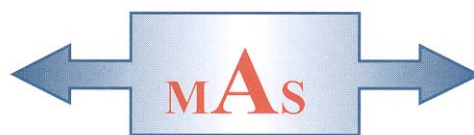


# LOWER NORTH WATER BRIDGE ANGUS



**- Mason's marks survey -**  
**-Part 2 -**  
Carried out 19<sup>th</sup> August 2008  
by  
**Murray Archaeological Services Ltd**



**Report No: MAS 2008-24**  
by  
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## LOWER NORTH WATER BRIDGE ANGUS

### **-Mason's marks survey Part 2- HK and JC Murray**

## **1 Background**

1.1 In 2007 Murray Archaeological Services Ltd was commissioned by Aberdeenshire Council Archaeological Service to undertake a survey of the mason's marks on those parts of the Lower Northwater Bridge, Angus, that were accessible by scaffolding erected for the 2007 renovation of part of the structure. The two most northerly spans, Spans 7 and 8, the north part of the W facade and the parapet on the W side of the bridge were surveyed over a period of three days, 7th-12th December, 2007.

1.2 The survey (Report MAS 2007-40) identified over 600 marks on spans 7 and 8. Sixteen different marks were recorded and it was apparent that these could be divided into the mason's autograph marks, a series of letter marks that were found in combination with the autograph marks and which were applied after them, and a number of x marks which appeared with both autograph marks and the letter marks.

1.3 It was suggested that some of the letter marks might indicate phases in construction and that further survey of the remaining six arches of the bridge would be worthwhile.

1.4 In 2008 Murray Archaeological Services Ltd was commissioned by Aberdeenshire Council Transportation and Infrastructure to undertake a survey of the mason's marks on these remaining six arches (arches 1-6) of the Lower Northwater Bridge, during the second phase of bridge renovation. This work was undertaken on 19<sup>th</sup> August, 2008.

## **2 Architectural background**

2.1 Lower Northwater Bridge was constructed in 1770-1775 by the architects and engineers John Smeaton; John Adam and Andrew Barrie of Montrose.

2.2 Arches 1-6 were under restoration at the time of the survey.

## **3 Methodology**

3.1 As a full catalogue of all marks had been compiled in 2008, a recording sheet check-list based on that evidence was prepared for use in 2008 (Appendix 1).

3.2 Unlike 2007, when there had been close access from scaffolding to both spans 7 and 8, access in 2008 was more restricted- with access to the water arch 4 being provided from a cradle over the water.

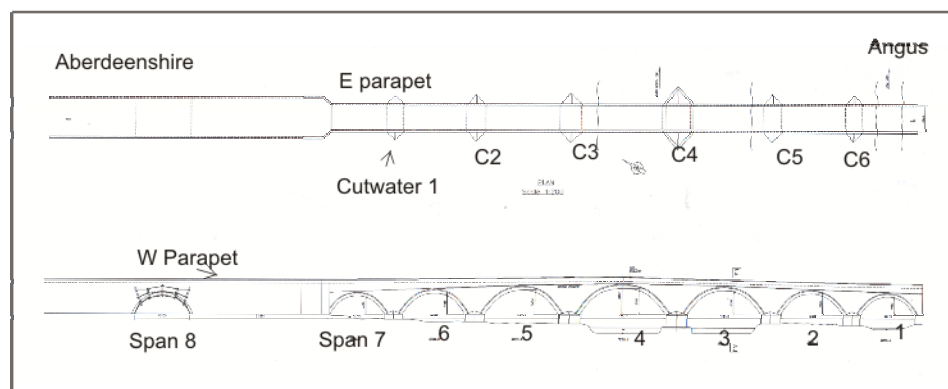
3.3 To maximise the information retrieved, one member of the survey team used high magnification binoculars to scan each arch course by course, identifying the clearly identifiable marks. The other member of the team logged the data onto the recording sheets. This proved a quick and fairly straightforward method- although one that could not have been attempted had the basic range of marks not already been catalogued.

3.4 Marks that were unclear were not recorded. It should be noted that some of the unclear marks might have been identifiable at closer contact. It should also be noted that the more exposed water arches were, not surprisingly, more weathered and had more accretion which obscured marks.

3.5 As there was no close access to most areas, no rubbings were attempted and only new marks (or variants) were photographed.

## 4 Location of marks

4.1 Marks were recorded on all of spans 1, 2, 4, 5 and 6. Only c 2/3<sup>rd</sup> of arch 3 could be recorded as it is over water and at the time of survey there was cradle access to water arch 4 but not to arch 3. Similarly, cutwater 4, between arches 3 and 4 (in the middle of the river) could not be surveyed. Due to traffic there was no access to the E parapet. It is not considered that there is a significant loss of information due to the lack of recording in these areas.












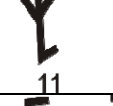




Illus 1 Annotated plan and W elevation of bridge

## 5 The survey

5.1 The totals of all marks observed are shown in table 1. For clarity, the totals from 2007 have been added in. A total of 947 marks have been observed over the two years.

5.2 These can be divided into three categories: autograph marks, placement marks and x marks. These are discussed in greater detail below.

Mark	Arch 1	Arch 2	Arch 3 part	Arch 4	Arch 5	Arch 6	Arch 7 (2007)	Arch 8 (2007)	Parapet (2007)	CW 1	CW 2	CW 3	CW 4 Not recorded	CW 5	CW 6	total
 1		3			1		4									8
 2					2				9							11
 3	11	18	9	52	33	33	56	74	2					1	1	290
 4	8	8		7	1	9	25	22								80
 5	18	10	1	3	8	7	40	29								116
 6	2	2		8	8	7			1		2	2		2	1	35
 7		4	2	9	10	2	1				1	2 (with M)		1	2	35
 8	15	16	5	27	26	15	28	43	1					1	1	178
 9						1			2							3
 10								1								1
 11									2							2
 12				26	11	5	6	6	3							57

Mark	Arch 1	Arch 2	Arch 3 (part)	Arch 4	Arch 5	Arch 6	Arch 7 (2007)	Arch 8 (2007)	Parapet (2007)	CW 1	CW 2	CW 3	CW 4	CW 5	CW 6	total
<b>M</b>  13	4			5	4	1	4		2	3	3	3		3	1	33
 14									1							1
<b>A</b> (15)			1	48	5				8							
<b>C</b> (16)	5	60	1	2		51	1									
<b>D</b> (17)	88	11		4	4	43	223	276								
<b>B</b> (18)		3	22	3	84	3										
<b>X</b> (19)			1	5		20	36	29			1					92
<b>Double A</b> (20)				2												2
<b>Triangle on Z</b> (21)					1		1									2
<b>Diamond + open triangles</b> (22)														1		1

**Table 1. Totals of all marks recorded in both 2007 and 2008**

5.2 Five new marks were recorded in 2008, these include two possible autograph marks which did not appear to be variants on existing marks (Marks 21, 22), two letter/placement marks (D/mark 17 and B/mark 19) and one mark (20) which appears to be a double A. The x marks also noted in 2007, which occur on some stones and in combination with both autograph marks and letter/placement marks have also been given a mark number (19).

### Mark 20 Double A



Two examples only, both near the apex of arch 4- which was the arch with most A marks.

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**Mark 21 Triangle on Z**



Two examples, one each on arches 5 and 7 (not visible in 2007); both below impost.

**Mark 22 Diamond + open triangles**



One example only, on cutwater 5. This could be a variant of mark 3 but the internal cross line not seen on any mark 3 and the triangles appeared to be open-ended.

## 6. Date stone

At the apex of the underneath of the main river arch, arch 4, there was a date stone with 1774 carved in high relief. This is considered to indicate when the final arch was completed.



Illus 1 Date stone on underneath of apex of arch 4

## 7. Discussion of the marks

7.1 *Autograph marks* The autograph marks are those which appear to be the masons' individual marks.

Fourteen possible marks have been identified (1-12, 21, 22). Some marks show a range of minor variations which are considered to be of no significance (e.g. 2, 3, 8, and 12). A good example was noted in 2007 with a very large version of mark 8 that was 620mm long (MAS 2007-40, 11). It is now considered possible that marks 6 and 7 may also be variations on a single mark but for the following analysis they are treated separately.

Of the 14 possible masons identified, there appear to have been 7 (or 6 if marks 6 and 7 are variants) who worked on most or all areas of the bridge and were probably employed for the full duration of the project (1770-1775).

Marks 21 and 22 were only observed on the cutwaters or below the imposts and may therefore have been involved in the foundation work only.

Marks 1, 2 and 9-11 were observed on limited areas and with few marks so may have been employed for limited periods only or may have been more involved in the

construction of the rough stone elements of the bridge which do not bear (visible) marks.

Mark	Arches	Cutwaters	Parapet	Total
1	2,5,7			8
2	5		Yes	11
3	All arches	Yes	Yes	290
4	All arches			80
5	All arches			116
6	1,2,4,5,6	Yes	Yes	35
7	2,3,4,5,6,7	Yes		35
8	All arches	Yes	Yes	178
9	6		Yes	3
10	8			1
11	7			2
12	4,5,6,7,8		Yes	57
21	5,7 below impost			2
22		Yes		1

**Table 2. Analysis of individual autograph marks (main masons highlighted)**

7.2 *Placement marks* As suggested in 2007 and proved fairly conclusively in 2008, a series of letters (**M** (mark 13, possibly mark 14), **A** (15), **C** (16), **D** (17) and **B** (18)) appear to indicate specific areas of the construction and probably seasons of work. These marks occur in combination with a range of autograph marks on individual stones and in a number of cases have been cut after the autograph mark, overlying it or even using part of the autograph mark to form the letter. Analysis of the distributions shows that apart from 3 examples on the parapet, all M are on the cutwaters or below the impost on the arches- in other words in the foundation level. This may represent the first season's work in 1770.

Letters **A**, **B**, **C**, and **D** appear to be in sequence from the outside arches with D, moving in towards the main river span 4 which has the letter A. As the top of the underside of arch 4 also bears a stone with the date 1774, it is suggested that these are stones cut in different seasons from 1771 – 1774. It is assumed that much of the cutting may have taken place in winter/spring with the stones set in place through the summer/ early autumn so in fact each season would have overlapped 2 years- the suggested 'years' on the chart below are those of possible construction. In each season a small number of stones cut the year before have been used up (also indicating that these are probably marks put on in the area – possibly in the quarry- when the stones were cut).

Some stones marked with A were used in the parapet, which is likely to have been the last part of the bridge to be finished.





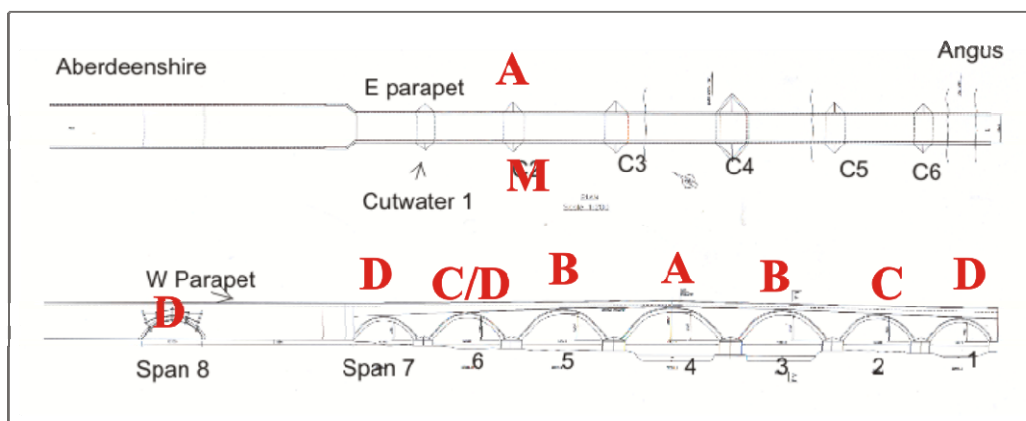
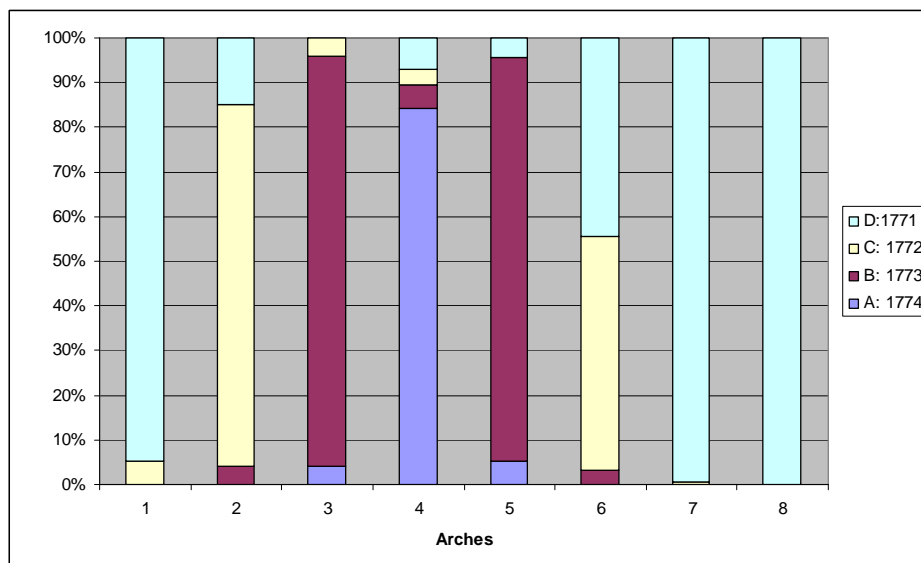
Mark	Arc h 1	Arc h 2	Arc h 3 (part)	Arc h 4	Arc h 5	Arc h 6	Arc h 7 (20 07)	Arc h 8 (20 07)	Parap et (2007)	C W 1	C W2	C W3	C W4	C W5	C W6	total	
M  13	4			5	4	1	4		2	3	3	3		3	1	33	On arches all below impost
 14									1							1	
A (15)			1	48	5				8								
C (16)	5	60	1	2		51	1										
D (17)	88	11		4	4	43	223	276									
B (18)		3	22	3	84	3											

Table 3: Totals of placement marks (highlight shows main concentrations)



Illus 2 Plan of bridge showing concentration of each placement letter



Illus 3 Chart to illustrate placement letters and probable date of season

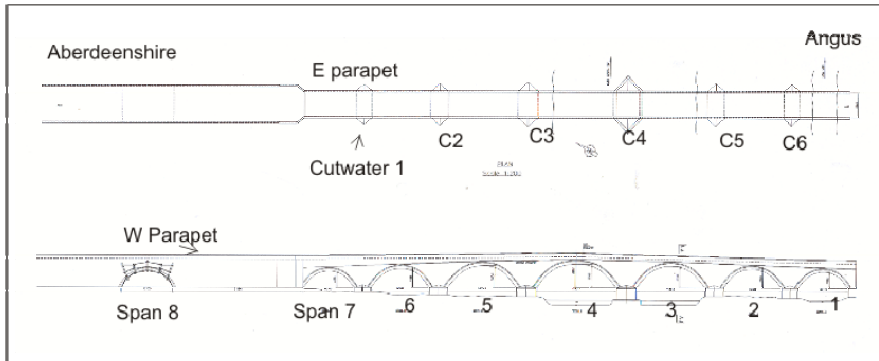
7.3 *X marks* The x marks also appear secondary and occur in combination with both the autograph marks and the placement marks and may represent a system of quality control, they occur in most areas but more were observed on those arches which could be observed closely as they are quite small.

## 8 Catalogue of photographs

















A full set of photographs with the photo location plans will be supplied on CD to the Aberdeenshire SMR and to the RCAHMS SMR.

- 1-2 Date stone under arch 4
- 3-5 Working from cradle arch 4
- 6-8 Double A on arch 4 (mark 20)
- 9 Working from cradle arch 4
- 10-11 Mark 22
- 12 Arch 2
- 13 Arches 3 and 4 (background)
- 14 Mark 21 (arch 5)
- 15-16 Mark M associated with mark 6
- 17 General view
- 18-19 Mark 21 (arch 7)

Appendix 1 Recording sheets used in 2008



Mark	Frequency (present/ frequent)	Mark	Frequency (present/ frequent)
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 <p>1</p>		 <p>9</p>	
 <p>2</p>		 <p>10</p>	
 <p>3</p>		 <p>11</p>	
 <p>4</p>		 <p>12</p>	
 <p>5</p>		 <p>13</p>	
 <p>6</p>		 <p>14</p>	
 <p>7</p>		 <p>15</p>	
 <p>8</p>		 <p>16</p>	