



Walls & Slopes
Nº 432

A90 Burnshot Bridge

📍 Edinburgh, UK

Benefits

In-house Tensar design service

acting as specialist designers

Natural stone appearance

offered a high quality aesthetic finish to meet client requirements

Reduction in cost and carbon emissions

Design Innovation

The old Burnshot Bridge was taken down in November 2017 and replaced with a temporary footbridge until a new bridge was in place. Innovative design solutions were required for the permanent replacement to address the acute angle of the wing walls and the need for custom-made facing blocks.

CLIENT'S CHALLENGE

Edinburgh City Council required a highly aesthetic finish to their latest bridge project due to the prominent location. The bridge is situated on one of the main roads leading into Scotland's capital city.

TENSAR SOLUTION

Tensar was appointed by Balfour Beatty as the element designer for the bridge abutments and wing walls using our TensarTech TW3 system. This system holds current HAPAS certification which confirmed it complied with the project and client requirements. The TW3 system has a high-quality aesthetic finish as the concrete split face blocks have the appearance of natural stone. It is also fast, easy and safe to build, keeping this SCAPE framework contract on schedule.



Tensor

PROJECT BACKGROUND

The design element of this project was amongst the most challenging Tensor has encountered for a non-load bearing bridge project in the UK and involved innovative design and the manufacturing of new system components.

The two biggest design obstacles centred around the existing temporary footbridge that had to remain in place until the new bridge deck was in position and secondly the acute return angle of the wing walls off the abutment as the bridge had to be constructed at a skewed angle across the carriageway.

The solution to address the temporary bridge issue was to build the new TensorTech TW3 reinforced soil abutment and wing walls in two parts. Where the temporary bridge fouled the new, we utilised our TensorTech TR2 system to hold back the reinforced soil area that were exposed. Once the temporary bridge was removed the remaining TW3 blocks were installed using lightweight concrete as a back fill as the specified Class 6 I/J material could not be used because the necessary compaction was not possible due to the restricted space behind the blocks.

Similar issues were encountered when constructing the 56° acute corners for the return of the abutment into the wing walls. All the corner block units had to be specially designed to provide a suitable detail in this area of space restrictions. The acute corners had to utilise a concrete backfill as there was insufficient space to fully install our standard geogrid layout.

One element that had to be designed on site was the custom-made architectural slip blocks that were used to face up the exposed structure concrete beams. These facing blocks all had to be individually cut and mechanically fixed to create a uniform appearance with the main TW3 blocks. The bridge opened in July 2020.

Main contractor

Balfour Beatty

Consultant

Mott MacDonald

Client

Edinburgh City Council

Installer

JML Contracts

“This was a challenging project from a reinforced soil design perspective, which required Tensor to innovate and incorporate new design techniques.”

Drew McCartney

Area Civil Engineer
Tensor International Ltd.