Tensar TriAx geogrid was used to mechanically stabilise the sub-ballast layer, providing a stable foundation for the upgraded railway line.

Tensar geogrids support European rail

Tensar geogrids played a key role in upgrading the Frontieră-Curtici-Simeria railway in Romania, enabling it to carry trains running at 160km/h, as part of the Pan-European Railway Corridor Line IV project.

CLIENT'S CHALLENGE

Three sections of line were underlain by weak and highly saturated ground, which was unsuitable for meeting the increased train speeds and traffic loads. A high-performing and economical solution was needed to minimise excavation of the weak subgrade and replacement with sub-ballast, to provide a stable foundation for the upgraded track.

TENSAR SOLUTION

Tensar TriAx TX150 geogrid was used to mechanically stabilise the sub-ballast, improving the track's performance and reducing long-term settlement and traffic-induced degradation. The solution meant a thinner sub-ballast layer could be placed, compared with a non-stabilised layer, reducing excavation and saving time and cost.

Rehabilitation of Curtici-Simeria Frontier railway

Ballast stabilisation

Vest Region, Romania

BENEFITS

1.5M m²
of Tensar geogrid installed to increase line speeds to 160km/h

Reducing
the rate of ballast settlement and traffic-induced degradation

Cutting
excavation and material use, saving time and cost

Increasing
time between maintenance events

REF TEN389

Tensar TriAx geogrid interlocks with granular material under trafficking load, confining lateral movement of the particles, enabling it to support far higher loads than thicker, non-stabilised layers.

PROJECT BACKGROUND

Romania's Frontieră-Curtici-Simeria railway forms part of the Pan-European Railway Corridor Line IV. A joint venture of Astaldi, FCC and Convensa won the contract to upgrade the line to train speeds of 160km/h.

Three sections of the route were underlain by weak subgrade and high groundwater levels, which meant the track was not suitable for higher design speeds. This soil had to be removed and replaced with a sub-ballast layer (comprising recycled ballast) to create a stable foundation capable of supporting the increased traffic loads from faster-running trains.

It was decided to incorporate Tensar TriAx TX150 geogrid in the sub-ballast to form a mechanically stabilised layer. TriAx interlocks with granular material under trafficking load, confining lateral movement of the particles, enabling it to support far higher loads than thicker, non-stabilised layers. The solution will also slow the rate of long term track settlement and substantially reduce maintenance.

Having a thinner, yet high-performing sub-ballast layer meant less subgrade needed to be excavated, saving construction time and cost. Additionally, a non-woven geotextile layer was placed beneath the sub-ballast to prevent upward movement of subgrade fines material under repeated train loading.

Tensar's Romanian partner, Iridex Group Plastic, supplied about 1.5M m^2 of TriAx on three sections of the line between Cap Y Barzava and Cap Y Ilteu and between Gurasada and Simeria.

Contractor:
JV Astaldi-FCC-Salcef-Thales (Lot 2A and Lot 2B) and JV FCC-Astaldi-Convensa (Lot 3)

Client:
CFR SA, the Romanian National Railways Company

Tensar Partner:
Iridex Group Plastic

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