinforcement/Stabilization** – The strong mechanical properties of Thrace geotextiles, which improve system strength, are ideal for reinforcing/stabilizing roads.
- **Filtration** – Thrace nonwovens work in equilibrium with the soil, allowing adequate liquid flow with limited soil loss, while avoiding pore clogging.
- **Erosion control** – Thrace nonwovens are often used to provide erosion control for slopes, shoreline protection and riverbank flood control.
- **Separation** – Inserting Thrace flexible and porous geotextiles between dissimilar earth materials increases the integrity and function of both materials.
- **Drainage** – Thrace's nonwovens allow for adequate liquid flow, and their hydraulic properties establish structural stability by controlling excess amounts of water during and after construction.

180EX benefits:

- **Fast, efficient installation** – High-grab tensile strength and excellent tear resistance make it easy to handle and install.
- **Increased service life** – Nonwoven structure provides excellent surface friction and built-in elongation.
- **Protection and endurance** – Polypropylene fibers have been UV-stabilized and are resistant to chemicals, mildew and insects commonly found in soil.

Thrace-LINQ civil nonwoven geotextiles are designed for high permittivity (water flow) and strength. These geotextiles also feature a fine pore structure, which allows the free flow of groundwater and in-place gas and liquid transmission while preventing fine soils from piping through or clogging the geotextile—eliminating the need for an expensive graded granular filter.

6-mil plastic liner. However, after just two weeks of rain and wear, the thin liner was already beginning to tear, threatening the success of the project.

In light of past positive experiences with the durability and effectiveness of the product, Site Engineering switched the lining to 180EX, a nonwoven polypropylene stable fiber geotextile from Thrace-LINQ. Engineers believed the 180EX product would provide the stabilization, filtration and erosion control necessary for this project.

Installed during a low-flow event one 10-foot section at a time, the geotextile would prove durable enough to withstand the toughest weather conditions. In fact, while the typical flow along Intrenchment Creek is around 7 CFS, equating to a worksite water depth of one to two feet, during one severe storm more than two inches of rain fell across Atlanta, and worksite water levels rose to more than 10 feet in about two hours' time. Despite these difficult conditions, the Thrace-LINQ 180EX geotextile performed effectively until flow was transferred back to the main channel five months later.

Once the stream flow was transferred back, Site Engineering began construction on the main Maccaferri gabion wall. Like many urban streams, the flow of Intrenchment Creek increases rapidly following any substantial storm event, so engineers needed to work quickly and provide significant moisture barriers. Once again, Site Engineering turned to Thrace-LINQ's 180EX product to get the job done.

The Result

The project was completed in approximately eight months and at \$35,000 below budget, and, thanks to the 35 feet gained from the streambank stabilization project, the SWAT facility's entrance has been fully restored to its original two lanes. Most importantly, the seriously incised stream channel has been transformed back into an aesthetically-pleasing, environmentally-stable waterway.



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