

RE-ALIGNMENT OF CLEMSONVILLE ROAD UNION BRIDGE, MARYLAND, U.S.A.

Asphalt Pavement Reinforcement

Problem

One of the most important economic forces in Union Bridge is a major North American cement and construction materials company. To secure its future productivity in the town, the company sought to expand its limestone quarry; but to do so, it had to tackle the risks that quarry would cause for the town itself. An existing roadway would have to be realigned, and that meant that the roadway would now have to pass over a potential sinkhole zone. A solution was needed to mitigate potential damage. Karst terrain is present, meaning that there is some surface instability and a heightened risk of sinkhole development. The town is listed on the United States' National Register of Historic Places and karst terrain is present.

Solution

Maccaferri was approached by the engineering consulting firm Hydro-Geo Services, Inc. to help solve the problem. With many years of international experience in sinkhole mitigation, Maccaferri worked with the project team to identify what would be the best solution for effective, economical results and safe, long-term performance. The embankment design of the new roadway leg needed to account for the possible development of a 15-ft.- diameter sinkhole.

A double-layer system design was selected, one that utilized Maccaferri's Paralink® 1000 kN geogrid in longitudinal and transversal layers for embankment reinforcement.

Concrete blocks were added along the perimeter to provide a uniform wrap and to increase friction between the bottom grid and the underlying soil. The grid was covered by a one foot layer of crushed aggregate. To ensure the integrity of the overall design, measures needed to be prescribed to prevent an embankment-weakening mixing of fines and the primary aggregate layer. A woven geotextile separation fabric was installed over the crushed aggregate to prevent this soil migration.

TBH/White Pine Construction installed more than 20,800 sq. yd. of Paralink® 1000, the project was executed in a timely fashion, and the roadway opened (in early 2011). The quarry works can continue to flourish, and with them so too does Union Bridge. The town's physical and economic infrastructures have both been reinforced.

Client: WHITE PINE CONSTRUCTION - Installer

Designer / Consultant: HYDRO-GEO SERVICES / CLSI

Contractor: THOMAS, BENNETT, & HUNTER

Products used (Qty.)

- ParaLink 20,825 SY of
PARALINK® 1000

Date of construction: 10/2010 - 04/2011



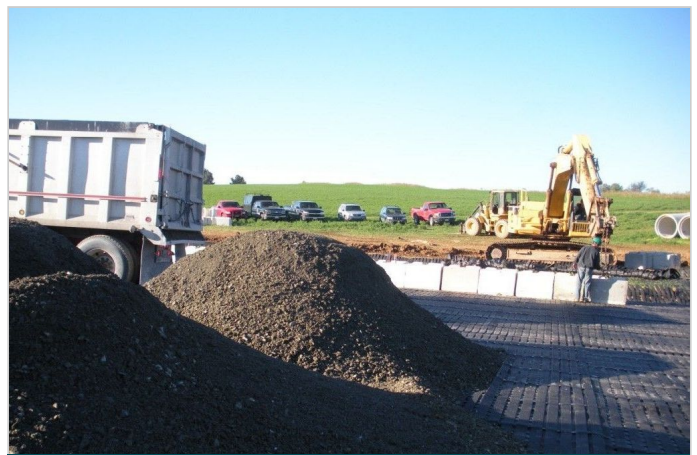
Before Construction



During construction - First layer installation



During construction - Second layer installation



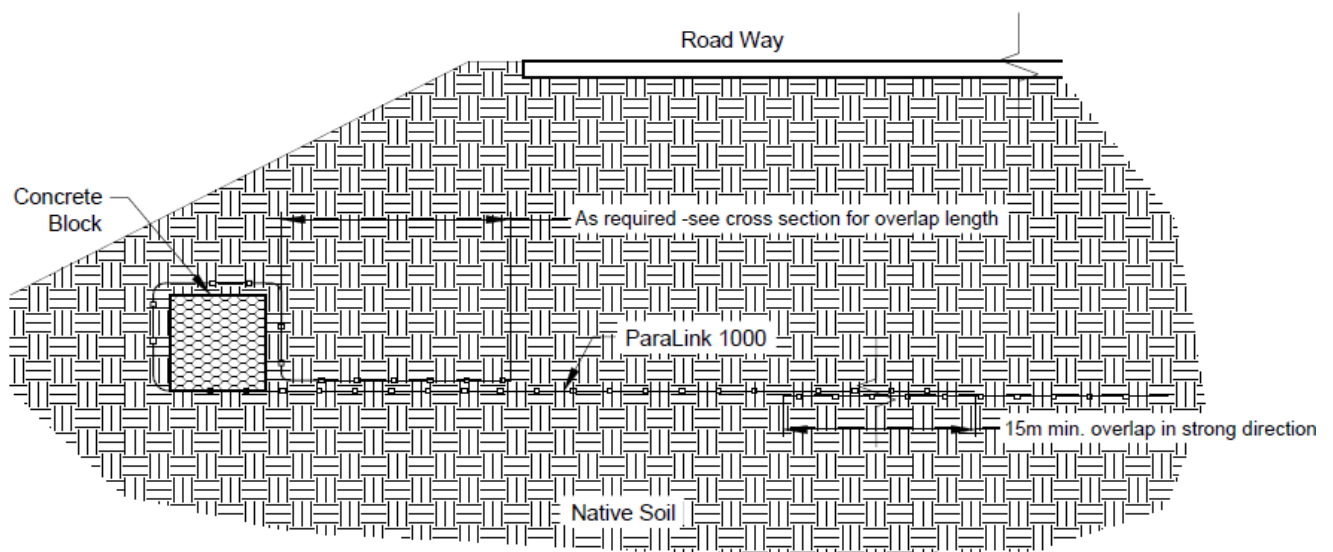
Block installation / Backfilling



Wrapping the Blocks - 15' minimum



ParaLink Completely Installed



TYPICAL CROSS SECTION

Typical Cross Section

Maccaferri Canada Ltd.
400 Collier MacMillan Dr. Unit B
Cambridge/ Ontario - N1R7H7 - Canada
Tel: 519-623-9990
E-mail: info.ca@maccaferri.com