



Tensar®

ROADS AND PLATFORMS

A Tensar geocomposite mechanically stabilised the capping layer, enabling construction of the temporary access road and forming the foundation for the permanent road pavement.

TriAx makes the cut in Perth

A TriAx geocomposite enabled construction of a road across highly saturated, and very weak, ground to provide access to a new community being built on the outskirts of Perth, Scotland.

CLIENT'S CHALLENGE

A section of the road between the A85 and Bertha Park runs in a cutting through an area of weak soils, with groundwater lying above road level. Construction of a conventional capping layer, forming the foundation of the temporary access road and the permanent pavement, was unsuccessful, so an alternative was needed.

TENSAR SOLUTION

Field trials demonstrated that an aggregate layer, mechanically stabilised by incorporating a geocomposite of TriAx geogrid backed with a non-woven geotextile, combined with a new drainage regime, would overcome the extremely challenging ground and groundwater conditions.

This layer provided sufficient support to carry light construction traffic and also allowed the permanent road to be built above without any issues.

Bertha Cut

Subgrade stabilisation

📍 Perth, Scotland

BENEFITS

Enabling road construction

over weak soils, with average CBR values of less than 0.5%

Delivering a technically-viable alternative

to conventional approaches

REF TEN396



At Bertha Cut, the new link road passes through an area of very weak soils with groundwater level higher than the road.

PROJECT BACKGROUND

Phase 1 of the Perth Transport Futures Project provided a link road from the A85, over the A9 and River Almond to Bertha Park, a new community being built on the edge of the city. Perth & Kinross Council awarded the £35M contract to Balfour Beatty Civil Engineering in 2015.

Ground conditions at Bertha Cut, where the road passed through higher ground, were problematic. Groundwater levels were high – in places above the proposed road level – and the route was underlain by weak laminated clays, silts and fine sands, with an average CBR of less than 0.5%.

Attempts to lay a capping layer of coarse aggregate had been unsuccessful – elevated pore water pressures resulted in softening and heave as the ground beneath was compacted – so an alternative solution was needed.

Tensar worked with Balfour Beatty and scheme designer CH2M (now Jacobs) to develop an alternative design for the capping layer that would enable construction of both a temporary access road and the permanent link road pavement.

A number of trial panels were built, using varying thicknesses and types of aggregate. Some panels incorporated Tensar TriAx geogrids and geocomposites to form mechanically stabilised layers, with the aim of improving the load bearing properties of the capping layer.

Trials demonstrated that a very well-graded glacial gravel aggregate, mechanically stabilised with a TriAx geogrid backed with a non-woven geotextile – was able to meet the target CBR value of 10% in a matter of days.

Drainage was also installed to control groundwater and construction of the final pavement was delayed for as long as possible to allow for consolidation. So, while light construction vehicles were able to use the unsurfaced road, it was 10 months before the subbase and surfacing was laid. The road opened in Summer 2018.

Client:

Perth and Kinross Council

Contractor:

Balfour Beatty

Consultant:

CH2M

“Tensar provided an immediate response to our issue. By attending our team risk meeting on site a solution was quickly developed. Tensar remained involved and engaged throughout the implemented construction solution. First class service.”

Stewart Ramsay

Perth & Kinross Council

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