

Tensar TriAx™ during installation

BENEFITS TO CLIENT

TriAx: Revolutionary geogrid in value engineering solution

THE PROBLEM

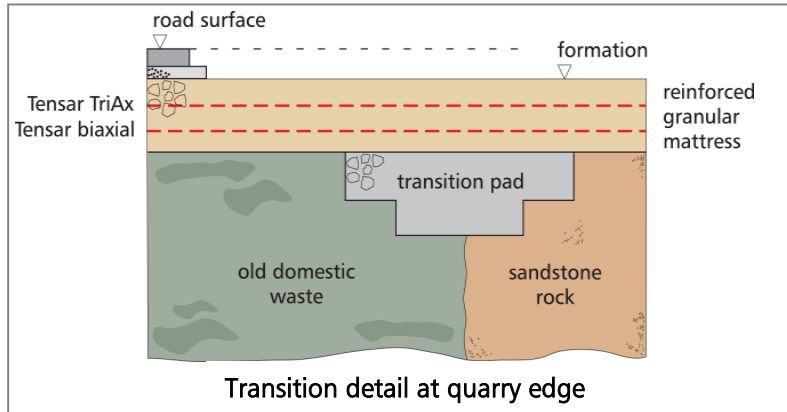
The improvement work to the highway involved the remodelling of the junction with a side road. The new layout required that the side road should pass over Melsonby Tip, the site of a former quarry that had been filled with domestic wastes. This meant that not only did the waste material need capping over but also there was a concern about differential settlement – particularly at the edge of the quarry wall where the road transitioned from a firm to a compressible subgrade.

THE SOLUTION

A reinforced granular mattress, comprising multi-layer geogrids and good quality aggregate was installed over the waste. Then a transition detail was devised for the quarry edge. The opportunity was taken to introduce a Tensar TriAx geogrid and take advantage of the extra benefits the geogrid brings to stabilisation applications.

PROJECT DESCRIPTION

In this Design & Build contract, the contractor and his designer conducted value-engineering workshops in order to meet the incentives and address the target costs that are part of the innovations that the Highways Agency has introduced into its contracts. One subject was how to engineer the requirement for a road to pass over the Melsonby waste disposal site. Traditionally, removing the waste and replacing with engineering fill would have sufficed. Environmental legislation and taxes now mean that this approach is no longer viable and the reinforced granular mattress solution introduced Tensor TriAx geogrids into one of its first projects.



The benefits that Tensor TriAx geogrids brought to this project, compared with traditional geogrids, are derived from its radial stiffness and improved interlock with the granular fill. This means that the performance of a TriAx geogrid is available in any direction of strain. For this project, it means:

1. The potential for differential settlement emanating from the irregular interface between the waste and the former quarry wall could be better controlled however the strains and distress might propagate towards the asphaltic road surfacing.
2. The in-service traffic loading will be quite random around the curvature of the junction and the geogrid will be lined-up effectively to respond to the loading however it arrives into the lower layers of the pavement.

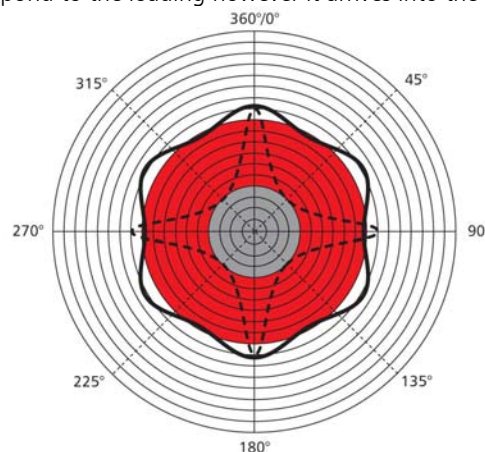
TENSILE STIFFNESS FROM WIDE WIDTH TENSILE TEST

Tensor biaxial geogrid stiffness -----

Tensor TriAx geogrid stiffness —————

Minimum Tensor biaxial geogrid stiffness

Minimum Tensor TriAx geogrid stiffness



The polar diagram compares tensile stiffness of Tensor biaxial and TriAx geogrids through 360°, with TriAx exhibiting near isotropic properties.

CONTRACT DETAILS

Specified by:
Atkins
Stockton-on-Tees

Contractor:
Balfour Beatty
Newcastle-upon-Tyne

Client:
Highways Agency
Leeds



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