

Kent, UK – unsafe bridge culvert restored for future generations

Kent County Council's programme of planned highways maintenance works to be carried out during 2019 – 2021 included strengthening works to structures such as the Brewers Bridge Culvert in Worth, Kent.

Worth is a small picturesque village situated near Sandwich in East Kent which has a population of circa 1000 and a central conservation area arranged around a duck pond fed by the River Delf which is an integral part of the village's storm water management system.

Brewers Bridge straddles the River Delf in Goretop Lane and in recent years the bridge had become unstable and unsafe. Kent County Council engaged the services of specialist contractor Steadline Ltd and their design partners BdR (Civil & Structural Engineering) Ltd. to design and build a solution to strengthen the existing structure and restore the aesthetic finish in line with its surroundings.

A temporary steel bridge was installed over the existing structure to maintain local access and to act as a working platform for the contractor's plant.



Fig 1: Courtesy of Steadline Ltd

The solution was to strengthen the existing structure by installing a 4m length of DN1600mm; SN10,000 plain ended, GRP relining pipe manufactured by Amiblu and fill the annulus with Sika High Flow Grout. The structure was designed to meet the current design requirements to BS EN 1991-2:2003.



Fig 2: Courtesy of Steadline Ltd

"This was our first project working with Amiblu and we are delighted with the level of support received, great product and efficient, professional service. "

Kevin Gray, MD Steadline Ltd.



Fig 3: Courtesy of Steadline Ltd

PROJECT PARAMETERS

Country	UK
City	Dover, Kent
Year of Construction	2020
Application	Culvert Strengthening
Intallation	Trenchless
Technology	Hobas
Total Length of Pipe	4m
Nominal Diameter DN (mm)	1600
Nominal Pressure PN (bar)	PN1
Nominal Stiffness SN (N/mm ²)	10,000
Client	Kent County Council
Contractor	Steadline Ltd.
Consulting Engineer	BdR (Civil & Structural Engineering) Ltd.

Working in conjunction with Kent County Council, Steadline and BdR to ensure all works were carried out safely and efficiently whilst meeting the requirements set out by the client in respect of strength, durability and finished aesthetics. With Environment Agency approvals in place the contractor first created a dam and over pumped the river flow, then removed the silt from the existing culvert and constructed a new concrete foundation for the pipe. Once the GRP liner was installed and the anulus grouted the new headwall and timber safety railings were constructed in keeping with the village surroundings.

“We are very pleased with the performance of the Amiblu GRP product and the help from their technical department to achieve this innovative solution.” Robert Mulligan, Associate, BdR (Civil & Structural Engineering) Ltd.

“The success of this project will allow our client the option of an alternative method to strengthen structures of this nature in the future.” Kevin Gray, MD Steadline Ltd.

Amiblu relining pipes are particularly suitable for pipe and culvert rehabilitation, as they are light in weight, corrosion resistant, quality assured, easy to install and engineered to give 150 years' service life, they are manufactured in a wide range of diameters up to DN4000mm in both circular and non-circular options and with varying strengths to cater for all locations and performance criteria.



Fig 4: Courtesy of Steadline Ltd

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