



## Geocells used to prevent embankment erosion

Project: Slope Stabilisation & Drainage for M25  
Contractor: Highways Agency/DBFO Contractor  
Connect Plus  
Specifier: Skanska Balfour Beatty Joint Venture  
Product: TERRAM™ Geocell / TERRAM™ 1B1

Skanska Balfour Beatty Joint Venture started work on the widening of the M25 motorway between Junctions 16 to 23 and Junctions 27 to 30 in July 2009, as part of the Design Build Finance and Operate (DBFO) contract awarded by the Highways Agency to Connect Plus, a consortium comprising of Balfour Beatty, Skanska, Atkins, and Egis Road Operation UK.

The construction of the road widening involved the use of Terram Geocell as a cost-effective and sustainable solution to help prevent erosion of the motorway's steep embankments, ensuring maximum stability with minimal maintenance.

TERRAM Geocell, a honeycombed geocell system, was installed on the surface of the constructed embankment. Once secured in place with pins, the cells were filled with a layer of top soil which was then hydro-seeded. The strong and flexible cellular structure of Geocell is specifically designed to prevent the movement of the top soil layer, whilst its superior permeability supports the free flow of water and nutrients, promoting a healthy soil environment which encourages the growth of vegetation.

Supporting the formation and growth of vegetation using a Geocell solution not only ensures that the construction blends into the surrounding environment with minimal ecological impact, it is also integral in maximising stability, with the supported vegetation cover acting as natural anchor and protecting the embankment surface from weather erosion

To date, approximately 1,800m<sup>2</sup> of TERRAM Geocell has been installed along the 6 metre high embankments as part of the Junction 27 to 30 widening scheme.

TERRAM 1B1 drainage geocomposite was used as drainage separation between existing ground and where PFA and glass sand was used as back fill to smooth faced retaining wall.

TERRAM's 1B1 drainage geocomposite directly replaces the use of granular fill found in conventional drainage designs. Drainage solutions which use granular fill are costly and cause damage to the environment, as stone has to be quarried and transported to site and excavated materials often end up as landfill.

TERRAM 1B1 consists of an extruded polymer grid core with a non woven geotextile filter thermally bonded on both sides. The core acts a vertical channel, directing excess ground water down into the main drainage system, while the filters allow the water to pass into the core but prevent soil from washing through.

