



Elland Canal Bridge, West Yorkshire

Watching brief report

ArcHeritage 2016

**Elland Canal Bridge, West Yorkshire:
Archaeological Watching Brief**

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Figure 1: Site location

NON-TECHNICAL SUMMARY

This report presents the results of a watching brief on demolition works on the bridge over Elland Canal, Elland, West Yorkshire. The canal bridge forms part of the grade II listed 'Elland Bridge', which also includes the bridge over the River Calder to the south of the canal. Following heavy rainfall in December 2015, the Calder broke its banks and water surged down the canal, causing severe structural damage to the Grade II listed canal bridge, which was immediately closed to all vehicles and pedestrians. Building recording was undertaken to provide a record of the bridge prior to major reconstruction works. The watching brief was undertaken on the demolition works, and forms a supplement to building recording report.

Research has shown that the bridge was built in, or shortly after, 1811. It was effectively built as a northern extension to the river bridge, which itself has seen at least two episodes of widening. It had been thought that the canal bridge may also have been widened at some point; however, no evidence for this was observed during the building recording or watching brief. The watching brief demonstrated that the canal bridge had been built directly onto clay. Some evidence for alterations or repairs to the bridge buttresses and the canal walls adjacent to the bridge was noted.

1 INTRODUCTION

This report presents the results of a watching brief undertaken during the demolition of the northern portion of the grade II listed Elland Bridge, spanning the Calder and Hebble Navigation. On 26th December 2015 severe flooding affected many parts of the north of England. At Elland, the Calder and Hebble Navigation runs alongside or close the River Calder through much of the valley. During the flooding, the river broke its banks and floodwater flowed into the canal. A large water surge drove water from west to east along the canal, where it was impeded by the canal bridge. The force of water badly cracked the bridge, and it was immediately closed to all traffic and pedestrians.

Examination of the bridge by structural engineers determined that it was too badly damaged to save, and required re-building. The watching brief on demolition works was undertaken to provide a record of the footings of the bridge and information on the internal structure of the bridge. It forms a supplement to building recording undertaken prior to demolition works (ArcHeritage 2016). The watching brief was commissioned by the Canal & River Trust, and was additional to the recording requirements of West Yorkshire Archaeology Advisory Service.

2 LOCATION, GEOLOGY AND TOPOGRAPHY

Elland Bridge is located in Elland, West Yorkshire, at SE 106213 (Figure 1). The larger, southern portion of Elland Bridge spans the River Calder. The canal bridge is a northern extension that spans the Calder and Hebble Navigation. Elland Bridge carries the B6114 over the canal and the river.

The canal and the river are separated by only c.80m at this point in the valley. A mixture of light industrial, commercial and original wharf buildings line the canal, the southern side of the river and the land between the two. To the east of the canal bridge the canal widens and there are moorings for canal boats. The ground rises up fairly steeply to the north. The superficial geology is alluvium, underlain by Millstone Grit and Sandstones.

3 AIMS AND METHODOLOGY

The aims of the watching brief were to record the internal structure of the bridge and details of the foundation deposits, as well as to identify any evidence for the bridge having been widened.

Site visits were made on the 26th and 31st May and the 3rd June 2016. Due to health and safety considerations, observations were made from the sides of the canal, or from the stone machine access created to allow machine-excavation of the foundations and insertion of piles. Recording was undertaken using digital photography and notes made on pro-forma watching brief recording forms. In most cases, it was not possible to utilise a photographic scale, due to difficulty in accessing the excavation areas.

4 HISTORICAL BACKGROUND

A more detailed summary of the historical background of the bridge is contained in the building recording report (ArcHeritage 2016).

A crossing over the River Calder was recorded from the 12th century, with the first phase of the current Elland Bridge possibly dating from 1617, and a plan and description of the bridge survive from 1752-3. The bridge was later extended to cover the canal, which was constructed after 1758 as a result of an Act for the extension of the Calder and Hebble Navigation from Wakefield to Sowerby Bridge. Construction of the canal began in 1759, with the Engineer being John Smeaton, though set-backs led to a second Act being obtained in 1769 to enable the first phase of the scheme to be completed in 1770 (Nicholson 2006). Other improvements and additional cuts were developed in the late 1770s and 1780s.

The Greater Elland Historical Society (GEHS) note that a wooden bridge was built over the canal for the old road to Halifax (this road presumably became the Halifax-Huddersfield toll road, 1777) and, although no reference is provided, this seems plausible. They also note that 'a wharf was built and the bridge extended in 1813', though no source material has been identified for this. It seems more likely that the current stone bridge wholly replaced, rather than extended, any previously existing wooden bridge.

A drawing by Bernard Hartley (surveyor) dated 12th November 1811 illustrates a proposed extension 'link' at the northern end of Elland Bridge, which effectively would extend the river bridge across the canal, from what is now Gas Works Lane to the A6025. This plan appears to show that the canal bridge and extension 'link' would be wider than the river bridge, which would require widening. It also clearly shows two arches within this extension, which are now no longer visible.

Hartley's drawing shows the width of the two (different) arch spans, and the stone coursing and arch and pier heights compared to the existing river bridge, and a cross section through the 'flank walls', which splay outwards towards the lower courses. It is unclear exactly when the northerly extension or the canal bridge were actually constructed, but both are shown on a small plan of the Elland Bridge and Obelisk Turnpike Road drawn in 1824. The two documents also make it clear that the canal bridge was constructed separately from (although related to) the northern river bridge extension, and this is evident from the stonework and the stone joints and position of the buttresses. This junction is also shown in the 1857 plan and elevation of Elland Bridge which shows a change in the shading convention at the junction with the canal bridge.

Plans for the bridge to be further widened were made in 1896/7, due to the heavy volume of traffic which passed over the bridge on a daily basis. Work to maintain the bridge occurred in 1975, including the construction of a concrete invert beneath the bridge to protect the bridge foundation, a cascade-type drop structure immediately downstream of the bridge, the removal of an existing weir, and the realignment of the river channel between the drop structure and surviving mill buildings.

5 RESULTS

Due to the contractors' construction schedule, archaeological monitoring was only possible after the bulk of the bridge had been demolished. This meant that only limited observation of the core of the bridge was possible, in the edges of the roadway. The area below the surfacing appeared to be constituted of stone rubble and soil (Plate 1).

Following the draining of the canal, the buttresses of the bridge were removed and the area below excavated to expose the foundation deposits. No evidence of any wooden foundation piles, or earlier wooden bridge footings was observed. There was also no visible evidence for widening of the bridge. The bridge appeared to have been built directly onto a deposit of grey clay, which also underlay the yellow-brown clay of the canal lining (Plates 2 and 3).

Modifications to one of the buttresses at the base of the northwest side of the bridge were noted, comprising an area of brick infill (Plates 4 and 5). This may have been a repair necessitated by heavy wear or water damage at a point where water pressure against the bridge was high. An earlier phase of walling along the northern canal edge to the west of the bridge was also noted, lower than the current wall. It was of similar stone construction to the existing wall, and surfaced with a layer of flat stone flags.

6 CONCLUSIONS

Archaeological monitoring during the demolition of the Elland canal bridge indicated that the core of the bridge was composed of stone rubble and earth. No evidence was found for widening of the bridge or for an earlier timber bridge. The foundations of the bridge were constructed directly onto grey clay, which also lay under the yellow-brown clay canal lining.

7 ACKNOWLEDGEMENTS

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8 REFERENCES

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PLATES



Plate 1: View of the demolished bridge, showing rubble core behind shuttering, viewed facing east



Plate 2: Grey clay underlying the southern bridge foundations, viewed facing southwest



Plate 3: Grey clay under the northern bridge footings, with brown clay canal lining in section, viewed facing northwest

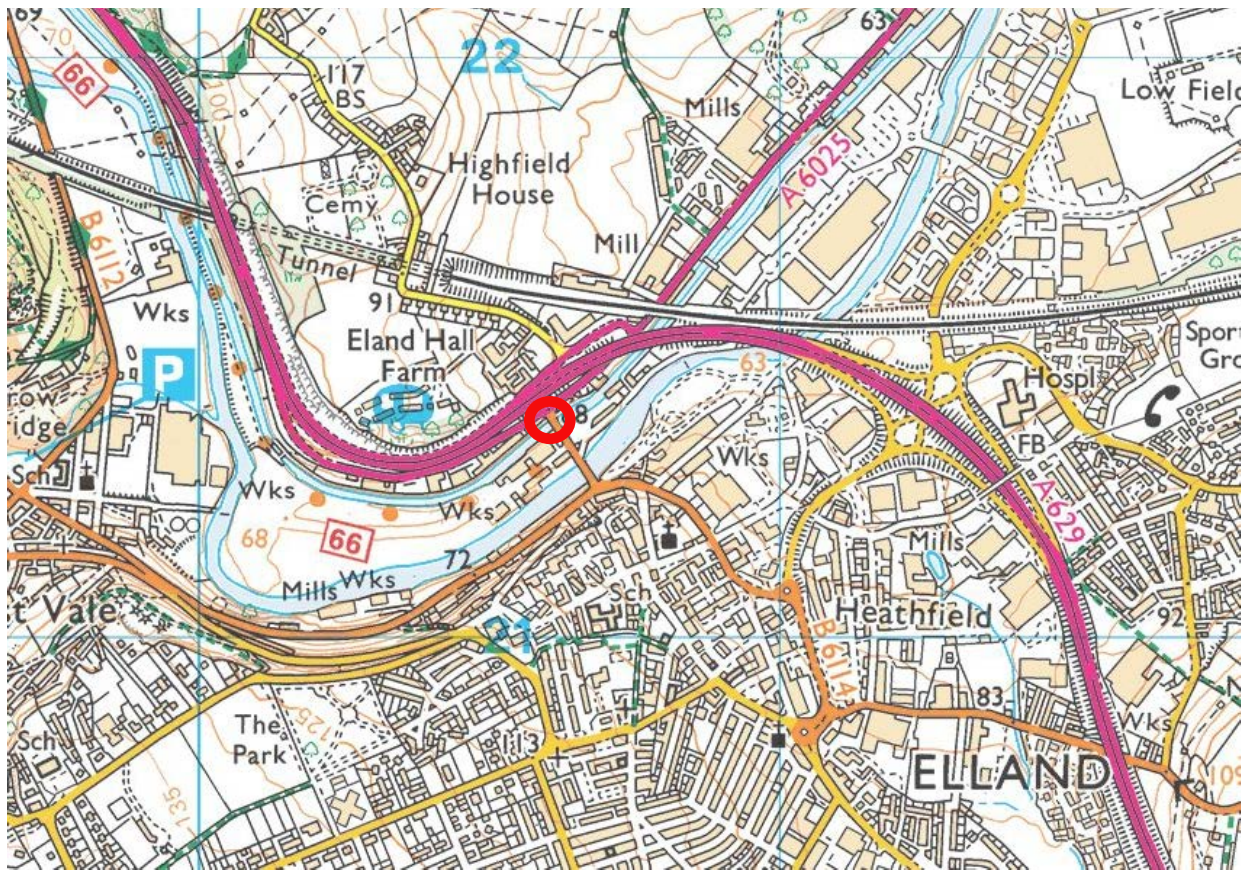


Plate 4: Northern canal wall west of the bridge, with repairs to bridge buttress and possible earlier canal wall, viewed facing north



Plate 5: Detail of area of repair to bridge buttress, viewed facing north

FIGURES



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