



A mechanically stabilised layer incorporating Tensor InterAx geogrid provided support for the largest ever abnormal load in Poland

Roads and Platforms N° 484

Temporary road for abnormal load - A2 to DW424

 Opole Province, Poland

CONSTRUCTED IN 2022

Benefits

A reliable safe road foundation for this exceptionally high-value load

Lower construction costs and 20% reduced materials transportation compared to non-stabilised alternatives

Removable after use to enable reinstatement of the original highway profile

A temporary road solution for Poland's largest ever abnormal load

Transportation of the largest ever abnormal load on Poland's road network necessitated the building of a temporary link between the A2 and DW424 roads. The structural road foundation for this high value load comprised a mechanically stabilised layer incorporating Tensor InterAx geogrid.

CLIENT'S CHALLENGE

Relocation of a large tunnel boring machine (4,000 tonne when fully assembled) required 14 specialist transporters. Near Malnia, a temporary link road across farmland was needed to allow the vehicles to move smoothly from the DW424 onto the A2 motorway. The road's designer had to guarantee a maximum surface rut depth of 25mm, for safe transport operations. Construction had to be quick, safe and economical.

TENSAR SOLUTION

The objective was to design the lowest cost road that would safely carry the in-service loading from multiple passes of the specialist transporters, while not exceeding the surface rutting criteria. The solution was a 5cm stone mastic asphalt surface supported on a mechanically stabilised aggregate layer incorporating Tensor InterAx geogrid.



The 214m long link road was designed for the 14 specialist transporters carrying components of the 4,000 tonne tunnel boring ma-

PROJECT BACKGROUND

Mostostal Warszawa, principal contractor for the S19 expressway, between Rzeszów Południe and Babica in the Subcarpathian Province of Poland, faced a considerable logistical challenge. The transportation of a 112-m-long, 4,000-tonne tunnel boring machine (TBM), from Sapin to the S19 expressway site, where it was needed to bore a tunnel of over 2 km in length.

Large components of the disassembled machine were to be moved on 14 specialist transporter vehicles using the Polish road network. This would be the largest abnormal load to have ever been moved over highways in Poland. In one location, near Malnia in the Opole Province, the existing road layout was difficult to negotiate. The solution was to design and construct a temporary link road between the A4 and DW424.

To ensure safe operation of the heavy load transporters, surface rutting would need to be limited to a maximum 25mm.

Consulting engineers Mostopole sp. z o. o., based in Opole, were tasked with design of the temporary road. The solution needed to fulfil the stringent requirements and then be completely removed after use. They sought support from Tensor, having developed confidence in Tensor's design capabilities from previous projects over many years.

The subgrade was a sandy loam with a minimum CBR around 4% and undrained shear strength (Su) around 100kPa.

The solution comprised a layer of C50/30 aggregate, incorporating Tensor InterAx geogrid. The stabilisation geogrid interlocks with and confines the aggregate particles, increasing bearing capacity of the layer. This mechanically stabilised layer supported a 5 cm SMA surfacing course to complete the pavement.

This relatively thin pavement structure enabled safe passage of the massive tunnel boring machine (TBM) components.

After successfully completing its task, the road was completely removed in December 2022.

Client

Mostostal Warszawa

Contractor

Mostostal Warszawa

Consultant

Mostopole sp. z o. o.

“Although this was not a large project it was still a challenge to meet the design requirements, and very satisfying to be able to offer a solution that proved to be successful and saved our client both time and money”

Rafal Skowronek

Area Civil Engineer
Tensor, A Division of CMC