Historic building recording at Chisnell Lift Bridge (Bridge 193), near Deddington, Oxford Canal, Oxfordshire

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Introduction

Historic building recording of Chisnell Lift Bridge (Bridge 193), near Deddington, Oxford Canal, Oxfordshire (SP 970 049; Fig 1) was undertaken at the request of Phil Emery of the Canal & River Trust. This was to comprise a digital rectified photographic recording of the abutments and a contextural description of the various elements of the structure. Resources were limited and no specific documentary or other study was undertaken to place the bridge in its historical context. However, a preliminary account of canal lift bridges had been made by a Canal & River Trust Heritage Advisor (Salberter 2014) and this has been quoted from extensively below.

The project was undertaken during repairs to the bridge abutments and wing walls.

Summary

Historic building survey was undertaken at Chisnell Lift Bridge, (Bridge 193) Oxford Canal, Oxfordshire. The project recorded the structural elements of the abutments and wing walls of the bridge by drawing and photography and identified which of those elements was original construction, formal repair, emergency or temporary repair and operational modifications and alterations.

The documentary material

The timber lift bridges on the Oxford Canal give this waterway part of its character (Salberter 2014). The main engineer for the Oxford Canal was James Brindley although he died in 1772 when his assistant Samuel Simcock took over. James Barnes was appointed resident engineer in 1786 to complete the works from Banbury to Oxford. The lift bridges employed were built as a cheaper means of providing a crossing for farmers over the canal. Timber lift bridges are present on other waterways such as the Northampton Arm of the Grand Junction Canal but these were constructed to a different design.

There are twenty-one lift-bridges remaining on the Oxford Canal, from north of Claydon to Oxford. Originally there would have been many more (ninety-five according to the Oxford Canal Conservation Area Statement produced by Cherwell District Council). The brick abutments with stone fenders and copings have been repaired over time, and the timber lift bridges replaced. There are still, in places, remnants of where former lift bridges once stood in the form of the abutment or 'narrows'.

Research at the Warwickshire County Record Office has revealed that the bridge design has evolved over time with the current flat deck, depicted in the early 20th century, formerly being curved. A drawing (Warwick CRO ref CR1590/P255) depicts this and is reproduced in Salberter (2014).

Bridge 193 (Chisnell) suffered a partial collapse of the south-east wing wall on the off-side in July 2013. This left the bridge operational but the abutment required rebuilding. The opportunity was taken during the de-watering of the canal to carry out repairs to other parts of the abutments and wing walls. The bridge is listed Grade II.

The fieldwork

General

Fieldwork took place on the 11th October, 11th November and the 15th October 2016. It comprised inspection and photographic recording of the abutments and wing walls of the bridge with a drawing of the arrangement of the planks of the deck.

The structural elements of the abutments and wing walls fell into four groups:

- original construction
- formal repair

- emergency/temporary repair
- operational alterations and modifications

Description and commentary

Original construction

In the main this comprises medium to large squared, coursed stones lying below the working water level (eg south-west wing wall, context 012; Fig 2.2, south-east wing wall, context 024; Fig 2.3, north-east wing wall, context 036; Fig 2.4, north-west wing wall, context 051; Fig 2.5, north abutment, also context 051; Fig 2.6 and south abutment, context 067; Fig 2.7).

Above the water level are areas of red brick in English bond (eg south-west wing wall, context 004; Fig 2.2, north-east wing wall, context 031; Fig 2.4, north-west wing wall, context 048; Fig 2.5, north abutment, context 059; Fig 2.6 and south abutment, context 066; Fig 2.7).

On the join of the abutments and wing walls are massive rubbing stones (eg south-west wing wall, context 003; Fig 2.2, north-east wing wall, context 030; Fig 2.4, north-west wing wall, context 047; Fig 2.5, north abutment, contexts 030 and 047; Fig 2.6 and south abutment, contexts 003 and 063; Fig 2.7).

Stone coping stones exist on only one wing wall: south-west wing wall, contexts 001, 005 and 008; Fig 2.2.

Timber tie-backs were noted in a number of places (eg south-east wing wall, context 023; Fig 2.3, north-west wing wall, context 053; Fig 2.5 and north abutment, also context 053; Fig 2.6)

When clearance of the collapsed stonework of the south-east wing wall was complete, the original line of the wing wall (context 024; Figs 2.1 and 6) was identified and recorded.

Formal repair

This generally took the form of bricks replacing stone or concrete replacing stone (eg south-west wing wall, context 010; Fig 2.2, north-east wing wall, contexts 025, 026, 027 and 028; Fig 2.4, north-west wing wall, contexts 038, 039, 040, 041 and 042; Fig 2.5 and north abutment, context 060; Fig 2.6). There are also areas of blue engineering bricks (eg south-west wing wall, context 002; Fig 2.2 and north-west wing wall, contexts 044 and 045)

Emergency/temporary repair

Concrete sand bags occur in various places (eg south-west wing wall, context 014; Fig 2.2, south-east wing wall, context 022; Fig 2.3, north-east wing wall, context 033; Fig 2.4, north-west wing wall, context 049; Fig 2.5, and south abutment, context 068; Fig 2.7).

Operational alterations and modifications

These relate to the requirements for the operation of the modern bridge deck and the facility to drain the canal (eg north abutment, contexts 055, 056, 057 – part of the landing for the deck of the lift bridge and contexts 061 and 062 – a recess cut in pre-existing brickwork and metal 'U' channel – elements of the stop plank grove; Fig 2.6, and south abutment, context 065 - metal 'U' channel – stop plank grove; Fig 2.7).

The invert

A brief record of the invert was made by the Canal & River Trust (Appendix 2).

Assessment of the bridge's significance

The Oxford Canal is an early and supreme example of a contour canal, linking Oxford with Coventry *via* Banbury and Rugby (Salberter 2014). The Act to build it was passed in 1769 but its engineer, James Brindley died shortly after, in 1772. By 1774 it had only reached Napton. The

section between Napton and Banbury was built between 1775 and 1778 under Samuel Simcock. James Barnes was appointed in 1786 to continue the works from Banbury to Oxford, once additional funds had been found. He completed it by 1790, but as by then funds were limited, the southern part has the reputation to have been built cheaply. It is also the section that, with the competition from the Grand Junction Canal and then the railway saw the biggest drop in boat movement and was threatened with complete closure in the mid-20th century. The northern section between Hawkesbury and Braunston was straightened in the 1830s to shorten the route and address the competition from the Grand Junction Canal.

The timber lift bridges have strong evidential value as they are remnants of the canal age and are also of historical value as a physical illustration of the financial constraints and the resulting innovative design to build accommodation bridges more cheaply.

Even though the bridge decking is made of timber which would, over time, be expected to be renewed, the special interest of the structure lies in the tilting design for the deck that is of a different design to other timber lift bridges found on the network and is specific to the Oxford Canal. A document in the Warwick County Record Office reveals that six bridges were rebuilt between 1824 and 1850 alone, two were abandoned/removed (202 and 242) and one was rebuilt in brick.

The design has been attributed to James Brindley although no evidence has, as yet, been found to support this. The timber lift bridge that is the furthest north (bridge 141) is located just north of Claydon, between Napton and Banbury, the junction Samuel Simcock completed after James Brindley died. The majority of the remaining bridges are south of Banbury, the section built by James Barnes. A drawing in William Weston's (1763-1833) notebook depicts a drawbridge with a reference to the Oxford Canal but this is of a different design.

Given that the timber lift bridges are of a design unique to the Oxford Canal, and have very simple lines they also have strong aesthetic values. Archive research has revealed that the bridge design has evolved over time with the current flat deck being a replacement of an earlier curved design.

Assessment of the recording techniques employed for the project

The need for recording of the structure prior to the repair works had not been identified and thus the recording project had to be undertaken:

- with no specific time allocated within the construction programme
- with no pre-determined budget

The priorities were thus not tied specifically to the needs of the historic environment but were determined by the needs for minimal cost and speed on site so as not to impede the construction activities.

In view of this, and since a stone-by-stone drawing for each element of the structure was aspired to, the method of on-site recording was proposed as digital rectified photography. This was very largely successful and it was only in the case of the south abutment (Fig 2.7) where the results fell short.

Ideally, when rectified photography is to be relied upon, the rectified drawings should be produced, checked on site, and any deficiencies that thus come to light made good. This can be done either by further photography or by conventional techniques. Unfortunately, in all the circumstances, it was not possible to produce the first draft of the drawings quickly enough, within the archaeological contractor's programme.

An outline plan (Fig 2.1), mainly for the purpose of locating the other figures, was produced by plane tabling.

Bibliography

Salberter, F, 2014 *Lift bridges, Oxford canal: heritage report*

Acknowledgements

The author would particularly like to thank Charles Baker and Phil Emery of the Canal & River Trust for their kind co-operation. The author would like to make special mention of the full and unstinting cooperation that was received from the construction team without which the recording project would scarcely have been possible.

Archive

The physical archive consists of:

5 x A4 pages	The text of the report
15 x illustrations of various sizes	Illustrations for the report

It has been deposited at the Waterways Archive..

The digital archive consists of:

5 x A4 pages	The text of the report (.doc format)
15 x illustrations of various sizes	Illustrations for the report (.bmp format)
1 x copy of the combined report	(.pdf format)

It has been deposited with OASIS.

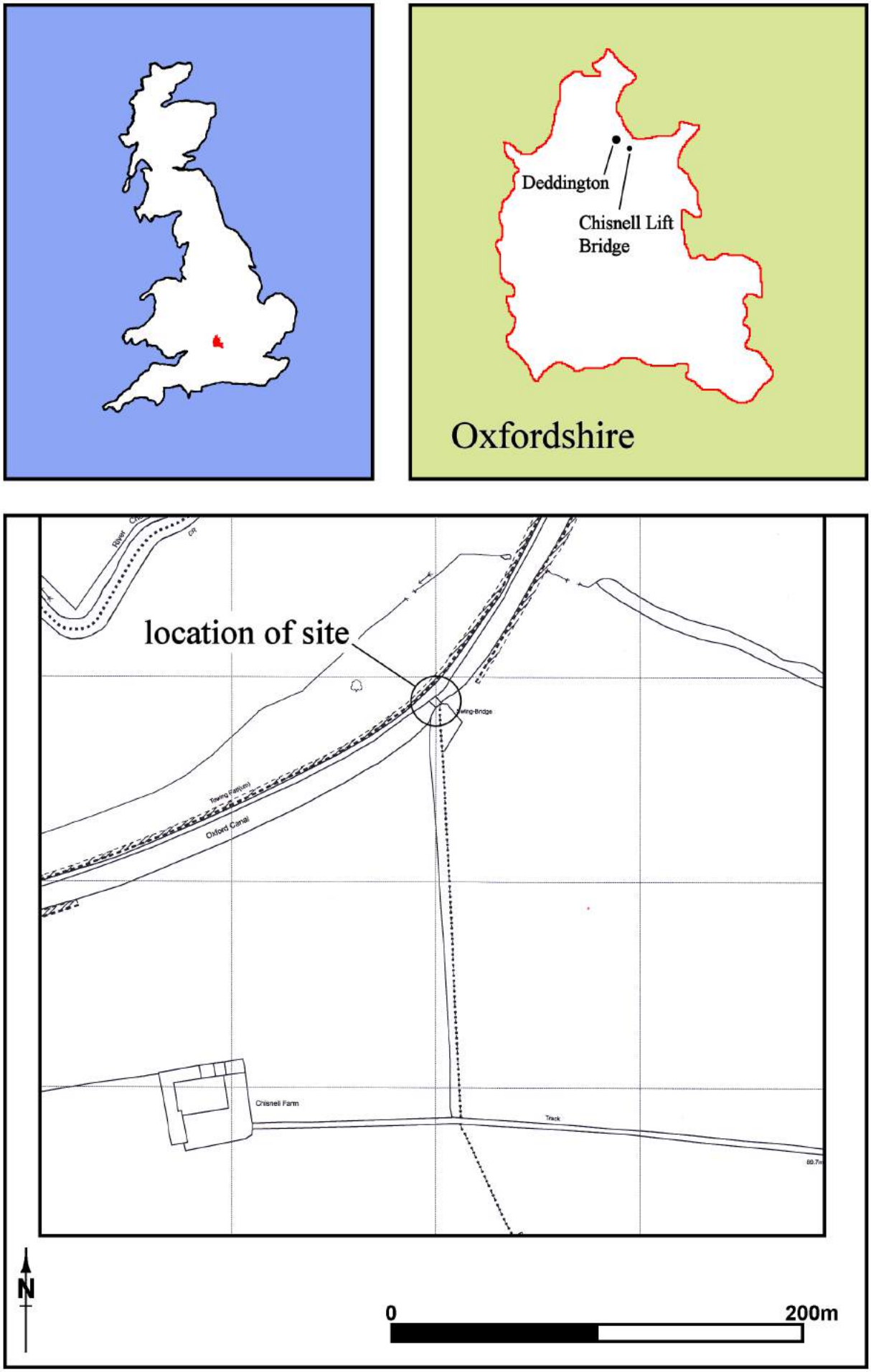


Fig 1: Location of site

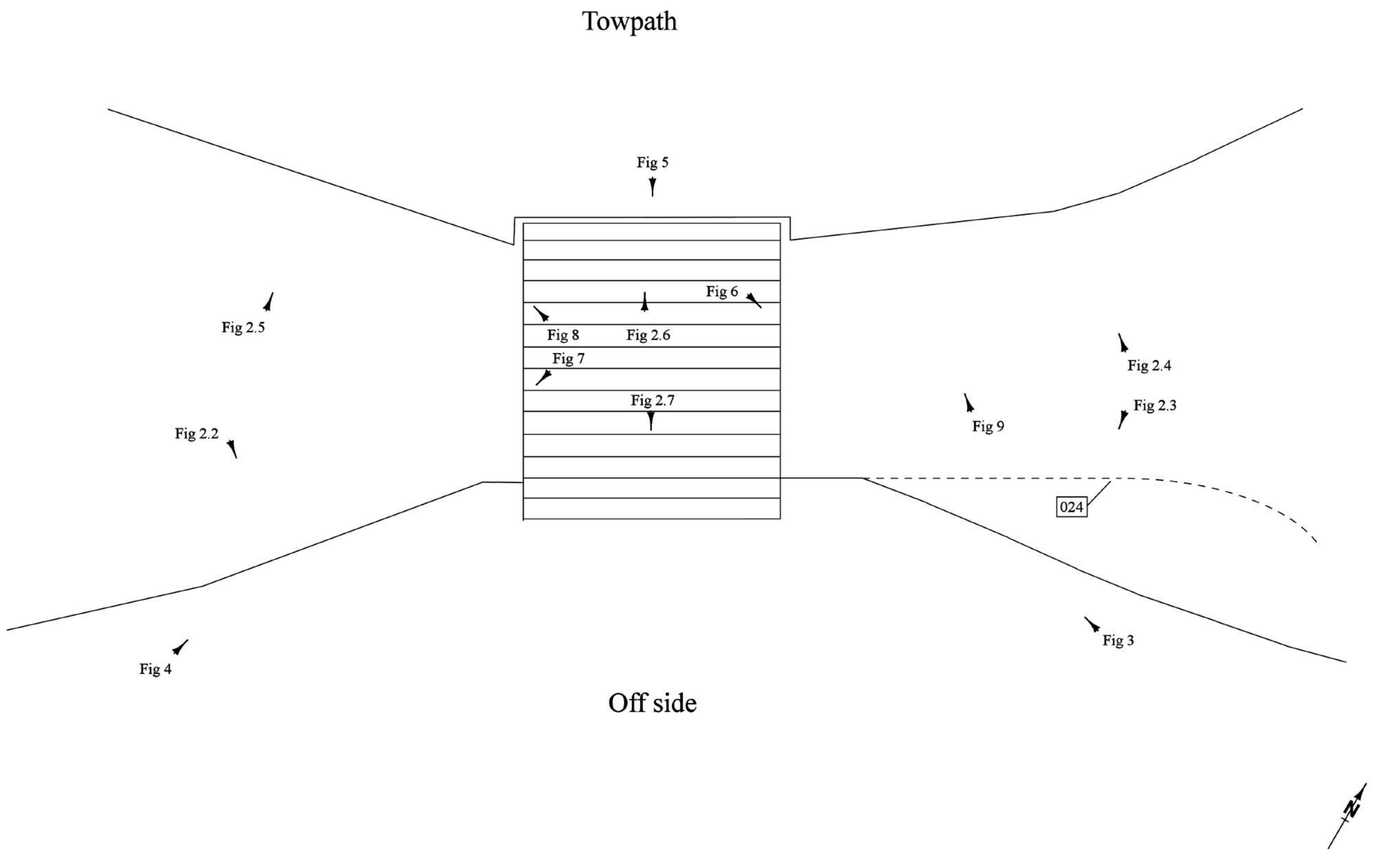


Fig 2.1: Plan of bridge showing deck, locations of elevations and other photographs

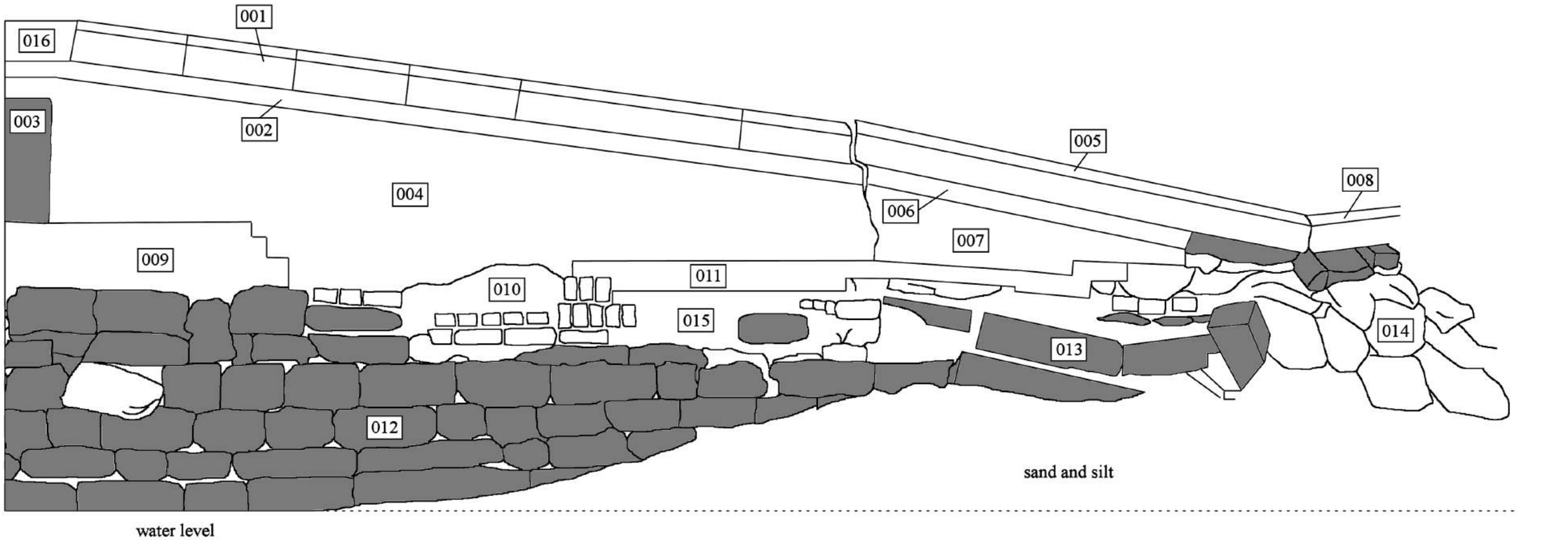


Fig 2.2: South-west wing wall

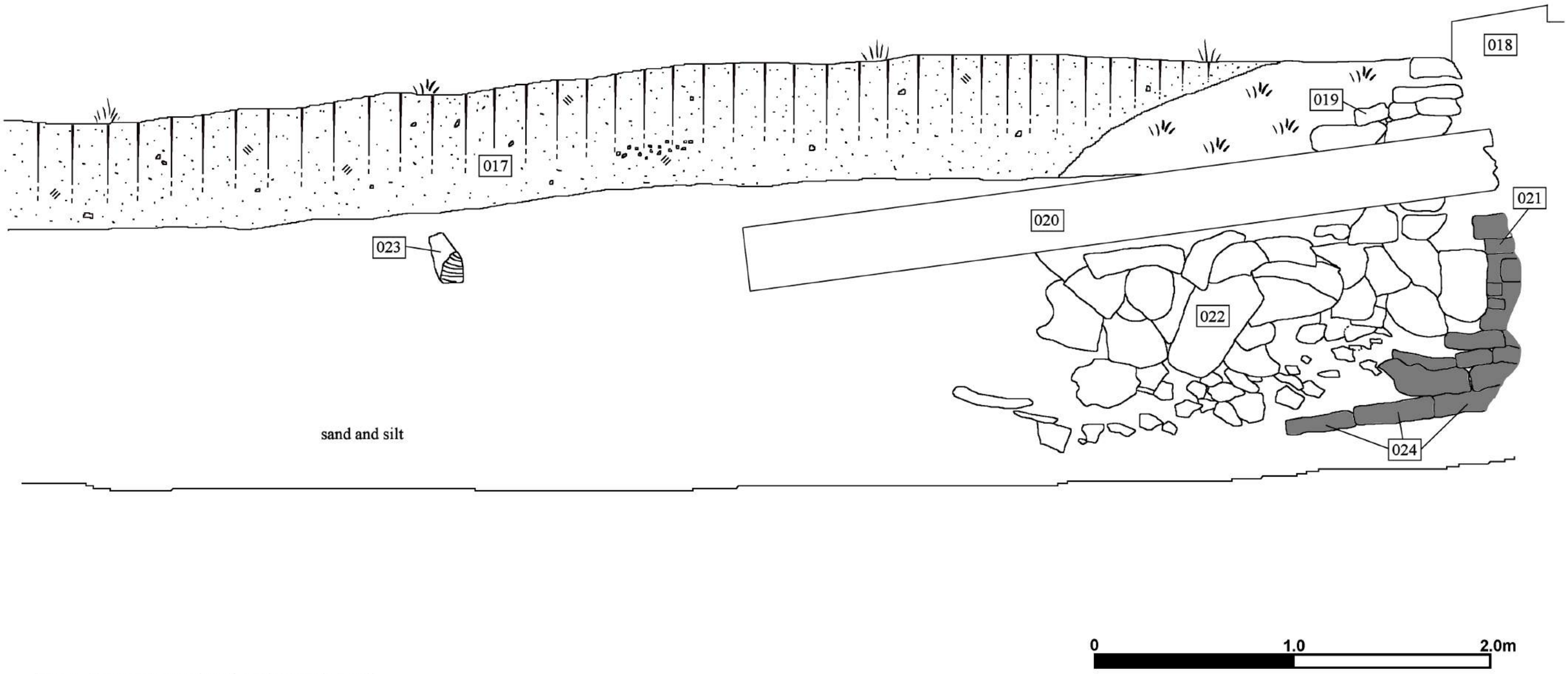


Fig 2.3: Fragmentary remains of south-east wing wall

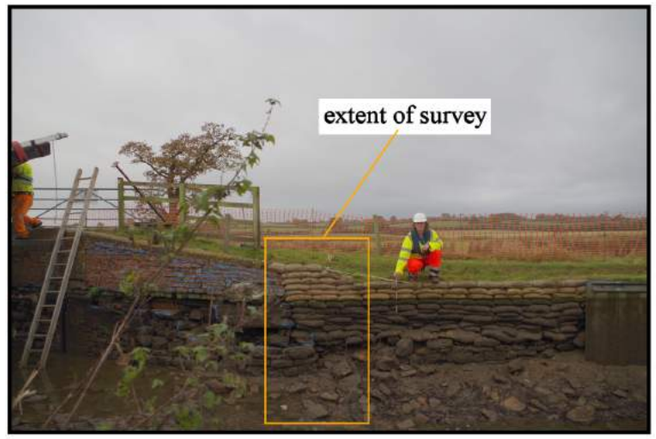


Fig 2.4: North-east wing wall

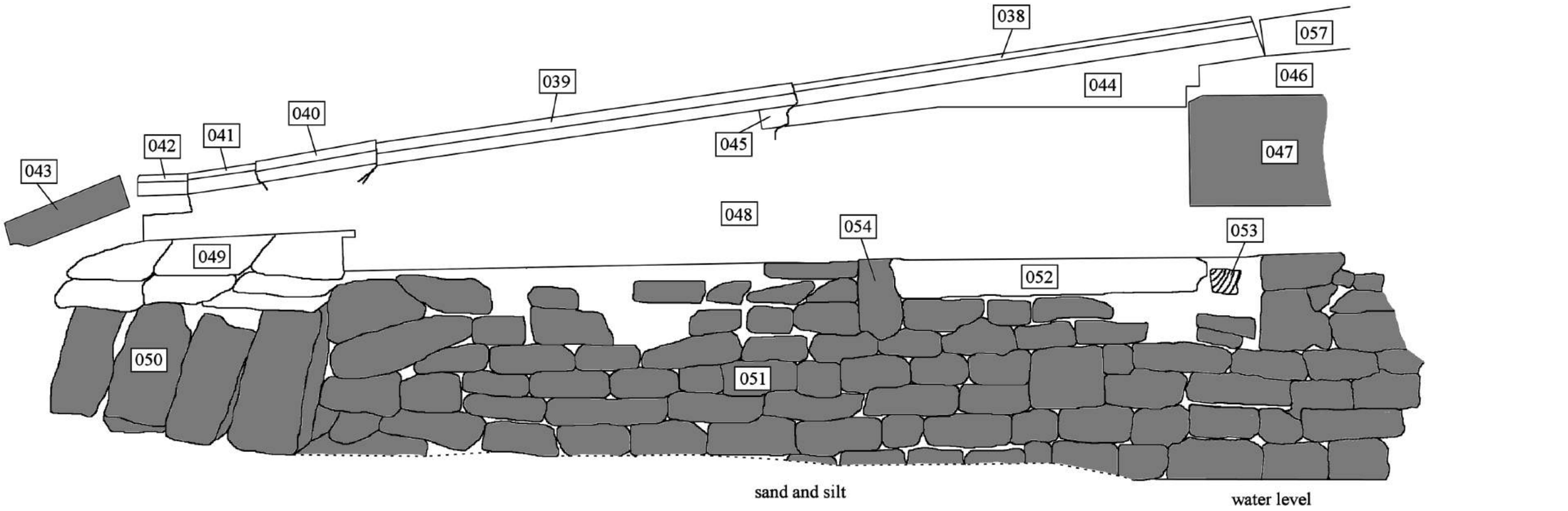


Fig 2.5: North-west wing wall

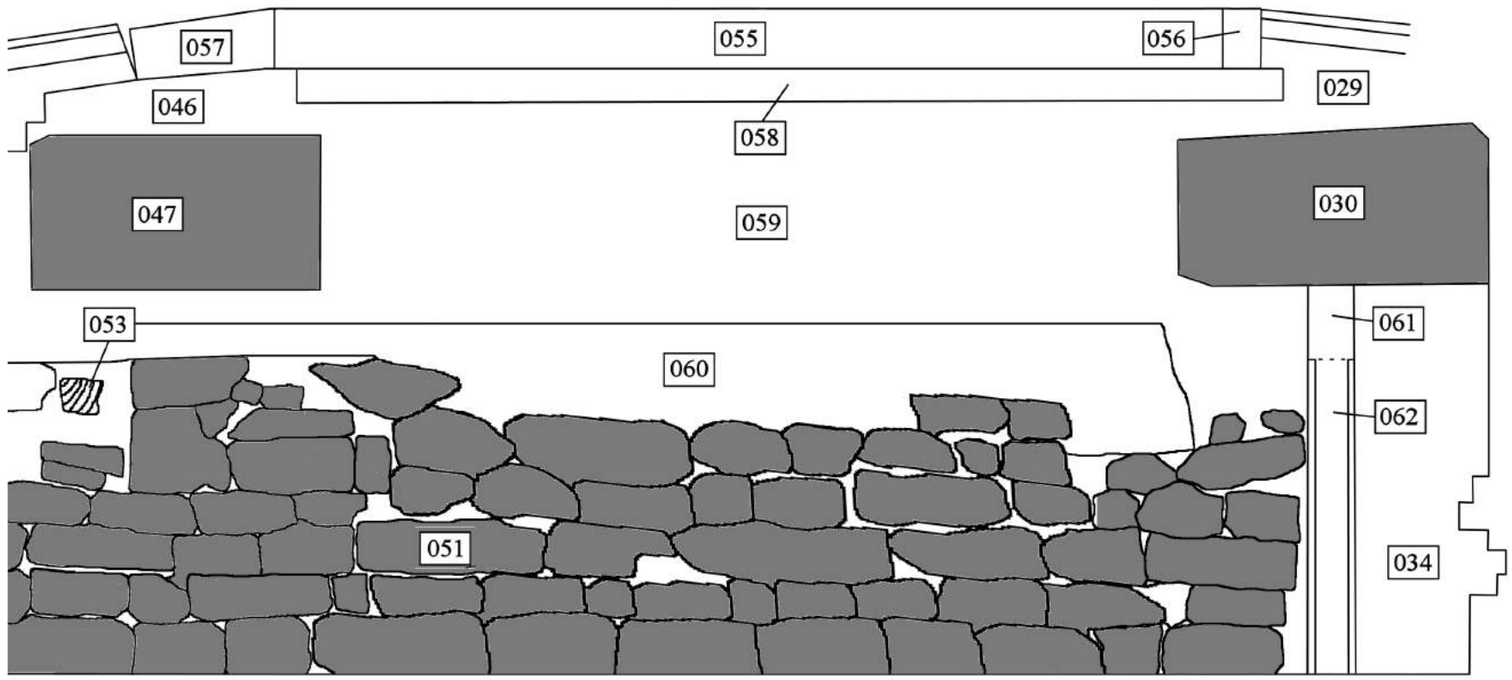
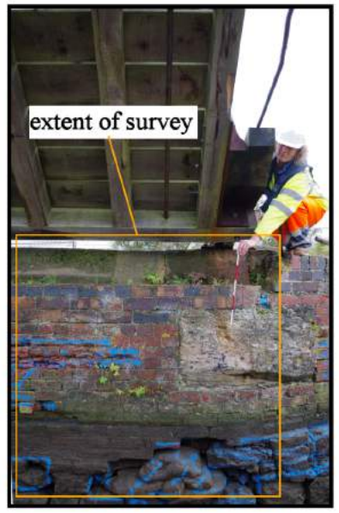


Fig 2.6: North abutment of bridge



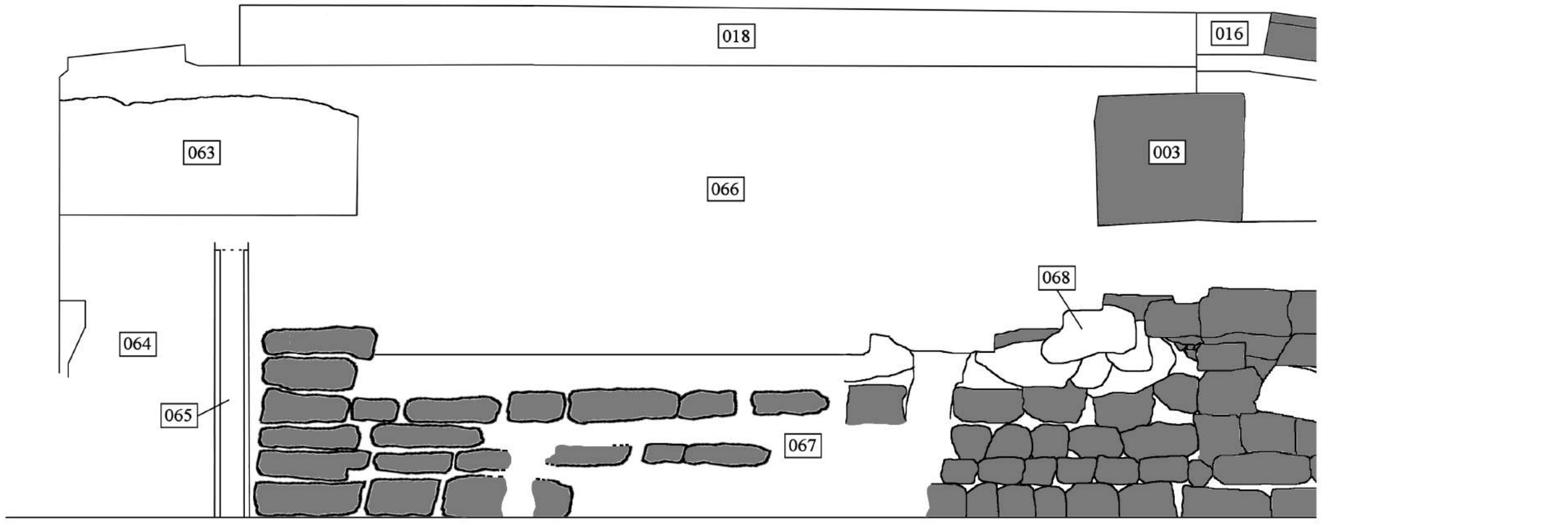


Fig 2.7: South abutment of bridge

Fig 3: General view of the bridge from the east

Fig 4: General view of the bridge from the south

Fig 5: View of the underside of the deck

Fig 6: View of the collapsed south-east abutment showing the original line of the abutment

Fig 7: South-west wing wall

Fig 8: North-west wing wall

Fig 9: North-east wing wall

Appendix 1: List of the contexts

Context number	Description	Location	Interpretation
001	Rectangular concrete with batter	South-west wing wall	Coping
002	Course of blue engineering bricks	South-west wing wall	Single course of engineering bricks underlying 001
003	Part of rectangular stone, protruding slightly from face of wing wall/abutment	South-west wing wall/ and south abutment	Rubbing stone
004	Red brickwork in English bond	South-west wing wall	Construction of south-west wing wall above water level
005	Rectangular concrete with batter, now collapsed	South-west wing wall	Coping
006	Course of blue engineering bricks, now collapsed	South-west wing wall	Single course of engineering bricks underlying 005
007	Red brickwork in English bond, now collapsed	South-west wing wall	Construction of south-west wing wall above water level
008	Rectangular concrete with batter, now collapsed	South-west wing wall	Coping
009	Red brickwork in English bond, now damaged and collapsed	South-west wing wall	Construction of south-west wing wall above and below water level
010	Brickwork in irregular bond, now damaged and collapsed	South-west wing wall	Probable patching of south-west wing wall below water level
011	Brickwork in irregular bond, now damaged and collapsed	South-west wing wall	Probable patching of south-west wing wall below water level
012	Large coursed, squared stone	South-west wing wall	Construction of south-west wing wall below water level
013	Large coursed, squared stone, now collapsed	South-west wing wall	Construction of south-west wing wall below water level
014	Area of concrete sand bags, partially collapsed	South-west wing wall	Temporary repair to south-west wing wall
015	Brickwork in irregular bond	South-west wing wall	Probable patching of south-west wing wall below water level
016	Brickwork	South-west abutment	Part of south bridge abutment
017	Mid-grey-brown clayey loam with occasional to common small rounded pebbles	South-east wing wall	Topsoil (although disturbed by construction activities associated with wing walls and abutments)
018	Concrete	South-east abutment	Part of south bridge abutment

Context number	Description	Location	Interpretation
019	Area of concrete sand bags, partially collapsed	South-east wing wall	Temporary repair to south-east wing wall
020	Timber hung from chains	South-east wing wall	Fendering to protect temporary sand bag repair
021	Medium to large squared, coursed stones, partially collapsed	South-east abutment	Part of south bridge abutment
022	Area of concrete sand bags, partially collapsed	South-east wing wall	Temporary repair to south-east wing wall
023	Timber protruding from bank	South-east wing wall	Possible timber tie-back for south-east wing wall
024	Alignment of medium to large squared stones in bed of canal	South-east wing wall, plan	Original position of south-east wing wall (see also Fig 6 showing collapsed wing wall material)
025	Rectangular blue bricks with batter	North-east wing wall	Coping bricks
026	Rectangular blue bricks with batter	North-east wing wall	Coping bricks
027	Rectangular blue bricks with batter	North-east wing wall	Coping bricks
028	Rectangular blue bricks with batter	North-east wing wall	Coping bricks
029	Red brickwork in English bond	North-east abutment	Part of north bridge abutment; same as 046 and 059
030	Part of rectangular stone, protruding slightly from face of wing wall/abutment	North-west wing wall/ and north abutment	Rubbing stone
031	Red brickwork in English bond	North-west wing wall	Construction of north-west wing wall above water level
032	Rectangular stone, protruding slightly from face of wing wall	North-west wing wall	Rubbing stone
033	Area of concrete sand bags, partially collapsed	North-east wing wall	Temporary repair to north-east wing wall
034	Large coursed, squared stone	North-east wing wall/ north abutment	Construction of north-east wing wall and north-abutment below water level
035	Large semi-coursed, semi-squared stone	North-east wing wall	Construction of north-east wing wall below water level
036	Large coursed, squared stone	North-east wing wall	Construction of north-east wing wall below water level
037	Large semi-coursed, semi-squared stone	North-east wing wall	Construction of north-east wing wall below water level
038	Brickwork	North-east wing wall	Probable patching of north-east wing wall below water level
039	Rectangular blue bricks with batter	North-west wing wall	Coping bricks

Context number	Description	Location	Interpretation
040	Rectangular blue bricks with batter	North-west wing wall	Coping bricks
041	Rectangular blue bricks with batter	North-west wing wall	Coping bricks
042	Rectangular blue bricks with batter	North-west wing wall	Coping bricks
043	Rectangular stone with batter	North-west wing wall	Coping stone
044	Course of blue engineering bricks	North-west wing wall	Single course of engineering bricks underlying 038 and 039
045	Single of blue engineering brick	North-west wing wall	Part of 044
046	Red brickwork in English bond	North-west abutment	Part of north bridge abutment; same as 029 and 059
047	Part of rectangular stone, protruding slightly from face of wing wall	North-west wing wall	Rubbing stone
048	Red brickwork in English bond	North-west wing wall	Construction of north-west wing wall above water level
049	Area of concrete sand bags, partially collapsed	North-west wing wall	Temporary repair to north-west wing wall
050	Large semi-squared stones	North-west wing wall	Probable collapsed material, reused in current position
051	Large semi-coursed, semi-squared stone	North-west wing wall	Construction of north-west wing wall below water level
052	Brickwork	North-west wing wall	Probable patching of north-west wing wall below water level
053	Timber protruding from wing wall	North-west wing wall	Possible timber tie-back for north-west wing wall
054	Possible position of timber protruding from wing wall	North-west wing wall	Possible timber tie-back for north-west wing wall
055	Concrete	North abutment	Part of landing for bridge deck
056	Concrete	North abutment	Part of landing for bridge deck
057	Concrete	North abutment	Part of landing for bridge deck
058	Concrete	North abutment	Part of landing for bridge deck
059	Red brickwork in English bond	North abutment	Part of north bridge abutment; same as 029 and 059
060	Brickwork	North abutment	Probable patching of north abutment below water level
061	Gap in brickwork	North abutment	Stop plank groove
062	Metal 'U' channel	North abutment	Stop plank groove
063	Part of rectangular stone, protruding slightly from face of wing wall/abutment	South abutment	Rubbing stone
064	Red brickwork in English bond	South abutment	Part of north bridge abutment
065	Metal 'U' channel	South abutment	Stop plank groove
067	Large semi-coursed, semi-squared stone	South abutment	Construction of south

068	Area of concrete sand bags, partially collapsed	South abutment	Temporary repair to south abutment

Appendix 2: Photograph of the invert

Bridge 193 : Invert between bridge abutments

Photo 2016-12-16