HUESKER
REPORT

Rockwood Block Segmental Retaining Wall with

Fortrac® Geogrids

In the spring of 1999, a student housing facility was constructed on the campus of the University of North Carolina Charlotte (UNCC) located in Charlotte, NC. The project was necessary to accommodate increasing student enrollment and campus housing demands at UNCC. The retaining walls for this housing facility were designed for UNCC by Cowley Engineering, P.C. The General Contractor charged with facility construction was Cowper Construction Company, Inc of Cornelius, NC.

The project consisted of four retaining walls. Wall 1 was constructed to support a new road providing access from existing campus roads to the new housing facility. This fill area was constructed over very soft soils. The poor condition of existing soil coupled with the existence of wetlands around a creek created a need for a retaining wall. In contrast to wall one, walls two, three and four were constructed on soil providing adequate bearing capacity. Walls two, three and four were constructed to maintain safe distances from existing facilities while realigning existing roads.
Walls two and three were needed to preserve numerous tennis courts while wall four was needed to buffer a track and field facility.

The total length of the wall was approximately 900 feet (274 m), ranging in height from 2 to 14 feet (0.6 m - 4.3 m) and accounting for approximately 6,200 square feet (576 m^2) of wall face. Soil behind the retaining walls was reinforced with roughly 2,800 square yards (2340 m^2) of **Fortrac® 35/20-20** geogrid by HUESKER, Inc.

Design

Geotechnical evaluation of the site soils were used along with proposed wall heights and surcharge loadings to determine the extent of reinforcement required to construct the Rockwood Classic faced segmental retaining walls. In addition, water table and one hundred-year flood elevations were considered during the design process. Using these parameters, the walls were analyzed for external, internal and global stability. The analyses indicated that the soil behind the block face would require reinforcement lengths up to 10.5 feet (3.2 m) and design strengths reaching 1320 pounds per foot (19.3 kN/m). Following examination of the results, the retaining wall system selected to meet these

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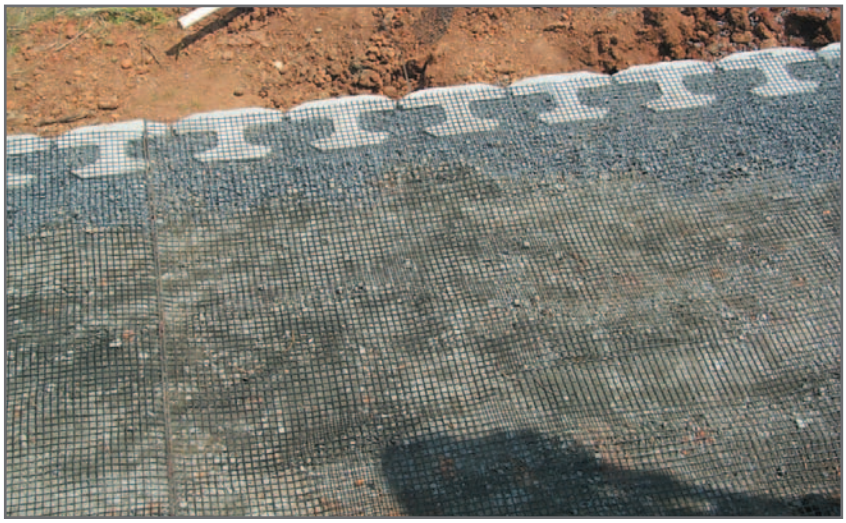
design conditions was the Rockwood Classic Unit with **Fortrac® 35/20-20** geogrid.



Construction

Construction of wall 1 required foundation soils be proofrolled and in some areas removed and replaced with adequate structural fill. Wall construction began after the foundation soils were improved for overall strength and stability. The wall facia and reinforced soils were placed in eight-inch lifts and compacted to 95 percent of standard Proctor Density. **Fortrac®** reinforcement was placed at the design elevations perpendicular to the wall face throughout construction of the wall.

Before constructing walls two, three and four, existing roads were demolished for realignment. After roads were cut to proposed elevations, adequate measures were taken to allow the daily access of affected sports facilities to continue. All four walls were installed following engineering specifications and standard segmental retaining wall construction techniques.

Conclusions

This project demonstrates the flexibility of a Rockwood Classic/Fortrac geogrid reinforced retaining wall. Construction of a new access road and rerouting of existing roads around the sporting facilities was made possible due to the geogrid reinforced segmental retaining wall. Once again, the Rockwood Classic / **Fortrac®** system proved cost effective and easy to construct.

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