

Maidstone, UK – NC Line Culvert Strengthening

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 Raigersfeld Culvert situated beneath the A20 Ashford Road, Maidstone, Kent.

Following on from previous culvert rehabilitation works for Kent County Council, Steadline Ltd. were once again commissioned to make the required improvements to an existing historical brick and steel beamed culvert which was showing signs of deterioration resulting in the restriction of flow capacity.

With the same project team comprising Steadline Ltd., BdR (Civil & Structural Engineering) Ltd. and Amiblu, a bespoke, non-circular GRP liner was designed with specific challenges to overcome, including:

1. Steel cross sections to the soffit of the culvert
2. Inconsistent shape
3. Traffic loads
4. Restricted access
5. Environmental considerations

The result, 16m x 1m length sections, 1244mm x 754mm Elliptical shaped NC Line with a 27mm wall weighing just 175kg per metre with a push fit bell & spigot socket, was designed to maintain the required cross section and flow capacity.

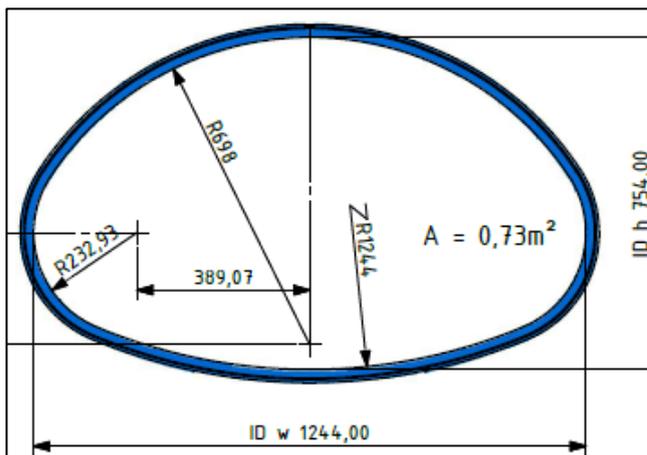


Fig 2: NC Line Raigersfeld Design Drawing

"All in all the scheme was very successful and certainly improved the flow of the stream/small river and with the new rag stone head walls looked very pleasing to the eye." Aaron Harber, Contracts Manager, Steadline Ltd.



Fig 1: Existing Raigersfeld Culvert - Courtesy of Steadline Ltd.

Steadline Ltd and BdR (Civil & Structural Engineering) Ltd worked in conjunction with Kent County Council, 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.

Forward planning of this scheme was critical as the culvert runs beneath the main A20 which is a major arterial route through Maidstone and a road closure was never an option, so the team at Steadline worked closely with park rangers within Mote Park to secure the downstream access and with residents of a gated housing estate for the upstream access.

The stream was dammed and overpumped with precautions in place to ensure that no unwanted debris found its way into the natural water course. The 1m long NC Line sections were then craned onto the upstream landing area before being installed using a purpose built roller system to accommodate for the inconsistent internal condition of the existing culvert.

Once all 16m of NC Line had been installed, grouting was carried out in stages as per Amiblu's recommendations and the headwalls were finished in keeping with the original culvert construction.

PROJECT PARAMETERS

Country	UK
City	Maidstone
Year of Construction	2021
Application	Storm Sewer
Installation	Trenchless
Technology	Amiblu NC Line
Total Length of Pipe	16m
Nominal Diameter DN (mm)	1244mm x 754mm
Nominal Pressure PN (bar)	PN1
NC Line Shape	Eliptical / 1m lengths
Client	Kent County Council
Contractor	Steadline Ltd
Consulting Engineer	BdR (Civil & Structural Engineering) Ltd.



Fig 3: Amiblu NC Line Installation courtesy of 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 sizes in both circular and non-circular options and with varying strengths to cater for all locations and performance criteria.



Fig 4: Finished Ragstone headwalls courtesy of Steadline Ltd.



Fig 5: NC Line Example Shape Options

Amiblu NC Line pipes are produced to ISO16611. The non-circular cross-sections are ideal for relining and strengthening aging sewer networks, culverts and channels. Non-circular pipes are also used for open trench applications where capacity is required, but allowable depth to invert is limited. They can be customised according to project requirements and easily be adapted to different types of shapes and geometries.

Contact Amiblu in the UK:
Email: united.kingdom@amiblu.com