

## Project Info

 JUN 6 06 / 06 / 17

 CCH8™ Bulk Rolls

 # 1,100m<sup>2</sup>

 Longitudinal layers

 Old Elvet Bridge,  
Durham, UK

 Sean Carr Lining  
Technology & Durham  
County Council

 CCH8™ was used to  
remediate the Old Elvet  
Bridge in Durham,  
UK and provide a  
waterproofing layer to  
the bridge decking to  
prevent leakage.



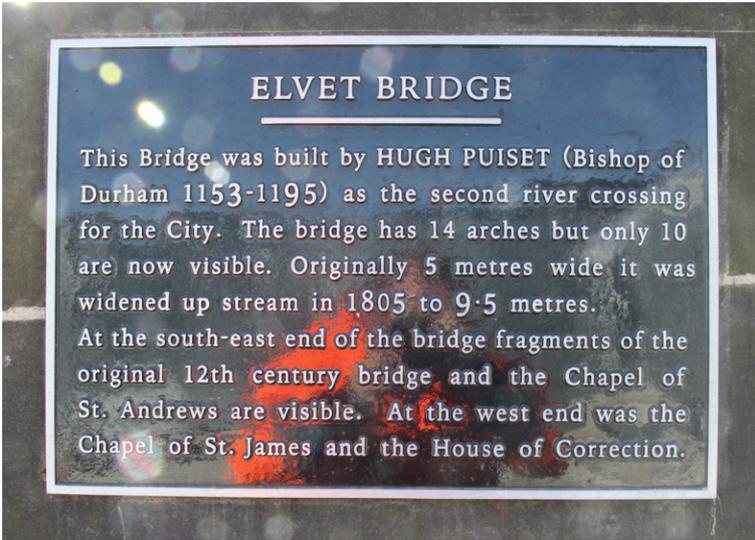
*A view of the bridge from across the river*

In June 2017, CC Hydro™ (CCH) GCCB\* was used to provide a waterproof layer to bridge decking on the Old Elvet Bridge in Durham, UK. The Old Elvet Bridge is a Grade I listed mediaeval masonry arch bridge across the River Wear, linking the peninsula in central Durham and the Elvet area of the city. Building of the bridge began in AD 1160, and construction of the arches is believed to have continued into the 13<sup>th</sup> century, although exactly how many there are is still debated to this day.

An inspection identified that the arch barrels were saturated in localised areas with water staining to most of the arches indicating any waterproofing was not adequate and probably not present at all. If this issue was not addressed the deterioration of the masonry would continue. As a result Durham County Council (DCC) who maintain the bridge required a solution for repairing the bridge deck and preventing water ingress. A number of repair methods were put forward to Historic England but these were rejected as they wouldn't give any consent to any invasive waterproofing due to the preservation needs of the scheduled ancient monument. CC Hydro was introduced to DCC during a proposal presentation in February and was then put forward by the Council to HE as a waterproofing layer solution. The proposal was approved and works commenced in June, and were carried out by DCC and Sean Carr Lining Technologies (SCLT).

Due to the Council's requirement for minimal disruption on the bridge, allowing it to remain open to the public as it is one of the main streets through Durham, the scheme had to be carried out in several stages. As CCH was used for this scheme, this also meant that the work had to be carried out in dry weather to prevent the PVC membrane being laid on damp substrate.

\*Geosynthetic Cementitious Composite Barrier



## ELVET BRIDGE

This Bridge was built by HUGH PUISET (Bishop of Durham 1153-1195) as the second river crossing for the City. The bridge has 14 arches but only 10 are now visible. Originally 5 metres wide it was widened up stream in 1805 to 9.5 metres. At the south-east end of the bridge fragments of the original 12th century bridge and the Chapel of St. Andrews are visible. At the west end was the Chapel of St. James and the House of Correction.

*Commemorative plaque found on the bridge*



*The bridge is one of the main footpaths in the city\*\**



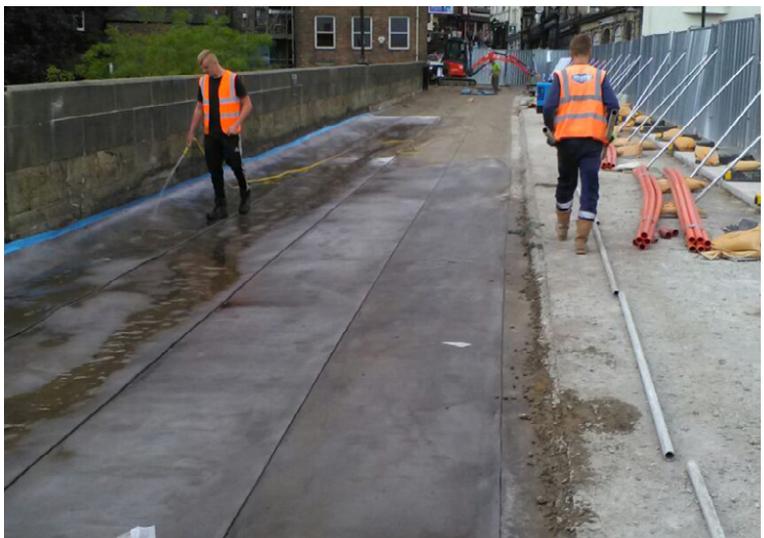
*The substrate was flattened before installation*



*The CCH bulk rolls were dispensed from a spreader beam*



*CCH joints were welded with Leister Twinnys Ts and Triacs*



*Hydration was given once each section was complete*

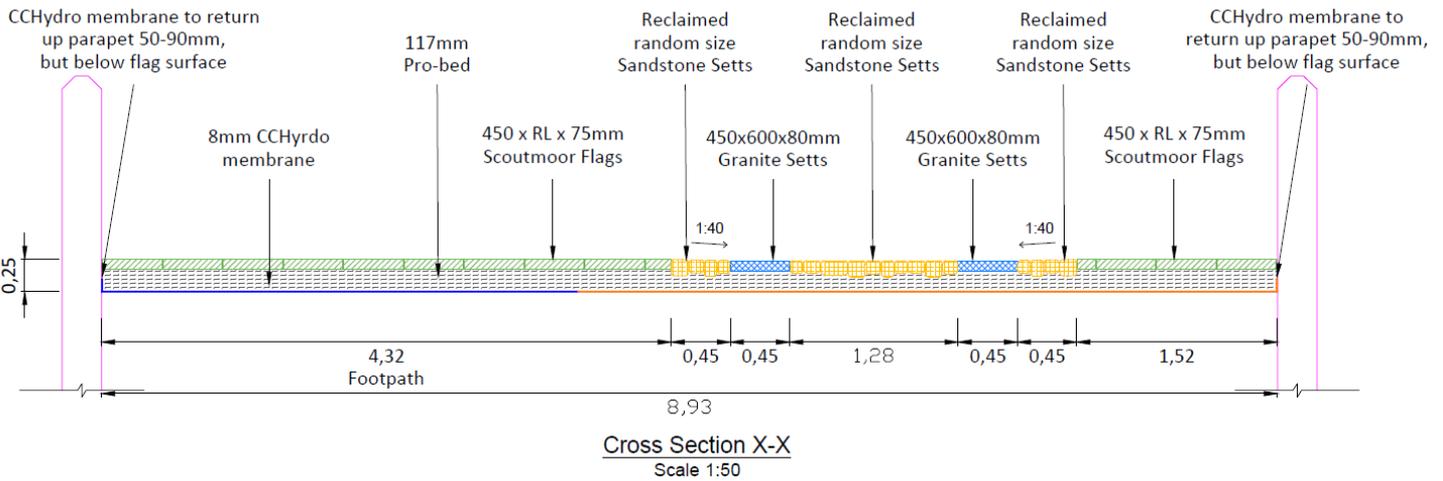
*\*\*By The original uploader was DWatson at English Wikipedia [CC BY-SA 2.5 (<https://creativecommons.org/licenses/by-sa/2.5>)], via Wikimedia Commons*



Completed section re-covered with CCH edge exposed for welding



CCH layer underneath re-layed substrate and flagstones



Cross Section Proposal Drawing

In preparation for the installation, the top flag stones were removed along with some of the substrate and the ground compacted using a whacker plate in order to provide a smooth surface for the CCH to be laid on. Bulk rolls of CCH8™ were then delivered to DCC's warehouse and then delivered to the site when required. The bulk rolls were then mounted onto a spreader beam and unrolled longitudinally along the length of the bridge. Adjacent layers of CCH were laid and then thermally welded using a Leister Twinny T or Leister Triac and roller. Once laid and thermally welded, each section was hydrated and re-covered using the removed substrate, leaving the leading edge of the CCH uncovered to weld to the adjacent layer of the next section.

Following the installation of the CCH across all sections of the bridge, the flag stones were re-laid on top of the water-proof CCH layer.



*Completed section of works*

In total, 1,100m<sup>2</sup> of CCH8™ were installed in 4 phases over the summer months by a team consisting of DCC and SCLT staff, section by section and only in dry weather conditions to ensure a successful installation. The installation was completed successfully, with minimal disruption to the day-to-day public use of the bridge and without the need of any invasive solutions, allowing Durham County Council to preserve the ancient, Grade I listed monument.