

Union Canal, Slateford Aqueduct, Edinburgh and Avon aqueduct, Linlithgow, West

Canal Channel Leakage Arrest

September 2016

Methodology

Introduction

Slateford and Avon aqueducts are major masonry constructed structures with cast iron canal channel troughs constructed between 1818 and 1822.

Leakage has been detected at both aqueduct locations. The leakage at Slateford is causing public nuisance and public risk by wetting the public footpath (Fig 1). The leakage is confined to the west side of the aqueduct.

Avon is also leaking at the same location, west end but is not causing public nuisance but will continue to deteriorate the structure and monument.

Scottish Canals are proposing to undertake canal channel repairs at both locations.

Proposed Methodology

Temporary localised dewatering to include for damming using fabric dams or similar approved. Material e.g. clay for temporary dam construction will not be permitted due to access constraints.

The procurement, setting up, maintenance and dismantling and removal on completion of the project of over pumping equipment to maintain canal levels.

The cleaning and removal of all siltation and debris from the works area once dewatered to be taken formally offsite and disposed of.

Survey and identification of leakage path routes within the canal channel.

Laying of approved geosynthetic clay linear to all suspect areas including overlap and factor of safety to ensure all suspect areas are covered.

Over lay geosynthetic clay linear with approved puddle clay to include for over lapping linear edges.

Over lay clay with mesh reinforced concrete slab to cover suspect area and protect against further erosion. Concrete slab to have downturns embedded into the clay to stop water paths underneath slab.

The cleaning of exposed cast iron aqueduct trough and the waterproofing / caulking of trough interface joints as directed by Scottish Canals Project Manager.

Testing of repairs.

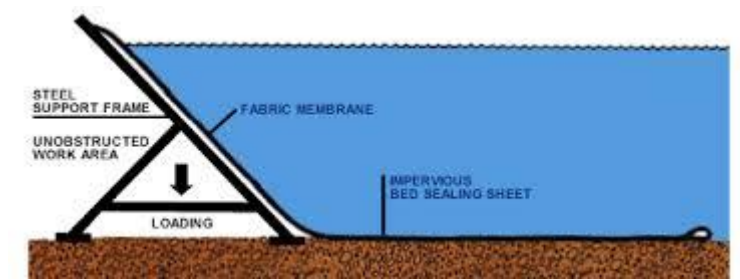
The removal of all temporary works including accesses. Full reinstatement and make good all areas used by the contractor in his delivery of the works.



Slateford aqueduct canal leakage at footpath and road level



Avon aqueduct showing leakage exiting structure under pressure



Temporary fabric dam



Fabric dam deployed in canal channel

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The procurement, setting up, maintenance and dismantling and removal on completion of the project of over pumping equipment to maintain canal levels.

The cleaning and removal of all siltation and debris from the works area once dewatered to be taken formally offsite and disposed of.

Survey and identification of leakage path routes within the canal channel.

Laying of approved geosynthetic clay liner to all suspect areas including overlap and factor of safety to ensure all suspect areas are covered.

Over lay geosynthetic clay liner with approved puddle clay to include for over lapping linear edges.

Over lay clay with mesh reinforced concrete slab to cover suspect area and protect against further erosion. Concrete slab to have downturns embedded into the clay to stop water paths underneath slab.

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