The new bridge carries the Great Yorkshire Way over the East Coast Mainline north of Rossington.

Strong and lighter weight

Tensar's design of reinforced earth structures and wing walls helped reduce construction costs of a new road bridge over a mainline railway.

Great Yorkshire Way

Reinforced
soil retaining wall

Doncaster, UK

CLIENT'S CHALLENGE

Doncaster Metropolitan Borough Council wanted to reduce the cost of a new bridge carrying the Great Yorkshire Way over the East Coast Mainline. It chose vibro stone columns, rather than more expensive piles, to support the bridge's approach embankments with only the abutments requiring piling. This meant the reinforced earth structures had to be lightweight but have sufficient capacity to support the road above.

TENSAR SOLUTION

The abutment wing walls were built using the TensarTech® TW1 modular block retaining wall system, incorporating uniaxial geogrid to reinforce the lightweight fill behind. This economical solution helped reduced the overall bearing pressure of the reinforced earth structure, while meeting the loading requirements.

BENEFITS

Cost-effective
retaining wall solution

Fast construction
without the need for specialist plant and labour

Lightweight fill
enabling the use of lightweight fill to cope with weak ground

The reinforced earth structures reduced earth pressure behind the bridge abutments, while also reducing the load imposed on the treated ground.

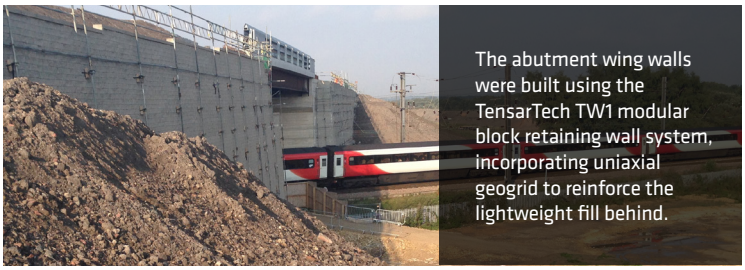
PROJECT BACKGROUND

The Great Yorkshire Way, a new road south of Doncaster between the M18 and Robin Hood Airport, crosses the East Coast Mainline on a new bridge just north of Rossington.

Doncaster Metropolitan Borough Council chose vibro stone columns, instead of more expensive piles, to improve the bearing capacity of the weak ground beneath the approach embankments.

As a result, lightweight fill had to be used to form the earth structures and the loads imposed by the retaining walls had to be kept to a minimum. So, while the abutments were built using cast insitu concrete, Tensar proposed using its TensarTech® TW1 modular block faced retaining wall to form the 59m long, up to 12.8m high wing walls, with thrust relief directly behind the reinforced concrete abutments to eliminate any horizontal thrust.

The precast concrete facing blocks were connected to Tensar uniaxial geogrids to reinforce the fill behind, which created a stable structure that provided sufficient support to the bridge, while reducing the load imposed on the treated ground. The block wall was also safe and easy to build next to the live railway, without the need for specialist equipment.



The abutment wing walls were built using the TensarTech TW1 modular block retaining wall system, incorporating uniaxial geogrid to reinforce the lightweight fill behind.

Contractor:
Carillion

Consultant:
Mott MacDonald

Client:

Doncaster Metropolitan Borough Council

"Tensar's design delivered a solution that not only delivered technically but that also contributed to our overall aim of reducing construction costs and programme."

John Foster
Project Manager
Doncaster Metropolitan Borough Council

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