



Geo-Environmental

Butts Bridge Alton | Case Study

Services Supplied on this Project:

Geotechnical (Bridge)

- 2 No. 25m deep rotary boreholes from track level.
- 2 No. hand dug trial pits within the existing embankment
- 2 No. hand dug trial pits in the area above the southern retaining structure.

Geotechnical (Road)

- 2 No. cable percussion boreholes to 10m.
- 6 No. trial pits machine excavated to 4.50m.
- 6 No. 600mm plate load tests within the pits below Topsoil level.

Geotechnical Laboratory Testing as specified carried out by a UKAS Accredited Laboratory in accordance with BS1377.

Environmental

- 2 no. tests to brownfield suite on sample of embankment material;
- 2 no. WAC testing to confirm material classification for off-site disposal;
- 2 no. BRE SD1 tests.

Civil

- A total of 6 No. 50mm cores through the existing southern retaining structure by means of rope access.
- Material testing to be conducted on masonry cores as specified.

Reporting

- A factual Ground Investigation Report (GIR)

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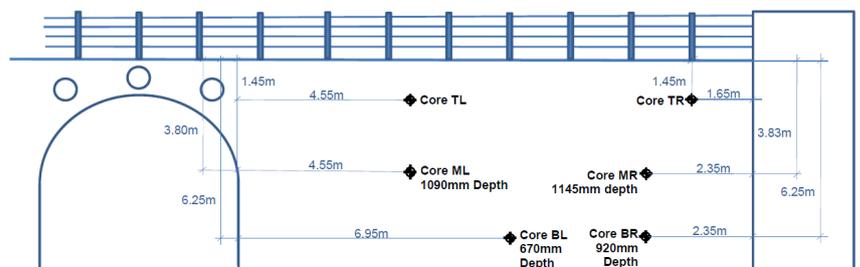
The Project

Geo-Environmental was instructed by Jubb Consulting Engineers Lt to undertake an investigation for a the re-development of Butt's bridge. Hampshire. The bridge was a historic masonry archway over Whitedown lane (A339) which currently restricts traffic flow due to its restricted width.

The proposed development involved the replacement of the existing bridge span with a steel structure with some alterations to the existing eastern abutment and wingwalls and the complete replacement of the western abutment. It was anticipated that the embankment to the north of the bridge may require stabilisation works and no alteration was proposed to the southern retaining structure, although its extent and stability required confirmation to ascertain if this was feasible.

Expertise

In order to support the feasibility assessment of the southern retaining structure, Geo-Environmental Services Ltd employed an IRATA rope access team to abseil down the side of the existing structure and drill 6 No. masonry cores into the brickwork.



The masonry cores collected were then sent for materials testing, the results used to inform the structural engineers of the stability of the structure.

About the project:

- Region: South East

Applicability of the project:

Across the UK Network Rail manage a portfolio of over 190,000 earthwork assets that includes:

- Embankments – a construction that allows railway lines to pass at an acceptable level and gradient over low lying ground.
- Soil cuttings – an excavation that allows railway lines to pass at an acceptable level and gradient through the surrounding ground that is composed entirely or predominantly of soil.
- Rock cuttings – an excavation that allows railway lines to pass at an acceptable level and gradient through the surrounding ground that is composed entirely or predominantly of rock.

Many sections of the railway were built in cuttings which are lower than the surrounding area and tracks can be overwhelmed by heavy rain and flooded, and this can cause serious problems for the railway. The work that we have undertaken on this site is an essential to mitigate the risk of flooding in cuttings.



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Ground Investigation

The principal objective of the ground investigation was to determine the depth to competent chalk strata on site in order to inform pile design for the abutments on site. As well as this, there is also a requirement for contamination assessment of the railway embankment for presence of PCB's/Ash which where likely to be present.



Classification of the embankment material, in geotechnical terms, was also required as this was to inform the stability of the slopes and the dimensions of the proposed wing walls.

For the rotary boreholes the drilling equipment was transported up-track using a Road/Rail Vehicle (RRV). Due to time constraints, two rotary rigs were deployed simultaneously.

This was a complicated project with lots of access issues and three streams of work ongoing on different parts of the site, nevertheless the site works were completed in nine days.

