



Briarcliff Apartments

Kansas City, Missouri

APPLICATION: Installation of a retaining wall to reinforce a steep bluff. The bluff supports a parking lot and swimming pool at a master-planned apartment community.

THE CHALLENGE: Access to the installation site and the resulting impact on logistics were the primary challenges, according to Randy Grego, General Manager of BC Hardscapes. "There was no access from the front, and not a lot of area to store block and materials, so we brought them in as needed," Grego explained.

Mike Stein, P.E., with Shafer, Kline & Warren (SKW), added that the upper portion and lower portion of the wall were each situated on different limestone rock formations.



The corrosive resistant properties of Tensor Geogrids allowed the use of recycled concrete for the backfill material, providing overall project savings.

SITE CONDITIONS: SKW's Stein, who designed the wall, noted that the site had been a borrow-and-dump site, requiring removal of a mixture of shale materials and soil in the excavated area. BC Hardscapes' Grego added that the cut at the back of the reinforced zone was unstable, and intermittent sliding occurred. It was eventually overexcavated and treated with fly ash. In addition, an unusual amount of rainfall resulted in some erosion behind the wall during construction.

ALTERNATIVE SOLUTIONS: A retaining wall system incorporating a polyester geogrid had been originally specified. When the environmentally conscious owner/developer decided to use recycled concrete for the backfill, the wall designer approached Tensor International and switched to Mesa Systems, due to Tensor® Geogrid's ability to withstand the concrete's alkalinity.

THE SOLUTION: Because of the site access challenge, the wall was built from the top of the bluff down. Twenty thousand tons of recycled concrete that had been crushed and screened for reuse as gravel aggregate were purchased and brought to the site. The installer set up a conveyor station at the top of the bluff to position the aggregate behind the wall. Aggregate was loaded onto the conveyor belt, dropping into the reinforced zone. Bobcats were then used to spread the backfill.

A 4 in. thick concrete leveling pad was poured at the foot of the wall, and Mesa Units in a blend of almond, buff and gray colors were placed. To support the

PROJECT HIGHLIGHTS

Project:
Briarcliff Apartments

Location:
Kansas City, Missouri

Installation:
Spring - Fall 2010

Quantity:
28,164 square feet Mesa Standard Units; Maximum wall height 40 feet.

Owner/Developer:
Briarcliff Development Company, Inc.

Engineer/Wall Designer:
Shafer, Kline & Warren, Inc.

Installation Contractor:
BC Hardscapes, LLC

Materials Supplier:
Midwest Block & Brick, Inc.

residential development at the top of the bluff, 12 piers within the reinforced zone were installed in sections as the project was being completed. Grego credited the geogrid and Mesa Systems' positive mechanical connection as key to the project's success.

THE MESA SYSTEMS ADVANTAGE: Inert to chemical degradation, Tensar® UX® Geogrids feature polymer resins that successfully resist high pH soils. They join versatile, high-strength Mesa Units and a unique locking connector as the only single-source, fully integrated segmental retaining wall (SRW) system with a positive mechanical connection. That connection assures full load transfer from wall face to reinforcement, resulting in unsurpassed structural integrity, efficiency and performance.

ADDITIONAL INFORMATION AND SERVICES: Tensar International Corporation specializes in solutions for site development problems such as grade changes requiring retaining walls and poor soil conditions affecting the cost of roadways, parking lots and building structures. Our solutions use proprietary engineered systems and our own



Inert to chemical degradation, Tensar HDPE Geogrids are able to withstand the high alkalinity found in recycled concrete.

unique products, services and application technologies. Our products and technologies, backed by the most thorough quality assurance practices, are at the forefront of the industry. Highly adaptable, cost-effective and installation-friendly, they provide exceptional, long-term performance under the most demanding conditions. Our support services include site evaluation, design consulting and site construction assistance.

For innovative solutions to your engineering challenges, rely on the experience, resources and expertise that have set the industry standard for nearly three decades.



The random placement of three different colored Mesa Units gave the finished wall a unique appearance.

For more information on the Mesa Systems or other Tensar Systems, call 800-TENSAR-1, email info@tensarcorp.com or visit www.tensarcorp.com

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