Reinforced Soil Slope Repair in Cheshire

Cheshire



TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Slope Protection	**2021**	**Russell Homes**	**Chartrange**	**E3P**

PROD. RELATED
Geocells (), GeoMats ()

Challenge

In 2018, Maccaferri delivered a full design and supply solution for a ParaGrid reinforced soil slope for Russell Homes, supporting a residential development along Macclesfield Road in Holmes Chapel, Cheshire. The reinforced slope was successfully constructed in summer 2018 and formed a critical boundary retention system for the site.

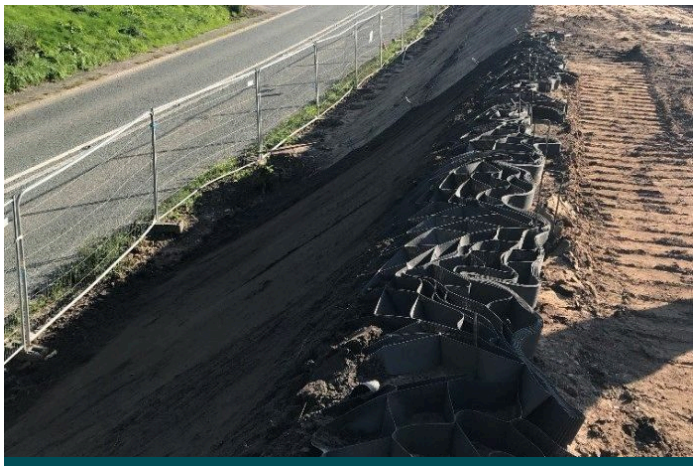
As part of the engineered design, robust erosion control measures were installed on the slope face. These included a 150 mm deep MacWeb cellular soil confinement system filled with topsoil and seeded with a wildflower mix to promote vegetation. To further enhance surface stability and prevent soil erosion, Enkamat 7010 erosion control matting was installed over the topsoil layer.

In February 2021, following a period of intense and prolonged rainfall, Russell Homes reported a localised failure where part of the topsoil layer had slipped down the slope towards the adjacent road. Maccaferri conducted a detailed site inspection to assess the issue.

The investigation confirmed that the ParaGrid reinforced soil structure remained stable and structurally sound. However, the failure was attributed to construction deviation from the original design specification. The topsoil layer had been installed at approximately 400 mm depth, exceeding the specified 150 mm by an additional 250 mm.

This excessive topsoil thickness created significant overburden on the slope face. During heavy rainfall, the surplus soil became saturated, dramatically increasing its weight. The original erosion control system, designed for the

specified depth, was not intended to resist this additional load. Consequently, the saturated overburden led to instability, resulting in the topsoil slipping down the slope.



ParaGrid reinforced slope with MacWeb erosion control in



Fully established wild flower vegetation in June 2019

Solution

Maccaferri was commissioned to design and implement an effective remedial solution to restore the slope and enhance long-term erosion control performance.

A comprehensive review of the original design, site conditions, and failure mechanism was undertaken. The agreed remediation strategy focused on reinstating the slope in accordance with the original engineered specification to ensure optimal performance.

The primary solution involved removing the excess 250 mm of topsoil from the slope face, reducing the depth back to the specified 150 mm. This step was critical in eliminating the additional load and restoring the slope to its designed stability parameters.

In areas where the MacWeb cellular confinement system had been damaged during the slip, replacement panels were installed. These were reinstated and filled with topsoil at the correct design depth to ensure uniformity and effective load distribution across the slope.

By restoring the slope to its intended design configuration and repairing the erosion control system, Maccaferri provided a reliable, long-term solution. The remedial works significantly reduced the risk of future topsoil slips, even under severe weather conditions, while maintaining the aesthetic and environmental benefits of the vegetated slope.



Slope face stripped of excess topsoil ahead of remedial works



MacWeb cellular containment system ahead of topsoil filling

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MacMat R Green and Gripple soil anchors

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