

CULVERT REPAIR & RELINING AT HARWOOD BROOK, GREAT HARWOOD - MANHOLES B2 TO B3

Client:

Environment Agency

Summary: Repair & reline existing culvert from manhole B2 to manhole B3



Before



After

PROJECT DETAILS

CULVERT WORKS

Following CCTV and man entry surveys to assess the condition of the stone culvert it was noted that a section of the culvert upstream of B_MH2 was in a dilapidated state and required repair over a 63m length to bring it up to an acceptable standard.

The dilapidations consisted of many natural masonry soffit stones exhibiting mid point failure cracks and some being afforded support by badly corroded steel rail sections.

- The existing culvert has an internal cross sectional size of 1000mm high x 900mm wide.
- The water flow within the culvert ranges in depth from 50mm in dry weather up to 300mm during periods of high rainfall.

Access to the culvert is via B_MH2. This manhole is situated on the edge of a petrol station forecourt and directly adjacent to the access route to the drive through car wash. The manhole has an opening size of 600mm x 600mm and a depth of 14m from ground level to the base of the culvert.

Following all party approval of the proposal, the works on site commenced on the 14th November 2011 and were finished just before the Christmas Break.

GROUND CONDITIONS

- Clay overlying weak sandstone



CULVERT REPLACEMENT AT ANTLEY SYKE, ACCRINGTON

PROJECT DETAILS (continued)

PARTICULAR DIFFICULTIES

- Very small access opening - 600mm x 600mm
- Very deep access manhole - 14m
- Constant wet working - flows cannot be over pumped
- Confined space working
- Very small surface working area
- Dense built environment above culvert route
- Manual handling in a small space
- Insecure existing structure
- Commercial constraints - must be a cost effective solution
- Coal tar ingress upstream of working area
- Repair must be durable and provide long duration, maintenance free service
- System must not substantially reduce the existing cross sectional area

SOLUTION

Use multi-sectional GRP linings with a grouted surround, which provides the following benefits:

- Can be bespoke manufactured to suit the specific requirements
- Individual pieces fit through the access hole
- Lightweight
- Very strong
- Easily transported from the storage area to the small surface working compound
- Easy to handle and erect within the culvert
- Individual pieces can be passed upstream through completed liners
- Durable
- Chemically resistant
- Very smooth
- Cause very little reduction to the cross sectional area
- Can be erected and grouted without over pumping.
- Stops exfiltration and infiltration