



Tensor InterAx geocomposite being installed to stabilise the haul road adjacent to the rail track.



Roads & Highways
Nº 486

Peels Pit Haul Road Transpennine Route Upgrade

 Huddersfield, UK

CONSTRUCTED IN 2023

Benefits

An estimated 46% reduction in construction cost
by significantly reducing the volume of imported 6F2 aggregate required

Approximately 3 days savings in construction time
equal to 46% of the total by reducing the thickness of material to be placed and compacted

An estimated 52% reduction in carbon emissions
- approximately 20,000kg CO₂e

Cutting cost but not performance for this critical haul road

Faced with importing a large volume of fill to construct a haul road to serve the track works, the Contractor, BAM, sought a value-engineered alternative design for the access. The works formed part of the Transpennine Route Upgrade near Huddersfield. BAM approached Tensor for their proposal for an alternative design for the haul road. Using Tensor+ software and Tensor InterAx stabilisation geogrid, a solution was found that saved an estimated 46% of the construction cost.

CLIENT'S CHALLENGE

Principal Contractor BAM needed to reduce the volume of imported aggregate required for construction of a haul road to access the track works, without reducing load-carrying capacity. This required a re-design of the haul road to achieve a thinner construction profile, without reducing performance or increasing maintenance requirements. The subgrade conditions also gave potential for contamination and weakening of the aggregate layer under the action of traffic.

TENSOR SOLUTION

Tensor proposed the use of its Tensor+ software and the LAAMS methodology to design a Mechanically Stabilised Layer (MSL) incorporating Tensor InterAx geogrid. Using this method, BAM's design consultants were able to reduce the road thickness by over 50%. A Tensor InterAx geocomposite was selected for the MSL. This incorporates a geotextile component to improve separation and reduce subgrade contamination of the aggregate.



The thickness of imported aggregate needed from the haul road was reduced by 50% by incorporating Tensor InterAx geogrid.

PROJECT BACKGROUND

The Transpennine Route Upgrade (TRU) is a major, multi-billion-pound programme of railway improvements intended to improve journey times between Manchester, Huddersfield, Leeds, and York.

As part of this larger project, Principal Contractor, BAM needed to construct a haul road to service part of the track works near Deighton, Huddersfield. Initial design for the haul road required a large volume of imported 6F2 aggregate to carry the construction traffic. BAM wanted to reduce the volume of imported material that needed to be hauled to site and compacted in place.

Following an approach by BAM, Tensor proposed that a Mechanically Stabilised Layer (MSL) incorporating Tensor InterAx geogrid, designed using the LAAMS methodology, would offer substantial reductions in road thickness. BAM instructed their design consultants, Crouch Waterfall, to investigate this option. Crouch Waterfall used the LAAMS module within Tensor+ software to value-engineer the design.

The resulting MSL design incorporated a single layer of Tensor InterAx with a geotextile separator and was 50% thinner than the initial design. Following a proposal by Tensor, the final design adopted Tensor InterAx geocomposite that combines the Tensor InterAx geogrid and geotextile separator in the one product. This simplified installation.

Client

Network Rail
- Transpennine Route Upgrade

Principal Contractor

BAM

Design Engineers

Crouch Waterfall

“It is good to use, minimises the amount of stone we require, and it is holding up well on the whole, despite having Hydremas and dumpers running down it in all weather.”

It seems to have given good support at the bottom of the ramp where we have experienced some pooling of water, but the aggregate and geogrid have maintained integrity.”

James Barnes

Section Engineer
BAM
Transpennine Route Upgrade West