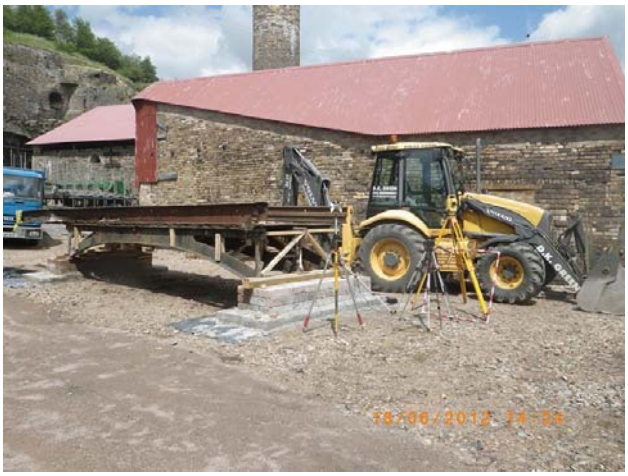
A.P.A.C. Ltd.

Archaeological Perspectives Analysis Consultancy

ARCHAEOLOGICAL

RECORDING SURVEY REPORT



Prepared for:

Archaeology Wales

By

Dr N Phillips

Summary

APAC Ltd was engaged by Archaeology Wales to undertake a measured survey of the Aaron Brute's bridge after it had been removed from its original position to a place of storage prior to its renovation.

The aim of the work was to record it prior to any renovation work so as to provide a more complete record of the bridge.

Cover Photograph: Photogrametric recording

Contents

Introduction

This report was prepared by Dr Neil Phillips, A.P.A.C. Ltd, on the completion of the work to record the structure of the Aaron Brute's Bridge, after it had been removed from its original position to a place of storage prior to its renovation.

The initial survey work was undertaken over two days 15th and 18th of June 2012 with the processing completed in November of 2012.

Location and description of the structure

The original location for he bridge was at 324825 208802, where it had stood since the 2nd decade of the 19th century; serving as part of the access route to an iron ore level.

During the survey, the bridge had been removed to the compound of the Ironworks at Blaenafon.

Please refer to figures and photographs supplied.

The bridge itself is constructed as a single metal span between masonry abutments.

The construction is made up of three identical cast iron sections braced together across the width of the bridge by the deck plates and presumably tie bars; but only one of these survived.

The spans are faced with a flange along top and bottom of one side.

Two of the spans are the same and one laterally inverted.

Each of the spans are pierced at the ends by large triangular cut outs.

The deck of the bridge is made up of 21 cast iron plates which are bolted through the upper flanges of the spans.

Later structural additions had been made to the bridge one being an 8.9m length of 'C' section girder whilst on the other side had been added two 6.57m 'dumbell' sectioned, railway lines; one atop the other and held in position with two sections of angle iron.

Objectives

The objective of the survey was to produce a measured record of the bridge in its present state prior to renovation.

The record consists of photographs, measured plans in elevation plan and isometric views and 3D cad model.

Methodology

The survey was undertaken using a Topcon GTP 3007 reflectorless total station, which was used to record a series of targets positioned along the structure of the bridge.

The targets were then photographed using a tripod mounted, Canon EOS 500D DSLR fitted with a 28mm, 1.28 lens and set to 14mgp RAW format.

The photographs were taken as pairs, overlapping to provide stereo pairs for use with Topcon PI300 photogrammetric processing software.

A second set of photographs were taken using a Sony F828 Digital camera set to 8mgp, RAW format as back up and including a rectification scale.

Data Presentation

The data produced from the survey was processed into 3D cad for the client to use as required. The data was provided as hard copy and in digital format.

Detail

It should be noted that the measurements taken from the structure relate to its surviving state. As such it was very difficult to arrive at a consistent representative surfaces and edges, the entire structure having been weathered for just under 2 centuries. The resultant surfaces and edges were corroded and worn producing not only depressions and voids but also lumps and rounding of edges.

As has been noted above the original bridge consisted of two main elements: the span in three parts surmounted by the deck.

The span members 6.3m in length and a stand 0.73m high
Average thickness of plate 0.04m with a flange of 0.06m
The span does not inscribe a true arc but is flattened towards the centre section between the two cut outs.

The deck plates which were all bowed upwards along the middle are 0.28m wide; just under 2m long and around 0.005 thick (edges hidden).