

## Case Study

**application** | Temporary Wrapped Face Walls  
**location** | Columbia, Maryland  
**product** | Mirafi® HP370

**job owner** | Archstone Communities  
**engineer** | CIS Engineering, Inc.  
**contractor** | Accu-Crete, Inc.

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

### THE CHALLENGE

Portions of the proposed Archstone Communities Apartment Complex were partially developed with flexible pavement parking facilities, while a majority of the site laid undeveloped, covered with mature growth trees, heavy underbrush and steep topographic relief. The planned site development indicated significant amounts of mass grading to achieve proposed grades for the building pads for approximately twenty clusters of residential apartments, a club house, swimming pool, two parking structures, numerous retaining walls, flexible pavement entrances and exits and limited at-grade parking. In order to facilitate the mass grading operations and retaining wall construction, temporary wrapped face MSE walls needed to be designed for wall heights of up to 4.6 meters (15 feet).

### THE DESIGN

The temporary MSE walls were designed to utilize Mirafi® HP370 woven geotextile as the primary reinforcement. Each layer was designed to incorporate a 0.5 meter (1.5 ft) face height and 1.2 meter (4 ft) wrap-back as well as full design primary reinforcement lengths. Maximum wall heights of up to 4.6 meters (15 ft) were designed to support construction traffic loads for a design life of 1 to 2 years. As a result of design traffic loads and planned site topography, Mirafi® HP370 was chosen as the primary geotextile reinforcement.

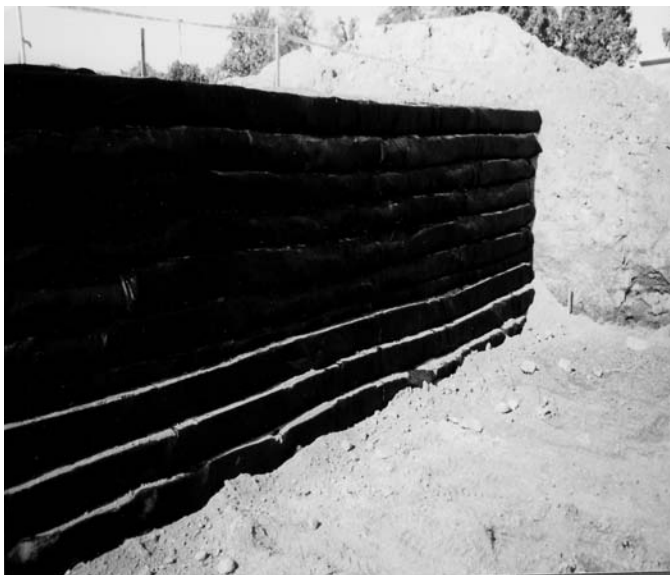
### THE CONSTRUCTION

Phased construction of the MSE walls began in September 2000 at the higher elevations of the site, then continued across the heart of the site, and was completed near the low end of the site. Construction of each wall began by excavating the existing soil to the required elevations for placement of the first layers of reinforcement. Mirafi® HP370 was placed from the back of the excavation, towards the front and staked to hold the materials in-place. Wooden

"L" shaped forms were placed at the outward boundaries of the wall footprints and were used to create the vertical faces of each lift. The primary reinforcement was placed up the back of the "L" brackets, with a flap of geotextile draped over the face for completion of the lift. Once the on-site fill materials were compacted into place over the primary reinforcement lengths, the reinforcement flap was wrapped-back over the top of the soil lift a minimum of 1.2 meters (4 ft). The construction processes were repeated for each lift of each temporary MSE wall until its design height was reached.

### THE PERFORMANCE

The use of temporary wrapped face MSE walls in this application aided in achieving the planned mass grading operations and retaining wall construction. The ability to complete site grading operations without staging around slope construction and construction of permanent retaining structures helped keep construction development on schedule. The flexible facade of the wrapped face MSE walls made possible to construct them with a near



vertical rise. The strength of Mirafi® HP370 made construction of the MSE walls possible under the anticipated construction traffic loads. These factors helped to make MSE walls the best project solution for the Archstone Communities at Columbia Town Center. In addition, the concrete retaining walls planned for placement in front of several of the MSE walls may be redesigned for lower lateral earth pressures due to the proximity of the MSE walls. The redesign is currently in engineering and will provide a cost savings in concrete and reinforcing materials originally required to construct the concrete retaining walls.



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365 South Holland Drive Tel 800 685 9990 Fax 706 693 4400  
Pendergrass, GA 30567 Tel 706 693 2226 www.mirafi.com



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