

GRP Segmental Culvert Lining at Farthinghoe

Following iLine Technologies successful relationship with this client and our reputation for innovative reliable solutions, iLine were approached by Kier-WSP Northamptonshire Highways to resolve an urgent structural bridge problem.

The brick-arch bridge, which carries the A422 over the Farthinghoe stream in South Northampton, needed to be urgently repaired and strengthened to accommodate fire engine & traffic loadings up to 40 tonnes.



The bridge was constructed of a skew brick-arch section which had previously been repaired, but this was now failing, along with signs of radial cracking occurring. The bridge had been extended in 1971 with a corrugated steel arch which was also now showing signs of corrosion. The structure is shallow, 15m long with a flat invert and straight walls, which arches across to a height of 1816mm with a span of 3000mm.

Due to operational restraints on this structure, a GRP segmental lining process was chosen to be the most cost-effective, non-disruptive and reliable solution with over 100 years of design life. The GRP units had to be designed to be fully structural standalone units to take all the loadings imposed up to 40t using the LM2 Eurocode design specifications.

Working with our partner Channeline (manufacturer of GRP units) a profile with a 48mm thick liner was designed & proposed. This was initially accepted. However, following discussions with the EA, a requirement to accommodate safe movement of mammals/otters through the new structure was required. The profile of the GRP liner was then modified to accommodate a 500mm ledge/shelf to accommodate wildlife movement through the final structure.



Because of the timing pressure from the residents and Local Authority, it was decided to air freight the units from the Middle East to the UK. GRP units of 1.2m in length were manufactured in shipped to site in early December 2018.

The river bed was dug out and a new gravel bed laid by the client prior to iLine installing the segments. The team then grouted the GRP units into place, all within a 2-week period.

Another very successful job undertaken to structurally repair a bridge and help to look after our wildlife friends!