



Tensar[®]

**WALLS
AND SLOPES**

Tensar's TensarTech TW3 modular block system was used to construct the load bearing bridge abutments and wing walls at two grade-separated junctions.

Loads of support

Tensar's TensarTech[®] TW3 modular block system enabled safe construction of load-bearing bridge abutments and retaining walls on a major road widening project.

CLIENT'S CHALLENGE

Balfour Beatty was looking for a way of constructing load-bearing bridge abutments, wing walls and retaining structures on the A21 widening scheme between Tonbridge and Pembury. Not only did the solution have to meet long term performance criteria but it also had to be built with minimal disruption to traffic flow.

TENSAR SOLUTION

Tensar's TensarTech TW3 system, which has been used to construct bridge abutments and retaining structures on many roads around the world, was chosen for its long-term performance characteristics and because its modular construction meant it was also fast, easy and safe to build, keeping road closures and disruption to traffic to a minimum.

A21 Tonbridge to Pembury

Reinforced soil retaining structure

📍 Kent, UK

BENEFITS

Modular system

reduced construction risk during temporary works

Robust and cost-effective

bridge abutment and retaining wall solution

Fast construction

minimising the impact on a busy trunk road



TW3's modularity meant it could be built without heavy lifting equipment or propping, minimising disruption to road users.

PROJECT BACKGROUND

About 32,500 vehicles use the A21 between Tonbridge and Pembury in Kent every day. As the main London and Hastings road narrowed to 4km of single carriageway at this point, with numerous side roads and poor visibility, it was often congested and accident rates were above the national average.

Balfour Beatty was awarded the contract to widen the road to dual carriageway by Highways England in 2014. This included two new grade-separated junctions at Fairthorne and at Longfield Road.

Balfour Beatty chose Tensar's TensarTech TW3 modular block system to construct the load bearing bridge abutments and wing walls for the overbridges at the two junctions.

TensarTech TW3, which has a Highway Authorities Product Approval Scheme BBA certificate for use on roads and bridges, comprises a dry-laid segmental concrete block wall facing, secured (via a mechanical connection) to layers of Tensar uniaxial geogrid that reinforce the soil behind.

Aside from technical performance, Balfour Beatty chose TW3 because Highways England required traffic flow to be maintained throughout works. TW3's modularity meant it could be built in the limited space available, without heavy lifting equipment or propping, and with minimal disruption to road users.

Tensar worked with WSP to design the retaining structures. The abutments were built using Department of Transport Type 6I/J aggregate, designed to meet bank seat loads of up to 566kN/m and to resist horizontal loads of up to 54kN. TW3 was used to build a total length of 194m of abutments and 80m length of wing walls up to 7.6m high. It was also used to build a 60m long, 3.6m high retaining wall on the route.

The new, widened road, opened in Summer 2017.

Contractor:

Balfour Beatty

Specialist installer:

Phi Group

Consultant:

WSP

Client:

Highways England

"The TW3 system was ideal for this project because it enabled retaining walls to be built with minimal disruption to traffic on the busy A21."

Craig Roberts

**Product & Technology Manager
Walls and Slopes**

Tensar International Limited

Units 2-4 Cunningham Court Shadsworth Business Park
Blackburn. United Kingdom BB1 2QX

T. +44(0)1254 262431 | Visit: tensarinternational.com

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