RAIL EMBANKMENT SLOPE STABILISATION COULSDON, SURREY, UNITED KINGDOM

Soil Nailing

Problem

Network Rail is investing substantial sums into the rail infrastructure of Kent and South East London. This is being spent on track upgrades, signalling, structures, stations and embankments.

Embankments can deteriorate if not maintained, especially in this era of changing climate conditions where the frequency of extreme weather events is increasing. When embankment deterioration occurs, the risk of landslips can increase.

The Netherne Drive section of the scheme required stabilisation.

Solution

A soil-nailed solution was designed by the project consulting engineer, Tony Gee. The project scope included 470 selfdrilling soil nails with lengths of 2.5m – 12m to stabilise the 50o slope. The vulnerable slope surface needed a containment mesh and protection from erosion. Slips in the surficial soil layers between the soil nails would be contained by the mesh; the punch resistance and stiffness of the mesh would transfer these loads back into the soil nails. The erosion control matting would provide immediate erosion protection to the soil slope, and offer a root reinforcement medium to the vulnerable vegetation as it establishes.

MacMat® R was proposed as it answers both project requirements in a single product; it features an easy-todeploy woven steel wire mesh with an integral 3D polymeric matrix, extruded onto the mesh during manufacture. When time is of the essence on construction projects, installing one product instead of two makes a saving in construction labour and plant time. It can also be safer for these projects on steep slopes as the time spent on the slope by workers is less.

The mesh in MacMat® R is the tried and tested 'Double Twist' hexagonal woven wire mesh. It is heavily galvanised with a zinc-aluminium alloy which is extruded with an additional PoliMac® coating. This gives the product greater life and resistance to installation damage and abrasion over the life of the installation compared to un-coated products. PoliMac® is unique to Maccaferri in that it offers far greater protection to the galvanised wire beneath than traditional PVC-coated products.

Client: Network Rail Designer / Consultant: Tony Gee & Partners Contractor: Bam Richies Products used (Qty.) Date of construction: 04/2021 - 04/2021 Google Maps Google Earth



MacMat[®] R used in conjunction with soil nails



Completed installation before vegetation establishment





Detail of roll to roll connection using DT Links



