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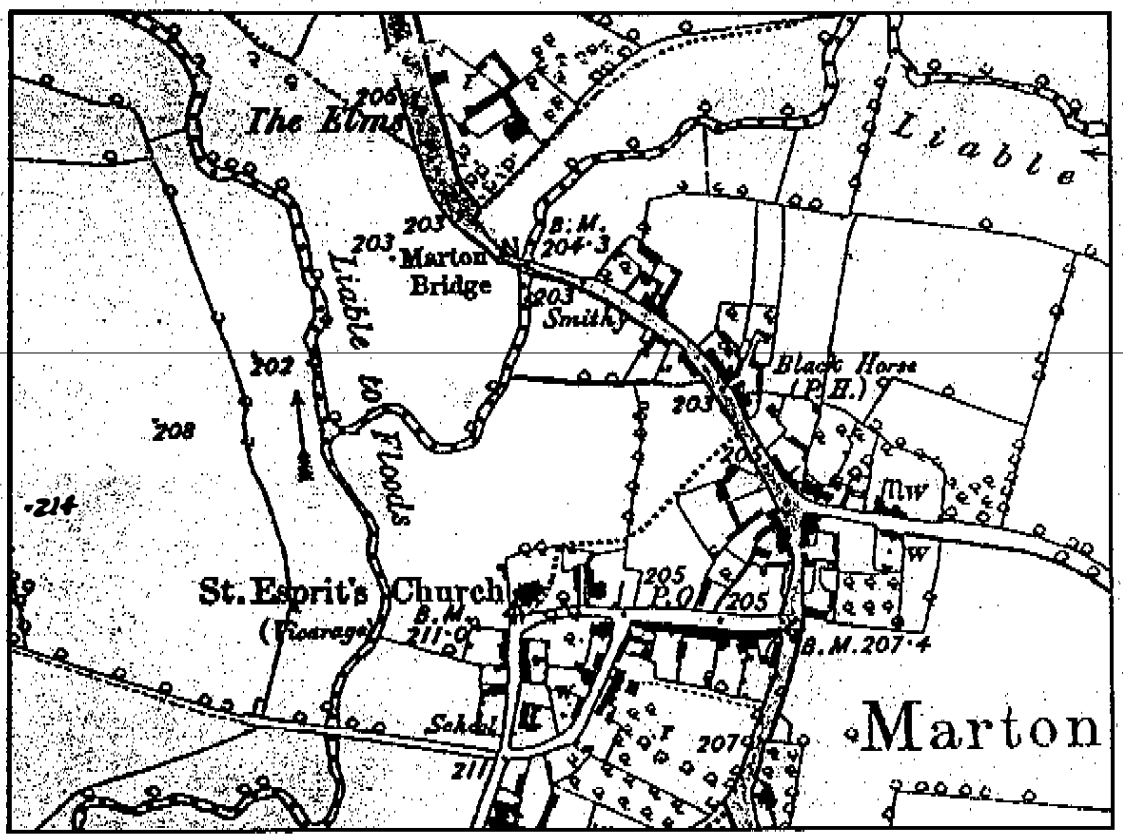
Reconstruction of Marton Bridge, Warwickshire:

Archaeological Recording - Stage 1 Preliminary

Surveys and Stage 2 Trial Trenching



Warwickshire County Council
Libraries & Heritage
Museum Field Services
Archaeology Projects Group

April 1999

Reconstruction of Marton Bridge, Warwickshire: Archaeological Recording - Stage 1 Preliminary Surveys and Stage 2 Trial Trenching

Contents

List of Figures

Report 9921
April 1999

Warwickshire Museum Field Services
The Butts
Warwick
CV34 4SS

Summary

The reconstruction of Marton Bridge, a Scheduled Ancient Monument, largely dating to c.1414 and extended to the north in 1926, is to be accompanied by a three stage pr gramme of archaeological recording. Stage 1 involved background historical research, and a survey of the masonry of the central section of the medieval bridge which identified nine constructional phases, dating from the 15th to the 20th centuries. Stage 2 , the excavation of three trial trenches to the north of the bridge revealed evidence for a cobbled roadway across the floodplain leading to an early ford or bridge. No dating vidence was retrieved but the surface seems likely to have been medieval. Stage 3 will involve observation of the construction work and recording of archaeological features revealed, with further excavation if necessary.

1. Introduction

1.1 Warwickshire County Council have applied for for Scheduled Monument Consent to ebuild Marton Bridge, Ma ton, Warwickshire (Scheduled Ancient Monument Warwickshire no 30, SMR ref WA 3151) on behalf of the Highways Agency. The bridge is located to the north west of the village of Marton on the A423 where it crosses the River Leam at national grid reference SP 4068 6913. The south part of the existing structure appears to consist largely of the bridge built in stone in c.1414 which replaced an earlier bridge which was in existence by 1223 (Fig 1). The north part is a widening attached to the medieval bridge in 1926 (Fig 2). It is now proposed to demolish most of the 1926 widening and build a new bridge just north of the medieval structure whose main arches and western flood culvert would then be re-exposed and restored.

1.2 As part of the rebuilding work a programme of archaeological recording approved by English Heritage is being carried out. This will involve three stages of work, followed by the production of appropriate reports. Stages 1 and 2, which did not require Scheduled Monument Consent, have been commissioned from the Field Archaeology Projects Group of Warwickshire Museum and their results are presented in this report. Stage 1 consisted of preliminary background historical research and a survey of the visible parts of the medieval bridge that will be affected by the proposals. Stage 2 was an archaeological field evaluation of the site of the new bridge comprising three trial trenches. Stage 3 will involve observation and recording of the contractor's excavations and demolition work. Further excavation will take place if significant medieval or earlier features are revealed.

2. Archaeological Recording Programme – Aims and Methods

2.1 In Stage 1 the history and archaeology of the bridge was researched using documentary sources, early map and pictorial sources held by the Warwickshire County Record Office, historic plans held by the Warwickshire County Council Bridges Section, archaeological information held by the Warwickshire County Sites and Monuments Record and standard local history and archaeological publications (for a full list of sources used, see Bibliography).

2.2 The survey of the parts of the existing medieval structure to be affected by the proposed works involved the preparation of stone by stone elevation drawings at a scale of 1:20 of the currently visible parts of the north side of the medieval bridge and the adjacent pier and abutments (Fig 3, Elevations A-E). A photographic record was also made. This work was mainly carried out in August 1995 and updated in January 1999. The elevation drawings were then used, in conjunction with the

Fig 1: Marton Bridge, south side , October 1998

Fig 2: Marton Bridge, north side , October 1998

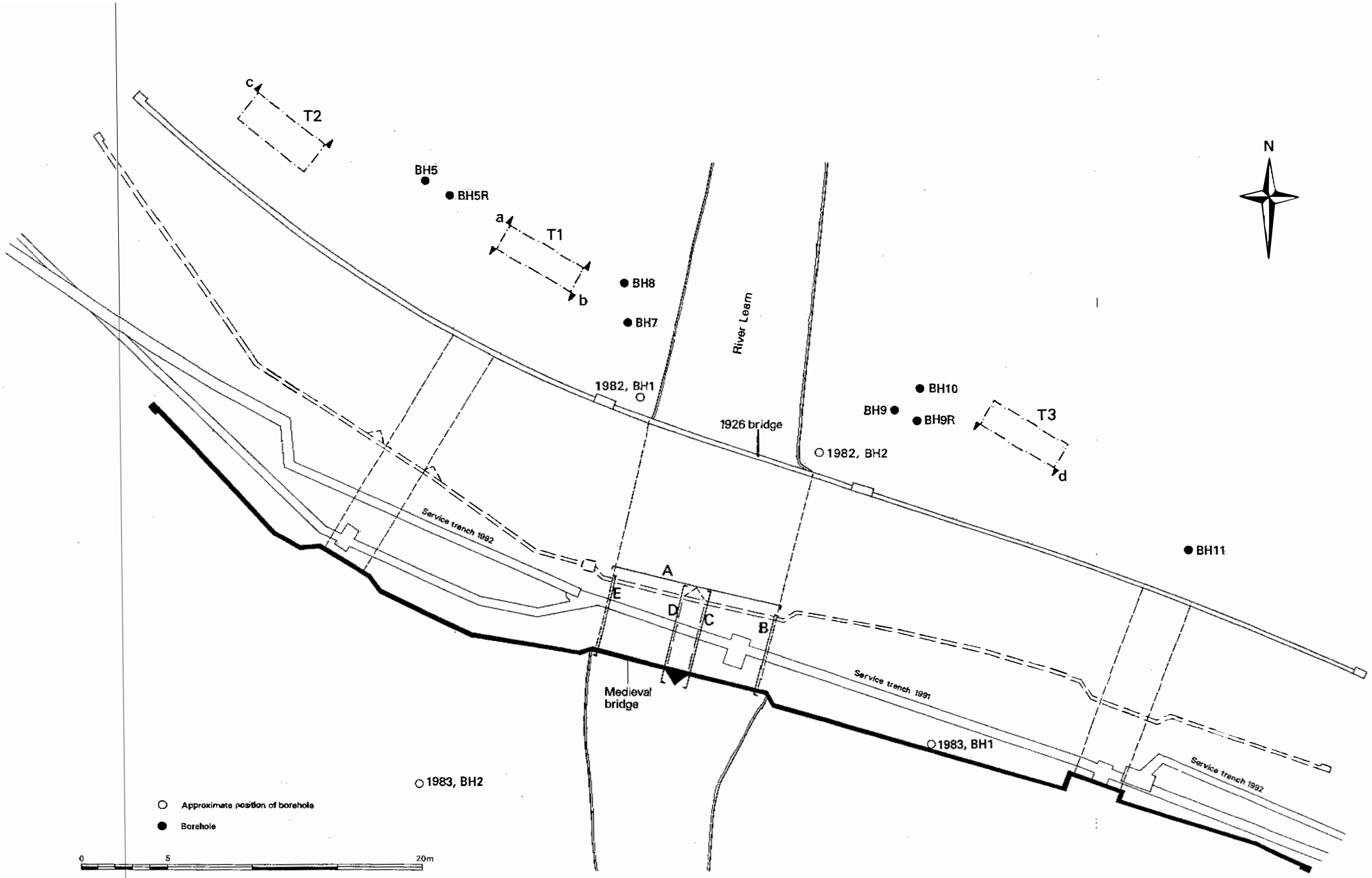


Fig 3: Marton Bridge, 1999, Plan

evidence of historic plans, maps and views to produce a preliminary phasing for the structure.

2.3 The markedly curved alignment of the existing bridge and approaches gives rise to a possibility that remains of earlier medieval bridge or ford structures may once have existed to the north. Because this area will be affected by the new bridge English Heritage recommended that a field evaluation be undertaken to establish whether any such remains survive there. This (Stage 2) involved the excavation in Janaury 1999 of three trial trenches, each 5m x 1.6m x 1.5m deep, two on the west side of the river, one to the east (Fig 3, T1-T3). Information from the trenches was combined with existing data from borehole surveys carried out around the bridge in 1982, 1983 and 1991 to produce an assessment of the potential survival of remains.

2.4 Stage 3 of the programme will involve observation, recording and excavation, if necessary during the construction work The rebuilding is planned in stages so that the traffic flow can remain interrupted. The first stage of work will involve the construction of most of the new bridge to the north. The topsoil stripping and excavations for the new embankment and abutments on the north east side will be archaeologically observed in case any remains of an earlier bridge or ford are revealed. Any significant medieval or earlier remains uncovered will be archaeologically excavated and recorded to the satisfaction of English Heritage and the Warwickshire County Archaeologist. It is hoped that any such work can be accommodated within the contractor's programme, but two contingency periods, each of two weeks, one for this stage and one for the next, will be written into the contract timetable to allow for this.

2.5 The second stage of the work will involve the south side of the bridge and include the demolition of the 1926 widening. This will be observed by archaeological staff at its junction with the medieval structure. The surviving medieval structure will then be planned and recorded and the existing stone by stone elevation drawing will be extended and amended, before the cont actor carries out any restoration work. If appropriate, the elevations may be recorded photogrametrically or by rectified photography and then checked manually. Any significant medieval features revealed will be excavated as necessary and recorded.

2.6 In addition it is planned to insert a concrete lining to the river through the bridge to prevent scouring of the river bed and to carry out some landscaping of the floodplain in the vicinity of the bridge. The contractor's excavations in connection with this will also be observed to allow recording of any details of the foundations of the medieval bridge abutments or any earlier bridge or ford structure revealed. Any excavations impinging on the medieval structure or its junction with the 1926 widening will be archaeologically observed and any significant archaeological features will be recorded.

2.7 Archaeological features will be recorded using the Warwickshire Museum's standard archaeological recording system or other system to be approved by the Warwickshire County Archaeologist and English Heritage. Features will be photographed in colour and monochrome, and measured plans and cross sections will be drawn at suitable scales. Particular attention will be paid to any waterlogged deposits and/or preserved timbers revealed. Contingency allowances will be made for specialist analyses of waterlogged environmental material and dendrochronological dating of timber structure.

2.8 A further report on the Stage 3 work will be produced. This will give a detailed account of any features or areas archaeologically excavated with plans showing the location of trenches dug and features located, and lists of finds recovered with spot dates where significant. It will also include a revised account of the structural development of the bridge, illustrated by similar plans, cross sections, elevation

drawings and photographs, as appropriate. Summary reports for publication will also be submitted to appropriate local and national archaeological publications. In the event of significant archaeological discoveries being made requiring more detailed publication a further report will be produced for an appropriate local or national archaeological journal.

2.9 Copies of the reports will be deposited with English Heritage, the Warwickshire Sites and Monuments Record, the Warwickshire County Record Office, Warwick Library Local History Collection and the National Archaeological Record. The archaeological archive resulting from the work will be deposited in the Warwickshire Museum, along with any finds, subject to the consent of the landowners.

3. Archaeological and Historical Background

3.1 The first reference to a bridge at Marton comes in 1223 when according to Dugdale (1730, 327) the king (Henry III) farmed out the tolls to the Abbot of S lby in return for a fixed rent. In 1251 the prioress and nuns of Catesby (Northants) were allowed free transit by the bridge of Marton, quit of pontage (VCH 1951, 170). In 1276 the then prioress of Catesby was arraigned for withholding two of the 5 shillings due from her for holding custody of the bridge, having presumably taken this over from the Abbot of Sulby (Dugdale 1730, 327).

3.2 In 1414 it is recorded that a new stone bridge was built at the expense of John Middleton, a native of Marton who had become a wealthy merchant in London. This was carried out as an act of charity by Middleton towards his birthplace, as the new bridge was free of tolls (VCH 1951, 170). Bridge construction or maintenance was a common object of late medieval charity; Clopton Bridge in Stratford-upon Avon was another gift to a birthplace by a Warwickshire native turned succesful London merchant.

3.3 By the 17th century the maintenance of the Bridge was a County responsibility and the early Quarter Sessions Records record a number of repairs (Warwickshire county Records I, 3-4; IV, 155). At Easter 1625 it was reported that repairs to the bridge costing a total of £51 13s 4d had been carried out by John Harrys of Fillongley, mason. In Trinity 1661 repairs costing £20 were ordered, and in 1676 it was ordered that a survey be carried out and a contract for further repairs made as necessary. In 1681 attempts were made to get the inhabitants of Marton to take responsibility for 'gravelling' the bridge, presumably maintaining the surface, as opposed to the structure which was a clear County responsibility. In 1682 however it was decided that the county should pay for 'gravelling', and in 1683 it was ordered that £2 8s 6d should be paid to John Westley for carr ing it out. The bridge appears in all the surviving lists of County Bridges from 1764 onwards.

3.4 The earliest pictorial representation of the bridge is a painting in the Aylesford Collection dating to c.1790 (Fig 4, BRL). This shows the north side of the bridge with its two main arches, segmental-headed of two chamfered orders, approached by stone walled causeways to east and west each cut by a segmental-headed flood arch. The painting also shows the splayed indents of the east flood arch and the main arches, the projecting triangular cutwater on the central pier, triangular buttresses flanking the west flood arch, another buttress west of the main arches and another east of the east flood arch. The bridge first appears in plan form, albeit at a small scale, on the Birdingbury Marton Inclosure map of 1804 (WRO QS 75/17).

3.5 A series of three photographs taken in the early 1920s survive (Figs 5-6, WRO PH 210/120). A rather poor quality view from the north (Fig 5) shows almost

Fig 4: Marton Bridge, c.1790, north side (Aylesford Collection, BRL)

Fig 5: Marton Bridge, 1920s, north side (WRO PH 210/120)

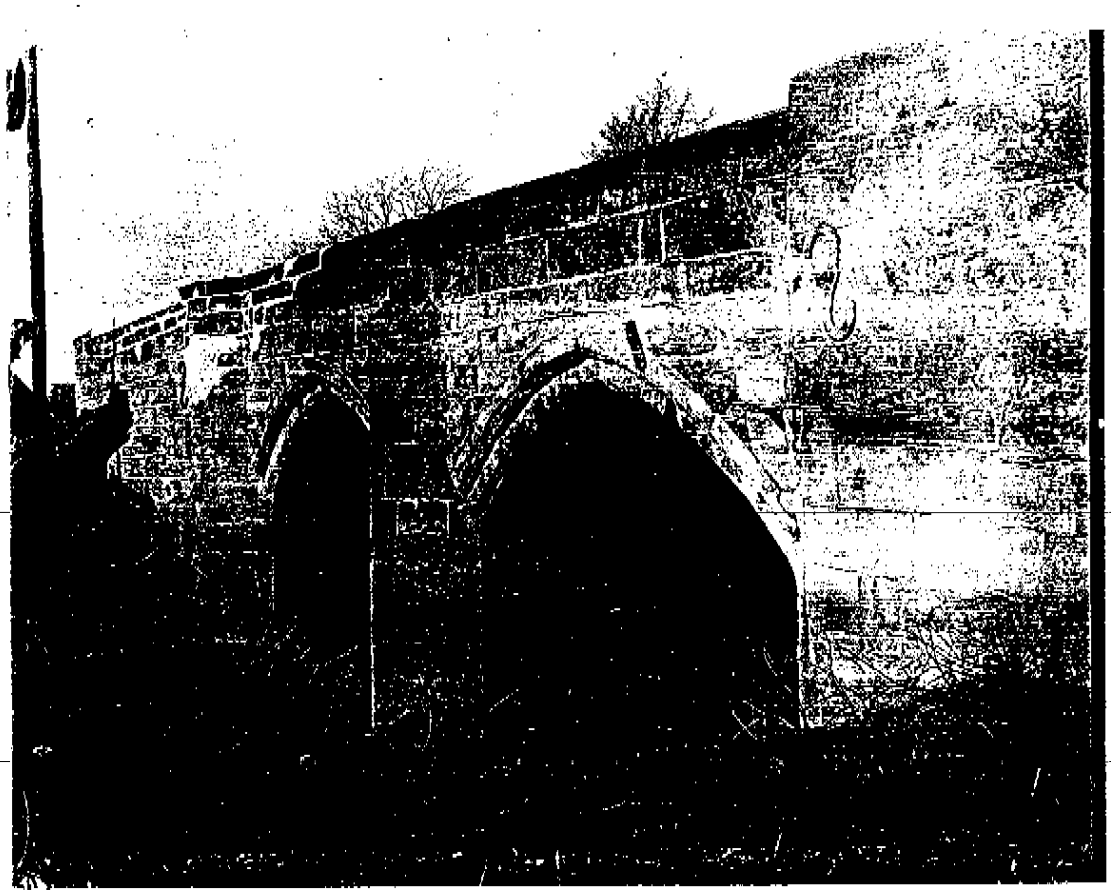


Fig 6: Marton Bridge, 1920s, south side (WRO PH 210/120)

exactly the same scene as the Aylesford Collection painting. A more detailed view of the south side of the main arches (Fig 6) shows a number of iron tie rods which presumably represent 19th century repairs. An area of lighter pointing on the west side suggests a recent repair of damage to the parapet.

3.6 In 1926, shortly after these photographs were taken, the bridge was widened on the northern side. A single flat concrete span was added against the main arches widening the bridge from c.4.5m to c.13.5m. The causeway was widened by up to 9.5m and revetted with a reinforced concrete retaining wall with a parapet of reused (and some new stone). The flood arches were lengthened by 8m (west) and 7.25m (east). The original drawings for this widening survive, giving existing and proposed plan and elevation views, as well as constructional details for the widening (WCC Bridges Section 1924; B16/1-7).

3.7 Historically the most significant of these drawings are the plan of the existing bridge in 1925 (WCC Bridges Section B16/01) and the elevation of the north side of the medieval bridge (Fig 7, WCC Bridges Section 1924, originally drawn at 1:96, here reproduced at 1:250). Although the latter is not sufficiently detailed to show differences in masonry it does show the main features of the bridge: the two main arches and central cutwater in their splayed recess, the eastern flood arch also in a splayed recess, the western flood arch flanked by triangular buttresses, a wide stepped buttress just west of the main arches and a smaller buttress to the east of the eastern flood arch. All these features were also there on the Aylesford Collection view of c.1790.

3.8 A photograph taken by Sapcote in the 1950s shows the south side of the main arches in a fairly weathered state (Fig 8, Warwickshire Museum B528). This is presumably why in 1978 a wholesale refacing of the masonry over the a ches of the bridge was undertaken using a mixture of old and new stone. This work was carried out in so insensitive a fashion that one order of the medieval arches was lost. The results can be seen in a photograph taken in 1991 (Fig 9, Warwickshire Museum).

3.9 In 1991 Scheduled Monument consent was granted for the renewal of gas and electricit services across the bridge (Ref HSD 9/2/2533). It was originally intended that these would share a common trench across the south side of the bridge but following a site inspection British Gas decided that this would not be possible except over the central section (Fig 3). A second consent (HSD 9/2/2533 pt 2) was therefore obtained in 1992 for further trenches at either end of the bridge to link up with this central section.

3.10 Excavation of the first trench began with three trial holes over the flood arches and the eastern main arch (Fig 3). All three trial holes produced a similar sequence: under the modern tarmac surface, there was rubble make up, another tarmac surface, more make up and a third tarmac surface, to a total depth of c.0.30m. Beneath this was a layer of sandy gravel containing some small sandstone fragments which formed the main infill of the bridge. Over the eastern main arch there was a large limestone block in the bottom of the trench which may have been the top of the arch. It was suggested that the block may have belonged to the repairs carried out in 1661, on the totally spurious grounds that these were the most recent known repairs. Over the eastern flood arch there was a block of concrete in the bottom of the hole, which was more reasonably interpreted as a modern repair, possibly connected with the widening of 1926. The rest of the trench which was 0.50m wide and c.0.60m deep, produced a similar sequence but no further structural evidence (Warwic shire Museum 1991).

3.11 The gas pipe trenches excavated in May-June 1992 were 0.3m wide and c.0.7m deep (Warwickshire Museum 1992). They cut through successive modern road

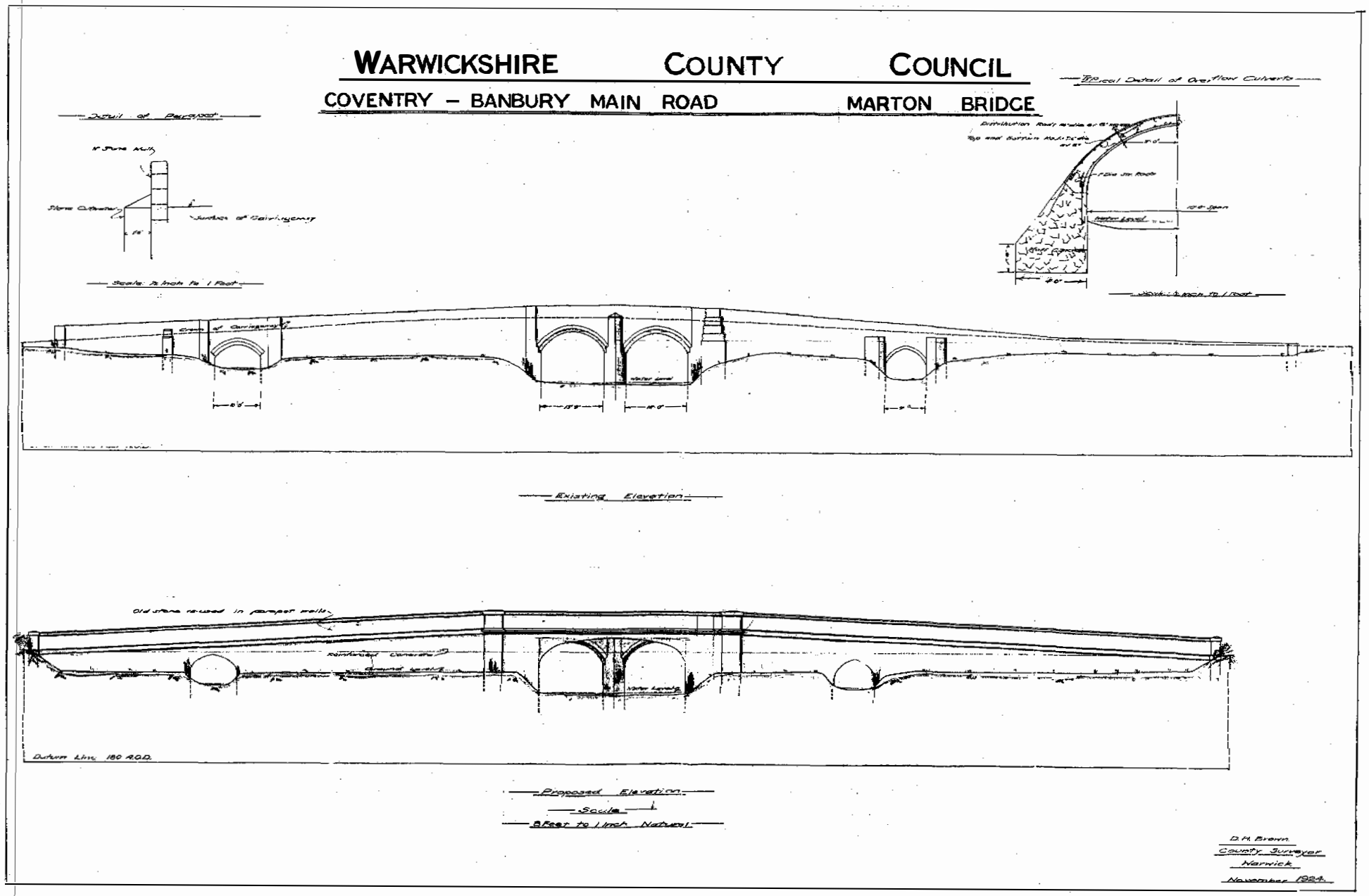


Fig 7: Marton Bridge, 1924, north elevation, existing and proposed (WCC Bridges Section 1924) [NB the proposed elevation differs from that actually built]

Fig 8: Marton Bridge, 1950s, south side, E Sapcote (Warwickshire Museum B528)

Fig 9: Marton Bridge, 1991, south side (Warwickshire Museum)

surfaces and make up to a depth of c.0.25m below which there was the sand and gravel infill of the bridge; no structural features were encountered (Warwickshire Museum 1992).

3.12 Since 1991 sections of the parapets on the south side of the bridge have sustained damage from vehicles and been repaired on at least two occasions, most recently in 1995/6 (SMC HSD 9/2/2533 pt 4).

4. Survey of visible medieval masonry

4.1 Despite the fact that the north side of the medieval bridge is buried in the 1926 widening the 1924-5 plans and elevations enable its general form to be relatively accurately reconstructed (Fig 3). The o ly parts of the north side of the medieval bridge that are currently visible are the main arches, the cutwater and a small area above them. In August 1995 these areas were photographed and drawn at a scale of 1:20, along with the adjacent abutment, cutwater and pier faces (Figs 11-18). The original faces of the f ood arches are completely covered by the 1926 extensions and their sides were inaccessible, so no survey of these areas was possible.

4.2 The masonry on each of the visible elevations was then examined for variations in coursing, stone type, weathering, tooling marks and lichen growth in order to identify different phases of rebuilding and repair. An elevation drawing of the south side of the main arches produced by the WCC Bridges Section (SWB 363/10A) in June 1995, and manually updated (in January 1999) to include a recent repair to the bridge parapet (Fig 19) enables the structural phasing to be carried round this side of the bridge as well.

4.3 The following phases of repair and rebuilding could be detected (Figs 12, 13, 16, 19):

Phase 1a	Upper parts of vaults and parts of north facade (c.1414 - weathered)
Phase 1b	South side of bridge and upper parts of pier and abutments (c.1414)
Phase 2	Rebuilding of north side of cutwater (Medieval/Post Medieval)
Ph se 3	Replacement of voussoirs on north side of east arch (?19th century)
Phase 4	Refacing of lower parts of central pier and abutments (?1887)
Phase 5	Replacement of voussoirs on north side of east arch (?1926)
Phase 6	Refacing of south side of bridge (1978)
Phase 7	Refacing (1978/1991)
Phase 8	Replacement of parapet (1978/1991)
Phase 9	Replacement of parapet (1995/6)

Phase 1a: Upper parts of vaults and parts of north facade (c.1414 - weathered)

4.4 The earliest surviving sections of masonry appeared to be those beneath the vaults of the arches and on the northern side above the arches including the arch springers and a few voussoirs of both orders either side of the cut water and a section of the upper order on the western part of the western arch. This masonry was of largish, very weathered, olive Bromsgrove Sandstone ashlar blocks in irregular courses. It belongs to the ori inal construction of the arches, and its character and condition, coupled with the fact that there is no evidence that the bridge has ever been broken, suggest it should be attributed to Middleton's work of the early 15th century (or c.1414).

Phase 1b: South side of bridge and upper parts of pier and abutments (1414)

4.5 The next identifiable type of masonry covers the top two to four courses on both abutments and both sides of the central pier. It also extends onto the southern

elevation where it forms the bulk of the sides of the bridge below the parapet to the west and east of the main arches. It is also constructed of large, weathered, olive Bromsgrove Sandstone ashlar blocks laid in irregular courses. In fact it is really the same as the Phase 1a work except for the degree of weathering, and this is probably to be explained by its position on the structure. The undersides of the arches and the northern façade which is covered by the 1926 arch, are clearly subject to water percolating down through the structure and the greater weathering of the Phase 1a masonry is to be explained by the effects of damp. The Phase 1b masonr on the south side and to a slightly lesser extent the sides of the abutments and pier are more exposed to thedrying effects of the wind. On this basis the Phase 1b masonry should also be regarded as original early 15th century (c.1414) work. This suggests that most of the basic structure of the pre 1926 bridge is original medieval work, and that subsequent developments have mainly been refacing and repairs.

Phase 2: Rebuilding of north side of cutwater (Medieval/Post Medieval)

4.6 The second true structural phase is represented by a repair to the north end of the cutwater in a rougher-faced, weathered, mixed olive and red sandstone ashlar. This survives only over the upper 2m of the cutwater, but its full extent can probably be made out in the masonry discontinuity preserved in the later refacing below (see Elevation C), and it seems to have originally covered the full height of the cutwater. The quality of the masonry is not as high as the original work but some effort was made to follow the orignal coursing. It is not known what would have caused damage necessitating such a repair, but collision with a very large piece of floating debris brought down by a flood seems likely. The masonry of the repair is quite weathered suggesting that it happened at quite an early date, possibly in the medieval period or early post medieval period.

Phase 3: Replacement of voussoirs on north side of east arch (?19th century)

4.7 The eastern two thirds of the voussoirs of both orders of the east arch on the north face are distinctively smooth and well finished compared with those to the west, suggesting that they have been replaced. However the undersides of the stones are somewhat weathered with some lichen and mould growth visible, which suggests that the replacement happened some time ago, probably in the 19th century.

Phase 4: Refacing of lower parts of central pier and abutments (?1887)

4.8 The masonry of the lower parts of both abutments and both sides of the central pier to a height of c.1.5-2m is formed of large, less weathered, greyer olive sandstone ashlar blocks with distinctive close vertical tooling giving a 'corduroy' appearance to the stonework (Fig 20). Most of the stonework is coursed through but on both the west abutment (Elevation E) and the east side of the central pier (Elevation C) there are discontinuities in the coursing. In the latter case this seems to result from an exact stone for stone replacement of the Phase 2 repair to the cutwater; and it is probable that former has the same explanation, that an area of earlier patching was replaced stone for stone.

4.9 The Phase 4 work is visible on the 1920s photo of the south side of the main arches (Fig 6) which it must therefore predate; it is also overlaid by the structure of the 1926 extension. Such an 'archaeological' approach to repair of a historic structure is in line with the best late 19th century, SPAB inspired, conservation thinking. Furthermore the date '1887' scrawled into the pointing at the top of the Phase 4 work on the west abutment (Elevation E) is entirely consistent with the other evidence. The same corduroy tooling is also visible on the south side of the western flood arch suggesting that it may also have been refaced at this time.

4.10 The 1920s photograph (Fig 6) also shows the ends of the existing iron tie rods inserted into the bridge in order to strengthen it. These iron supports are also likely to be 19th century repairs, possibly of the same date as these others.

Phase 5: Replacement of voussoirs on north side of east arch (?1926)

4.11 All but one of the voussoirs of the lower order and one third of the upper order on the northern side of the western arch are in an unweathered, reddish sandstone and have clearly been replaced. The new stones are poorly set into the arch with large amounts of mortar used to fill the gaps left between the lower and upper order voussoirs. The unweathered appearance of this stonework suggests that this repair was relatively recent. It appeared to be just overlaid by the 1926 extension, and it is quite possible that it represents a repair to the existing bridge carried out immediately before the extension was constructed.

Phase 6: Refacing of south side of bridge (1978)

4.12 The disastrous repairs of 1978 involved the complete refacing of the southern face of the b idge above the main arches. The two medieval orders of arches were replaced with one, for no apparent reason. The refacing was carried out using a mixture of the original olive sandstone along with new machine cut blocks of red and beige mottled Hollington sandstone. Some of the reused stones retain their original lichen growth but as they were used at random the resulting effect is strange. The coursing of the new masonry contains a number of random discontinuities and the voussoirs of the new single order arch do not join up properly with the abutments and central pier. At the same time a few of the original (Phase 1b) stones on the western abutment were also replaced (Elevation E).

Phase 7: Refacing on south side of bridge (1978/1991)

4.13 Just to the west of the main arches on the south side of the bridge there is an area of stonework, c.2.5m x 1.5m across, at the top of the side of the bridge and the bottom of the parapet, replaced in smooth, modern, machine cut, reddish and reddish brown sandstone. This refacing, which differs from the 1978 work in that no original stone was reused, will have taken place some time between 1978 and 1991.

Phase 8: Replacement of parapet on south side of bridge (1978/1991)

4.14 Some time between 1978 and 1991 a 7m section of the parapet up to four courses deep over the western arch was demolished, presumably by being hit by a vehicle. It was repaired using new, red sandstone blocks. The full extent of the repair is visible on the photograph taken in 1991 (Fig 9) although most of was subsequently destroyed by another vehicle collision, and only a single course now survives.

Phase 9: Replacement of parapet on south side of bridge (1995/6)

4.15 The final phase represents the most recent replacement of the southern parapet after vehicle damage. A 11m length of parapet, mainly three courses deep but up to five courses deep to the east, is shown as down on a photograph taken in 1995 (Fig 10). This damage destroyed most of the previous Phase 8 repair, except for its lowest course. The repair of this damage was carried out in 1995/6, under SMC HSD 9/2/2533 pt 4, using red sandstone blocks.

Fig 10: Marton Bridge, main arches, south side, 1995

Fig 11: Marton Bridge, cutwater, 1995

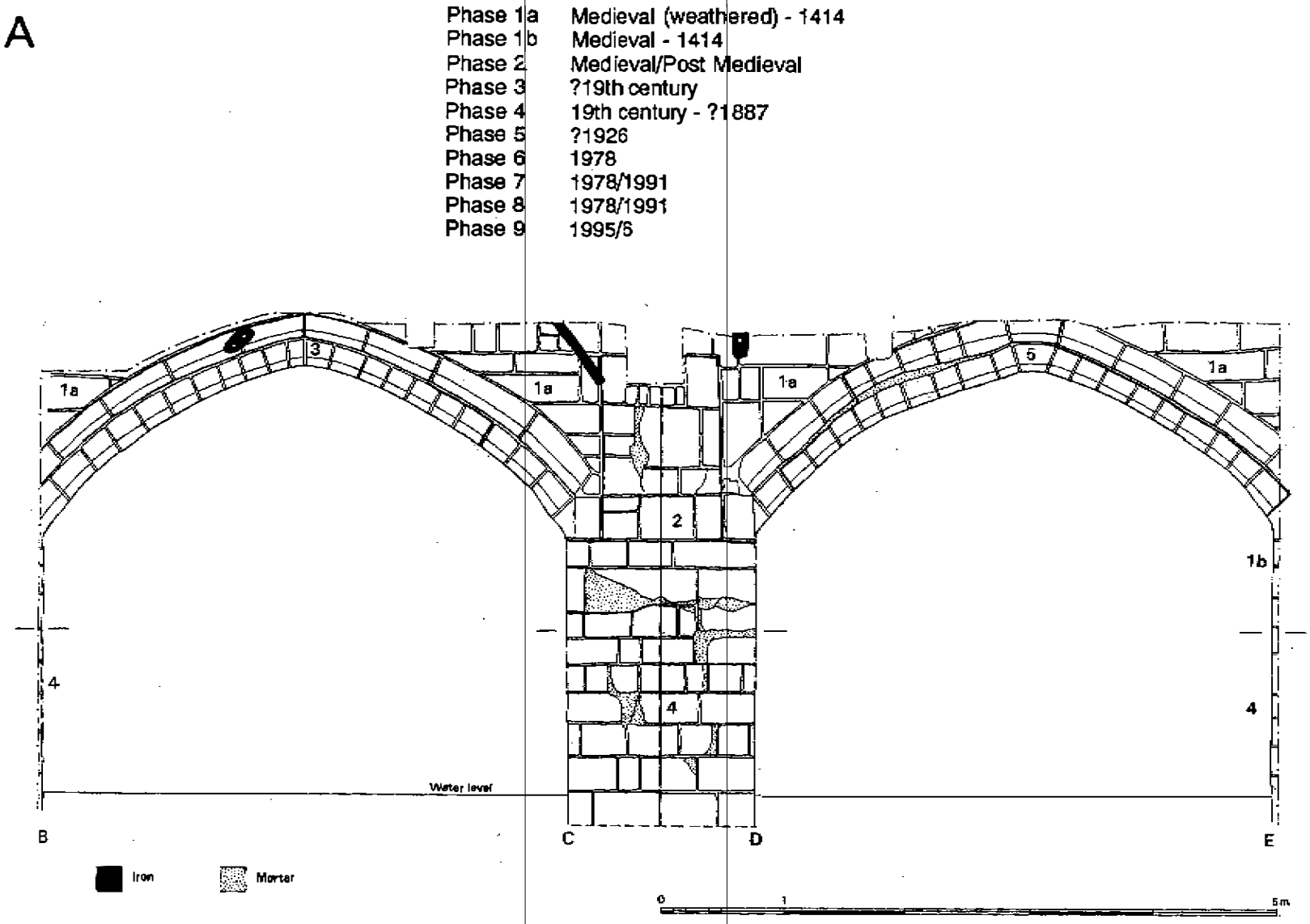
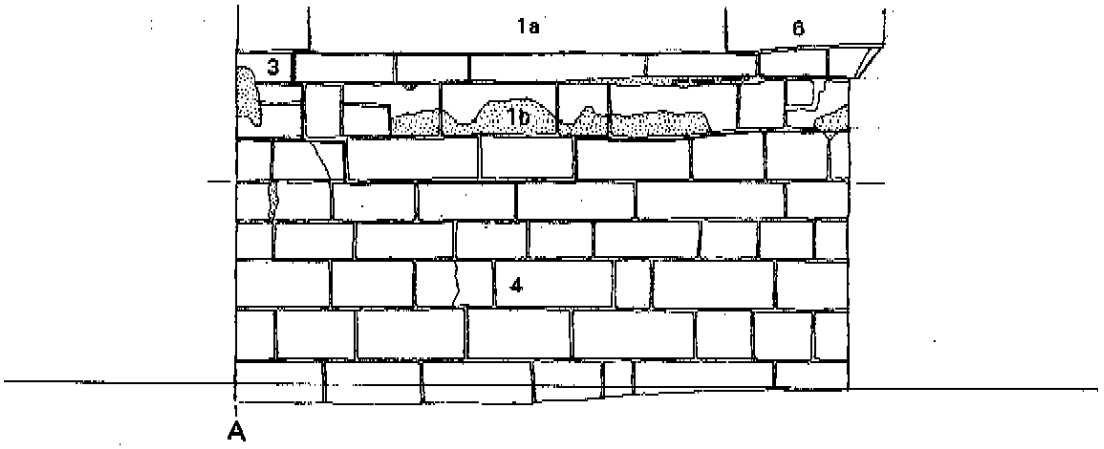


Fig 12: Main arches, A, north side

B



Phase 1a	Medieval (weathered) - 1414
Phase 1b	Medieval - 1414
Phase 2	Medieval/Post Medieval
Phase 3	?19th century
Phase 4	19th century - ?1887
Phase 5	?1926
Phase 6	1978
Phase 7	1978/1991
Phase 8	1978/1991
Phase 9	1995/6

C

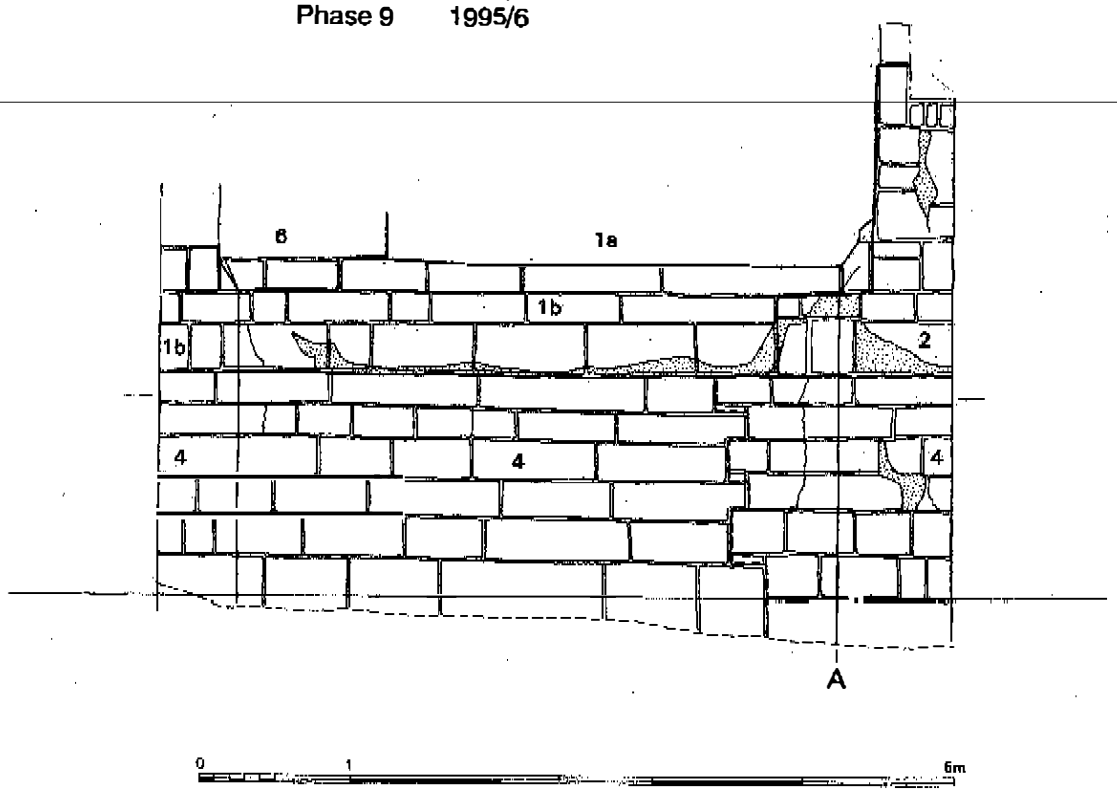


Fig 13: East main arch, B, east side, C, west side

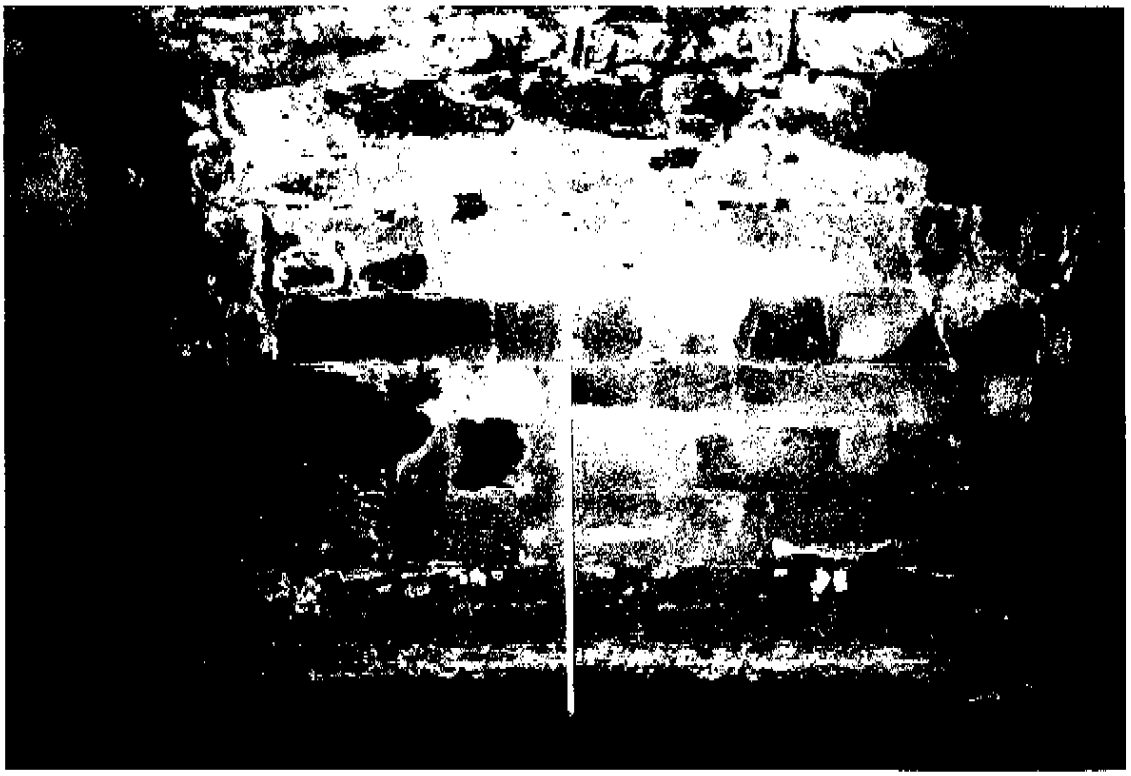


Fig 14: East main arch, east side, 1995

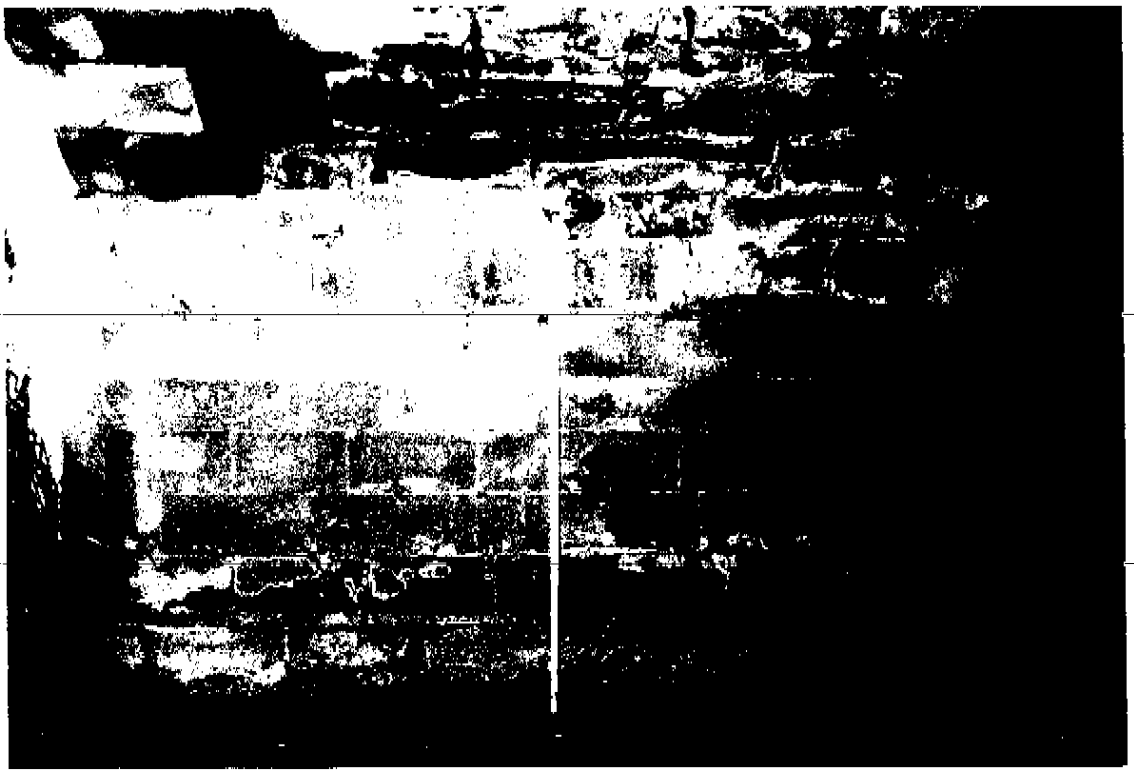


Fig 15: East main arch, west side, 1995

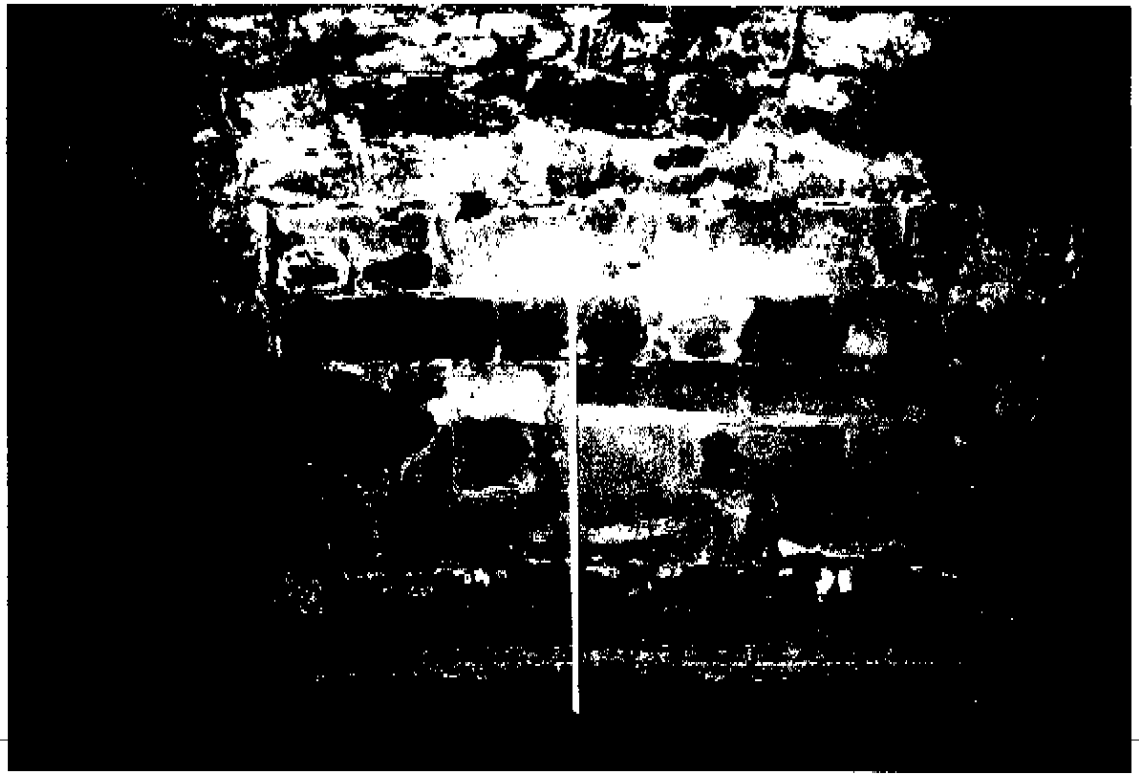


Fig 14: East main arch, east side, 1995

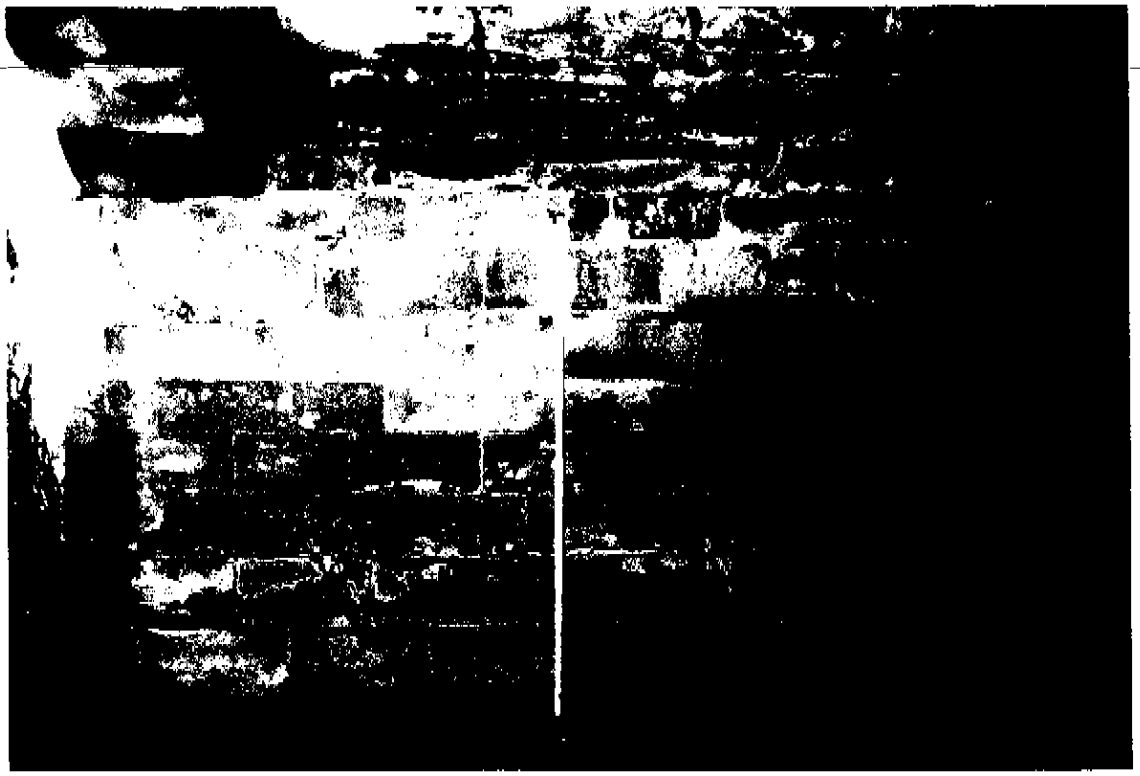
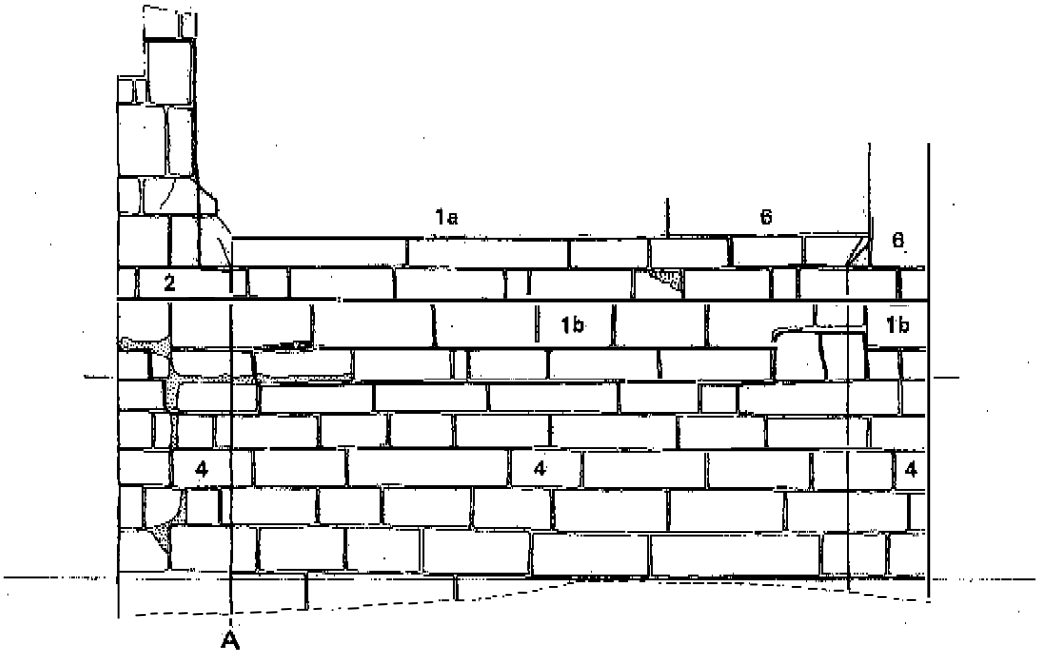


Fig 15: East main arch, west side, 1995

D

Phase 1a	Medieval (weathered) - 1414
Phase 1b	Medieval - 1414
Phase 2	Medieval/Post Medieval
Phase 3	?19th century
Phase 4	19th century - ?1887
Phase 5	?1926
Phase 6	1978
Phase 7	1978/1991
Phase 8	1978/1991
Phase 9	1995/6



E

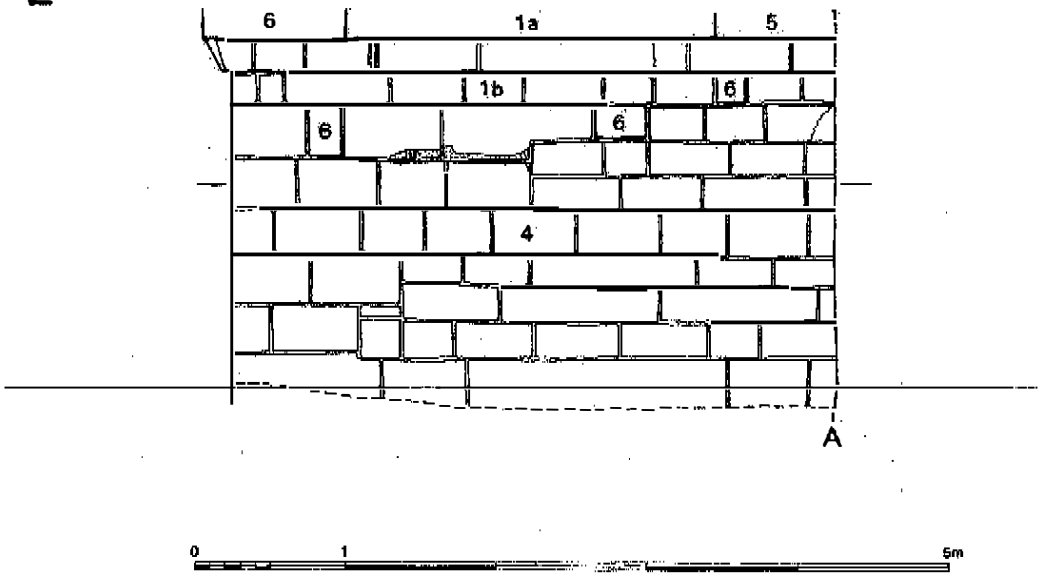


Fig 16: West main arch, D, east side and E, west side

Fig 17: West main arch, east side, 1995

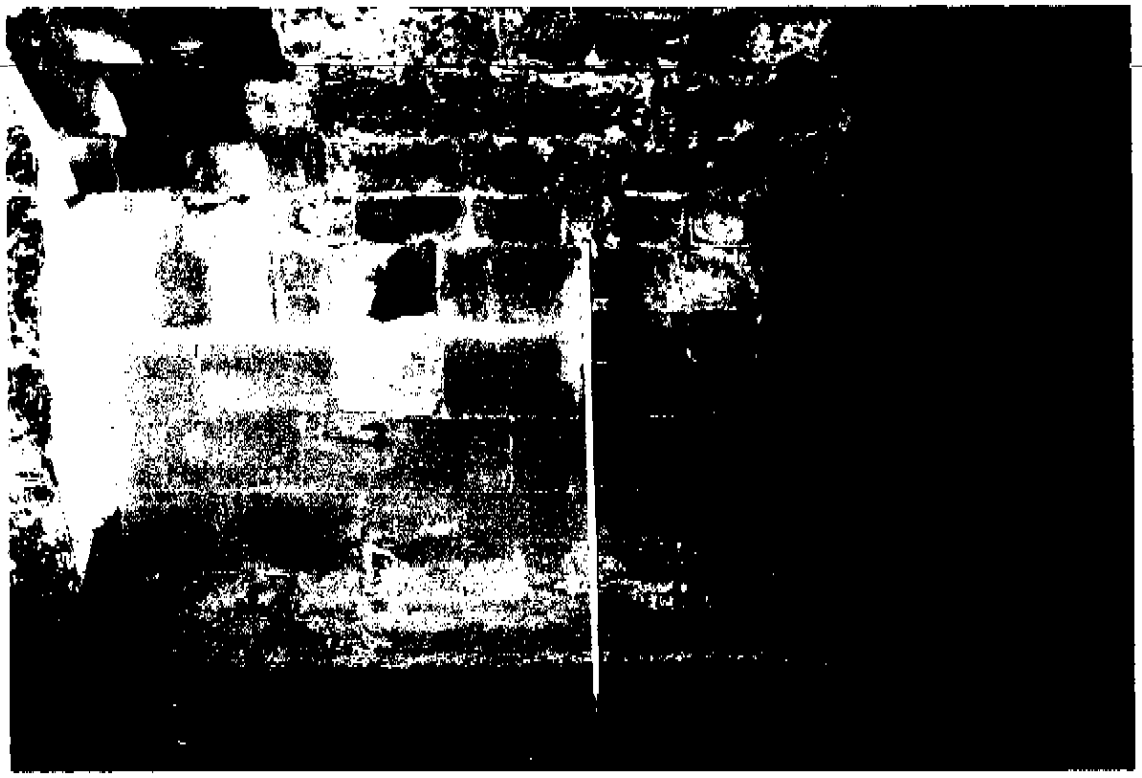
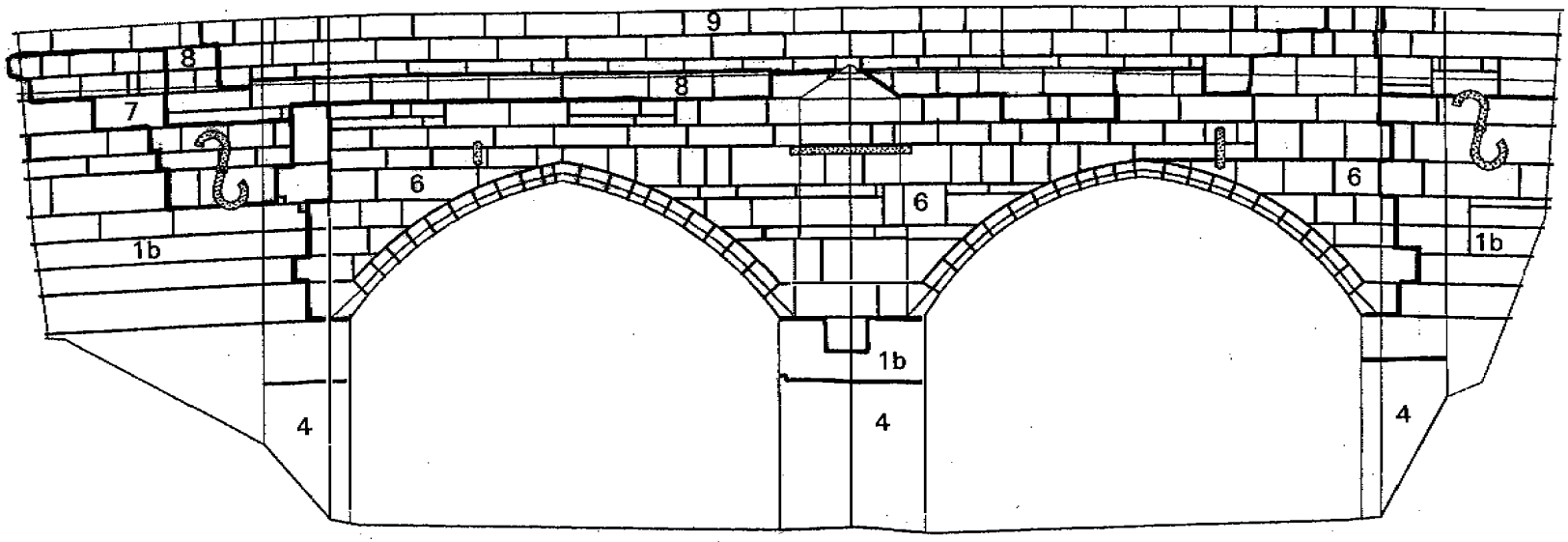


Fig 18: West main arch, west side, 1995

Phase 1a	Medieval (weathered) - 1414
Phase 1b	Medieval - 1414
Phase 2	Medieval/Post Medieval
Phase 3	?19th century
Phase 4	19th century - ?1887
Phase 5	?1926
Phase 6	1978
Phase 7	1978/1991
Phase 8	1978/1991
Phase 9	1995/6



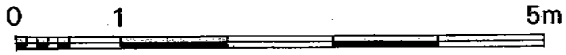


Fig 19: Main arches, south side
(WCC Bridges Section SWB 363/10a, manually amended 1999)

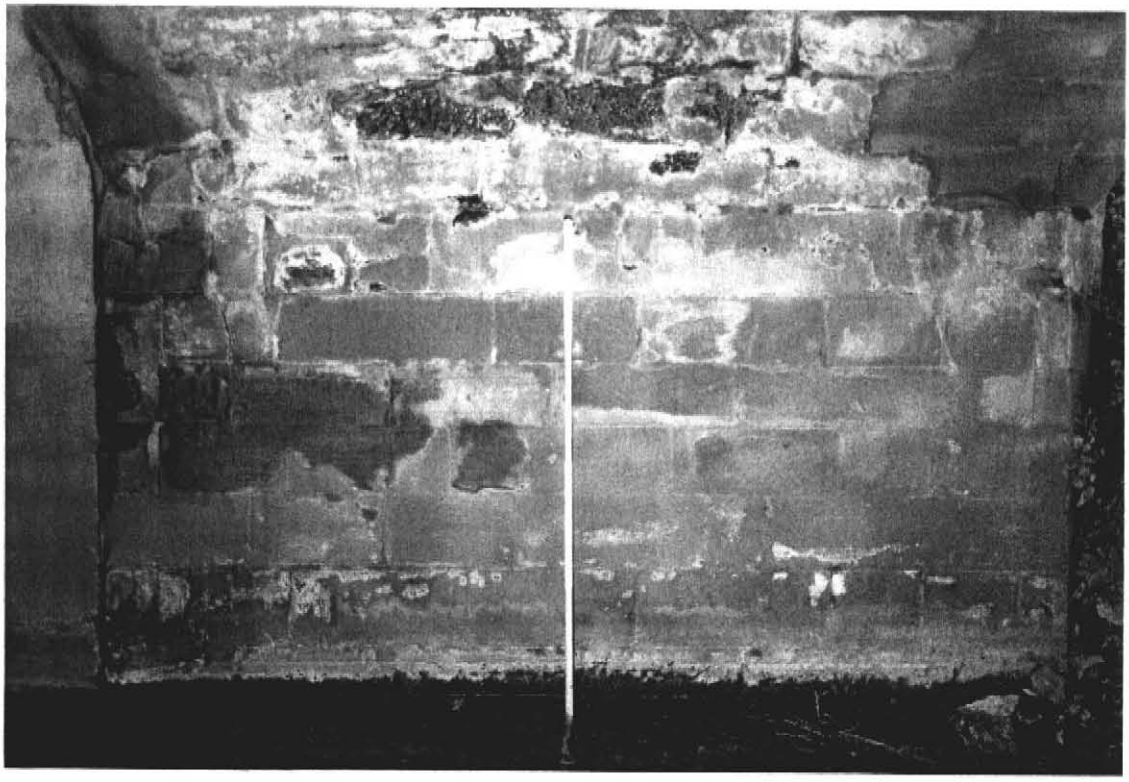


Fig 14: East main arch, east side, 1995

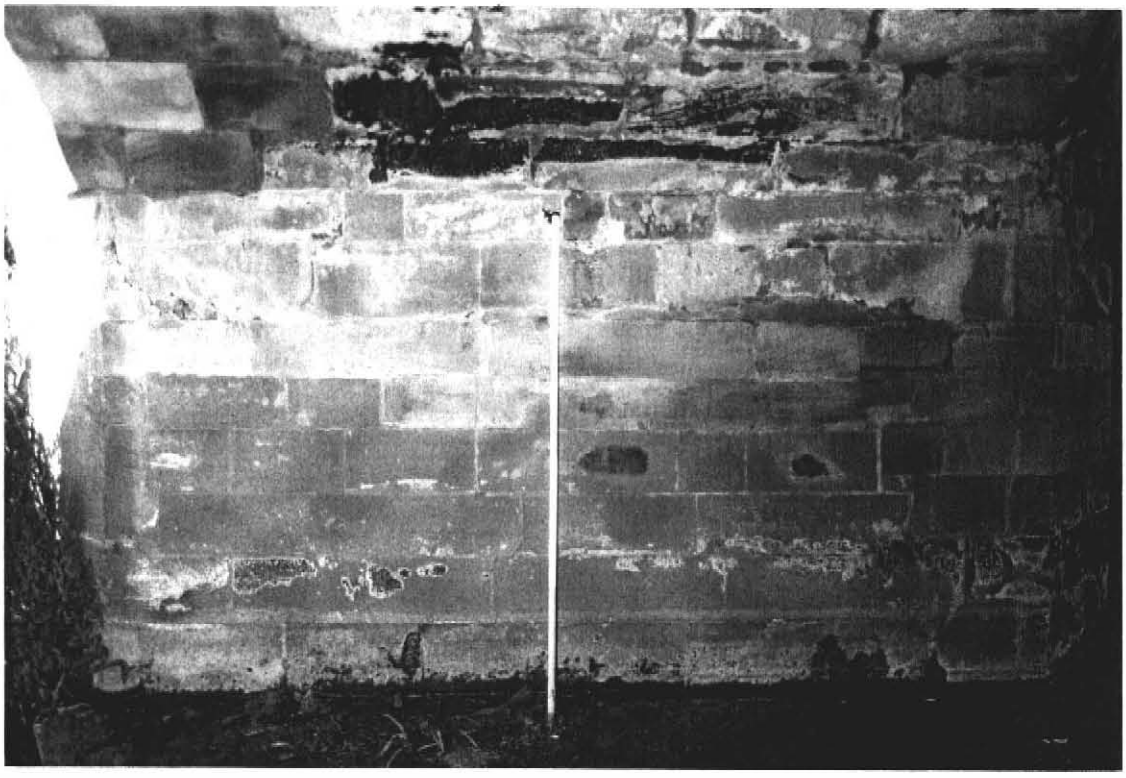
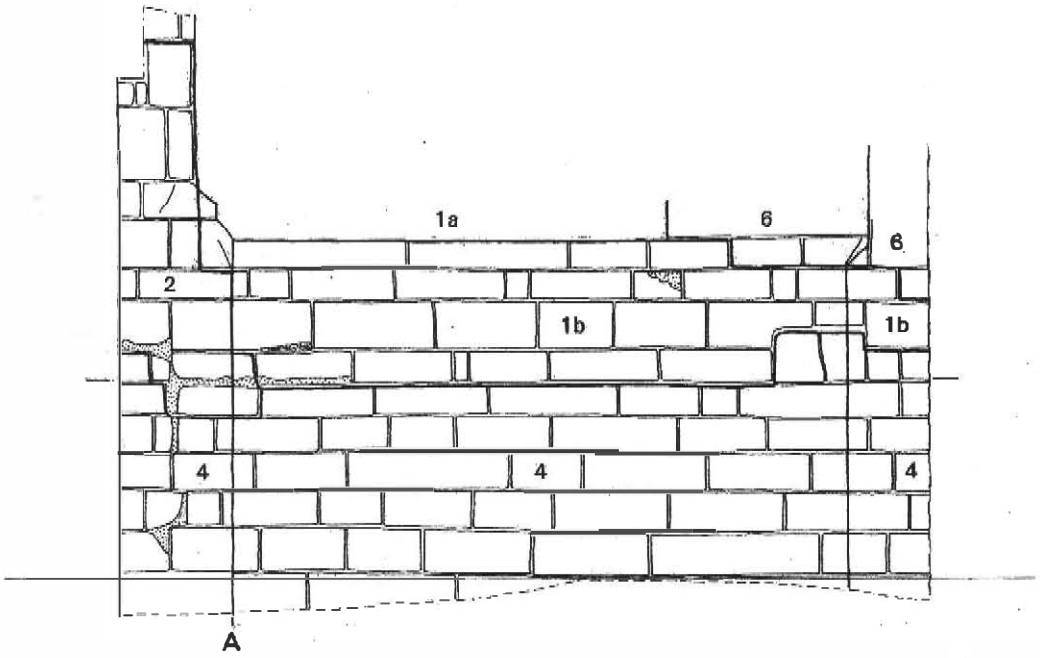


Fig 15: East main arch, west side, 1995

Phase 1a	Medieval (weathered) - 1414
Phase 1b	Medieval - 1414
Phase 2	Medieval/Post Medieval
Phase 3	?19th century
Phase 4	19th century - ?1887
Phase 5	?1926
Phase 6	1978
Phase 7	1978/1991
Phase 8	1978/1991
Phase 9	1995/6

D



E

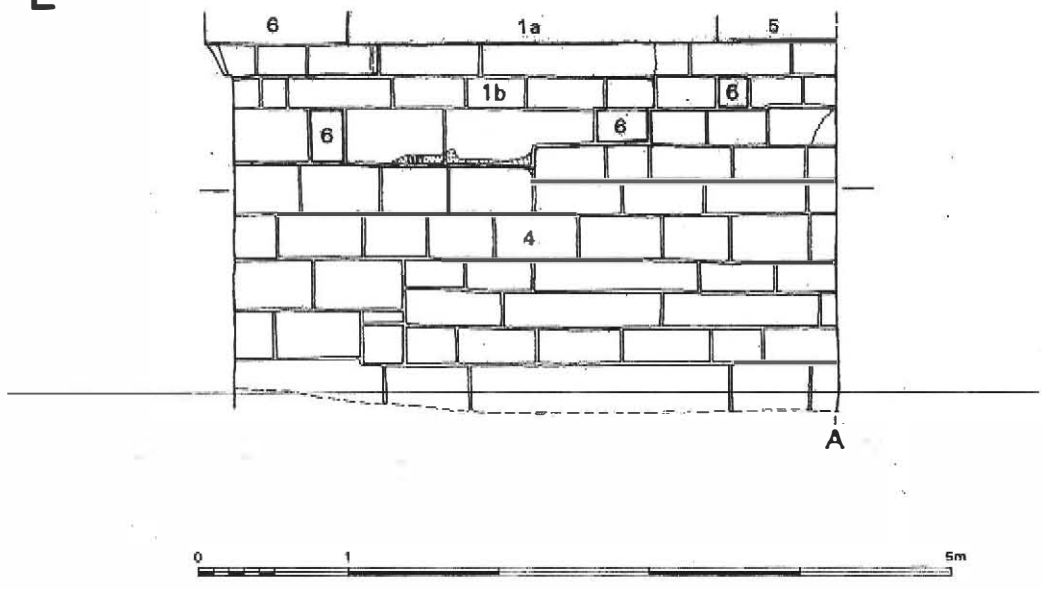


Fig 16: West main arch, D, east side and E, west side

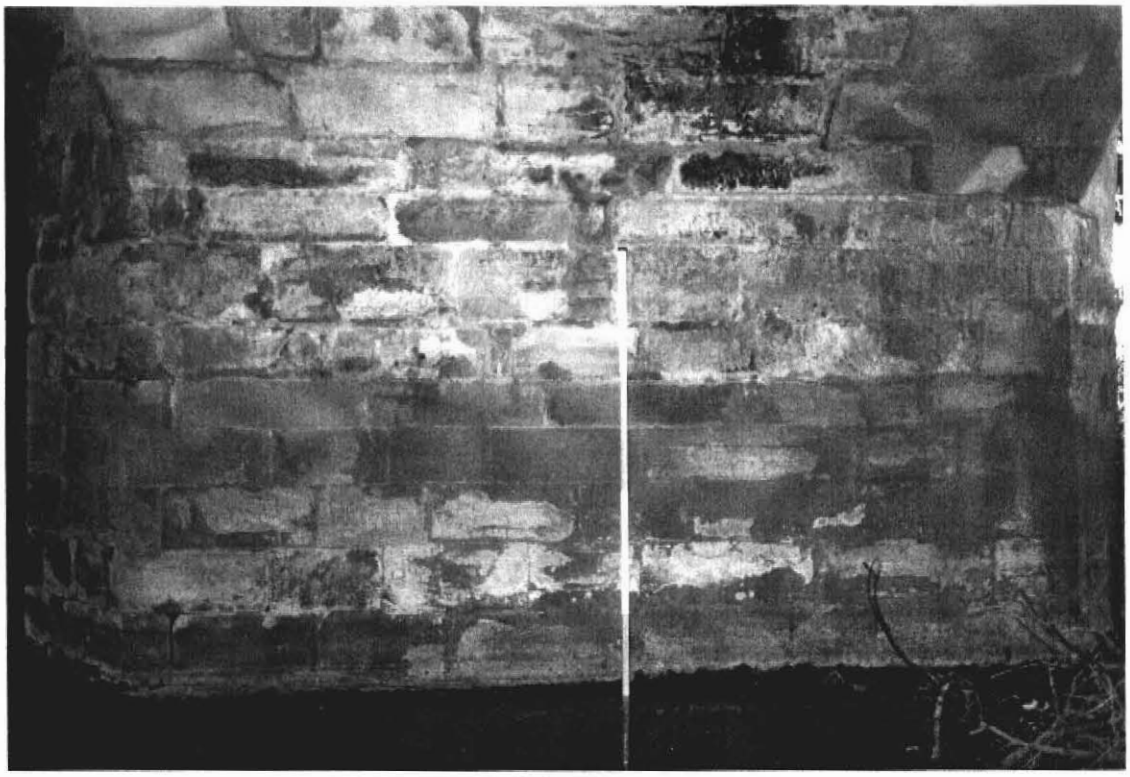


Fig 17: West main arch, east side, 1995

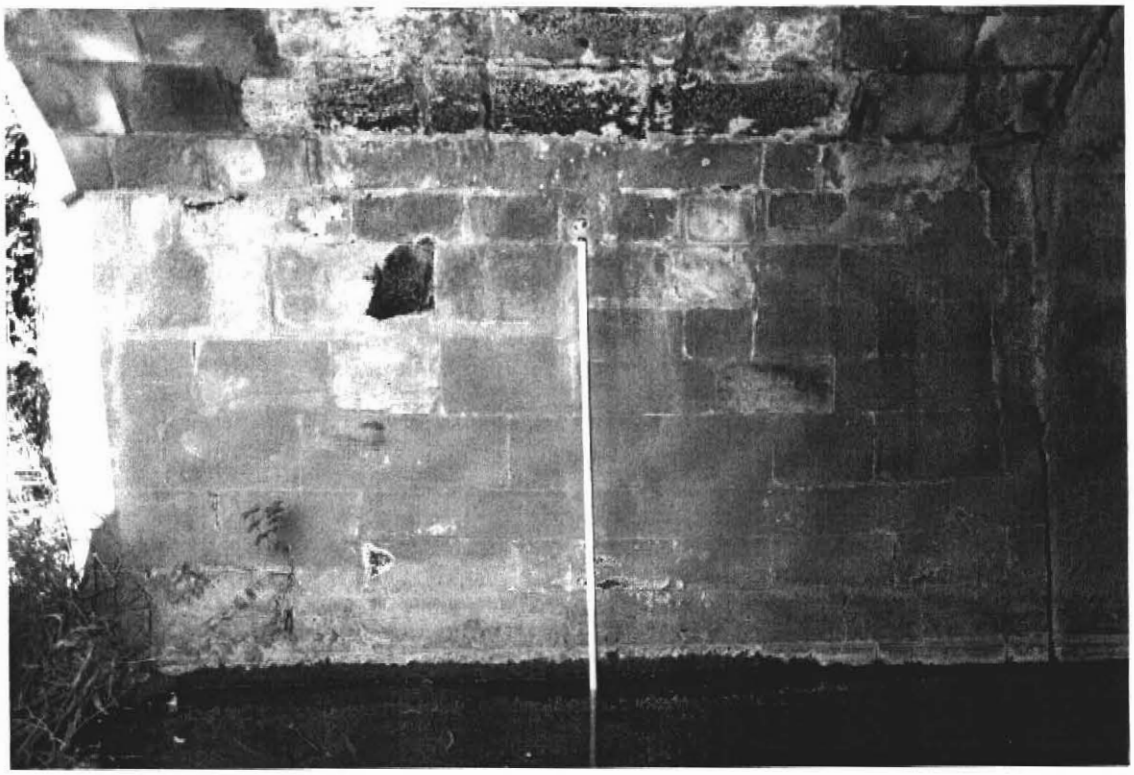


Fig 18: West main arch, west side, 1995

Phase 1a	Medieval (weathered) - 1414
Phase 1b	Medieval - 1414
Phase 2	Medieval/Post Medieval
Phase 3	?19th century
Phase 4	19th century - ?1887
Phase 5	?1926
Phase 6	1978
Phase 7	1978/1991
Phase 8	1978/1991
Phase 9	1995/6

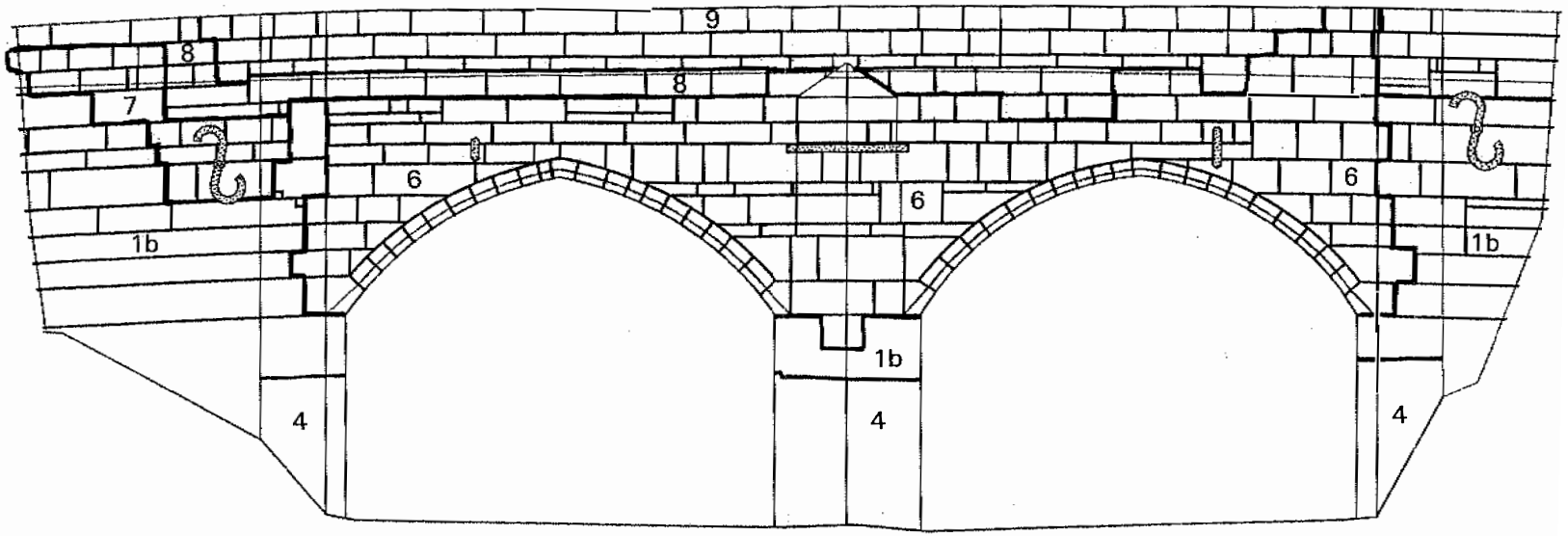


Fig 19: Main arches, south side
(WCC Bridges Section SW3 363/10a, manually amended 1999)

5. Trial Trenching north of the Bridge

5.1 The Stage 2 Trial Trenching was carried out in January 1999 (Figs 3, 21-24). Three trenches were dug, each measuring 5m x 1.60m, two trenches to the west of the River Leam and one to the east (Fig 3, T1-T3). The trenches were placed across the floodplain adjacent to the proposed foundations of the new bridge abutment and retaining wall. The trenches were excavated by a JCB with a toothless ditching bucket under archaeological supervision to a safe depth of 1.20m, at which point the trenches were recorded. The trenches were then further machine excavated to a depth of 1.50m to check the maximum depth of deposit to be disturbed/destroyed by the new bridge foundations.

5.2 In all three trenches old field drains containing horseshoe-shaped tiles were encountered, which constantly leaked water into the trenches despite attempts to temporarily plug them with alluvial clay. This was surprisingly the only source of inflowing water during the investigation despite the high level of the river at the time and the relative flatness of the area, the alluvial layers in the trenches remaining impermeable. A photographic record of the trenches and the exposed sections was made in colour and monochrome. Plans and cross sections were drawn and recorded using the standard Warwickshire Museum system, and the heights and locations of the trenches related to Ordnance Datum. No finds were recovered during the evaluation.

Trench 1

5.3 Trench 1 was the central of the three trenches, placed parallel to the existing bridge, 5m north of the western flood arch (Figs 3, 23). After the topsoil had been removed the trench had to be moved slightly to the south of its planned location to avoid a drain pipe serving the farm to the west of the river.

5.4 The trench was excavated to a maximum depth of 1.5m at a level of 59.30m aod (Fig 22, Sections a and b). The lowest layer (104) revealed consisted of rounded and subrounded with occasional nodules (2mm) of reddish brown clay and decayed roots. The surface of the cobbles was moderately compacted and sloped steeply down from north-south, the difference being some 0.50m (59.80-59.30m aod) across the 1.60m width of the trench.

5.5 Overlying 104 in the south section but petering out across the trench towards the north section was a thin (0.08m) layer of light greyish brown sandy silt (103). There were no finds or inclusions, and the layer had the appearance of a waterlain deposit. Sealing 103 was a thick and homogenous layer of yellowish brown alluvial silty clay (102). This was 0.80m thick in the south section, but only 0.50m thick in the northern section where the cobble layer (104) was thicker. It was again completely sterile. Overlying 102 was a 0.30m thick dark yellowish brown silty clay loam subsoil (101), overlain in turn by the topsoil (100), a humic and very dark greyish brown clay loam layer. Its surface sloped 0.08m west-east over the length of the trench.

Trench 2

5.6 Trench 2 was positioned 12m to the north west of Trench 1, parallel to and 3m to the west of the extant bridge, further up the river bank (Fig 3). The sequence here was quite different, reflecting this fact. The trench was dug to a maximum depth of 1.65m (Fig 22, Section c). The lowest layer exposed (205) was the natural Mercia Mudstone, which was excavated to a depth of some 0.20m. Its surface sloped gently down towards the river from a top level of c.60.10m aod.

5.7 Directly on the natural there was a hard packed layer of medium and large subrounded cobbles (204), 0.30m thick, whose surface also sloped gently down

towards the river (60.42m-60.30m aod). This was clearly a man made surface, and equivalent to 104 in Trench 1, although it also produced no dating material.

5.8 The cobbles were sealed by a layer of yellowish brown alluvial silty clay (203), up to 0.35m thick, which was probably the same as 102 in Trench 1. This was in turn sealed by a layer of dark grey silty clay (202), c.0.3m thick, which was not present in Trench 1, and whose surface was almost level. Layer 202 was sealed a dark yellowish brown silty loam with occasional small pebbles (201), which would appear to represent a subsoil similar to 101 in Trench 1. Its surface sloped relatively steeply down towards the river, as did 200, the uppermost topsoil, which was identical to 100 in Trench 1.

Trench 3

5.9 Trench 3 was located on the east bank of the River Leam, c.5m out from the bridge between the main arches and the eastern flood arch (Figs 3, 22, 24). It was oriented slightly irregularly due to the need to avoid the area of the proposed foundations for the new bridge and the existing embankment.

5.10 The lowest layer exposed was of cobbles in a coarse black silty sand matrix (303), at least 0.20m deep (Fig 22, Section d). It was identical to layer 104 in Trench 1 and its moderately compacted surface sloped down westwards towards the river (from 59.75m-59.54m aod along the length of the trench).

5.11 The cobble surface was overlaid by an up to 1m thick layer of brown silty clay with very few small pebbles (302), up to 1m thick, the surface of which was almost level but then sloped at the western end of the trench steeply towards the river. It was in turn overlaid by a layer of strong brown silty clay (301), apparently a subsoil, overlaid by the dark greyish brown clay loam topsoil (300).

Borehole information

5.12 As part of the preparatory work for the new bridge a series of ground investigations had taken place involving the drilling of boreholes across the site of the proposed new bridge (Norwest Holst 1982; Geotesting Services 1983; Arup and Partners 1991, Enclosure A). The information from the upper levels of these (summarised in Appendix A) can be combined with that from the trenches to produce a section across the flood plain (Figs 3, 22). The borehole information is not completely consistent but some patterns can be made out.

5.13 The top of the natural Mercia Mudstone slopes down from east to west from a level of 60.10m in Trench 2, to between 57.14m and 57.59m in BH5 and BH5R and between 56.29m and 56.55m in BH7 and BH8. On the east side of the river it lies at between 57.34m and 57.53 in BH9 and BH9R and 56.99m in BH11. Immediately north of the bridge it lies at 56.80m to the west of the river (1982 BH1) and 56.20m to the east (1982 BH2), and on the south side it lies at 56.86m to the east (1983 BH1) and 56.87m to the west (1983 BH2).

5.14 Over the Mercia Mudstone there are a series of layers, presumably of alluvial origin but of unknown date, mainly silty clay layers between 0.8m and 1.7m thick, but including patches of reddish brown and orange brown gravel and peat (1982 BH1 at 57.80m and BH10 at 57.95m). The peat layers should be particularly noted as they may contain significant palaeoenvironmental deposits.

5.15 Over these layers the boreholes north of the bridge along the line of the section then almost all have a layer of black or grey sand and gravel, again undated, which probably corresponds to the cobbled surface found in the trial trenches. In BH5 this layer was 0.4m thick with its top at 59.54m; in BH5R there was a layer of black grey

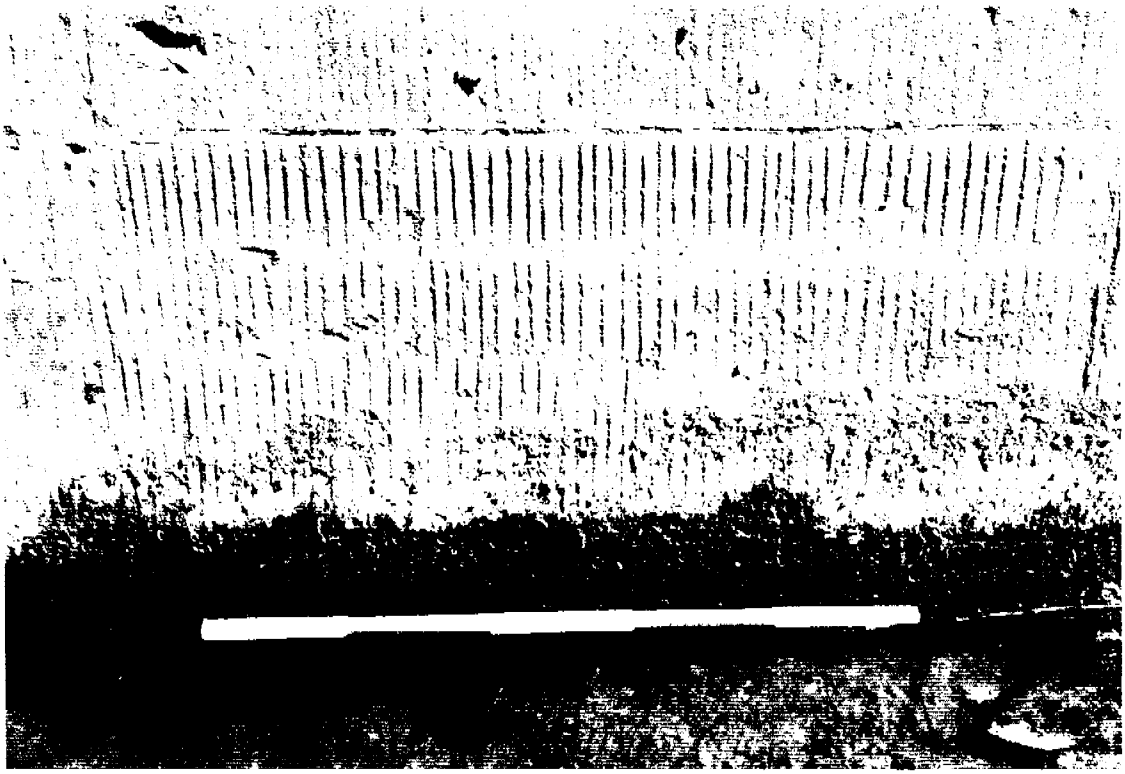


Fig 20: Phase 4 'corduroy' tooling

Fig 21: Trial Trenching, 1999

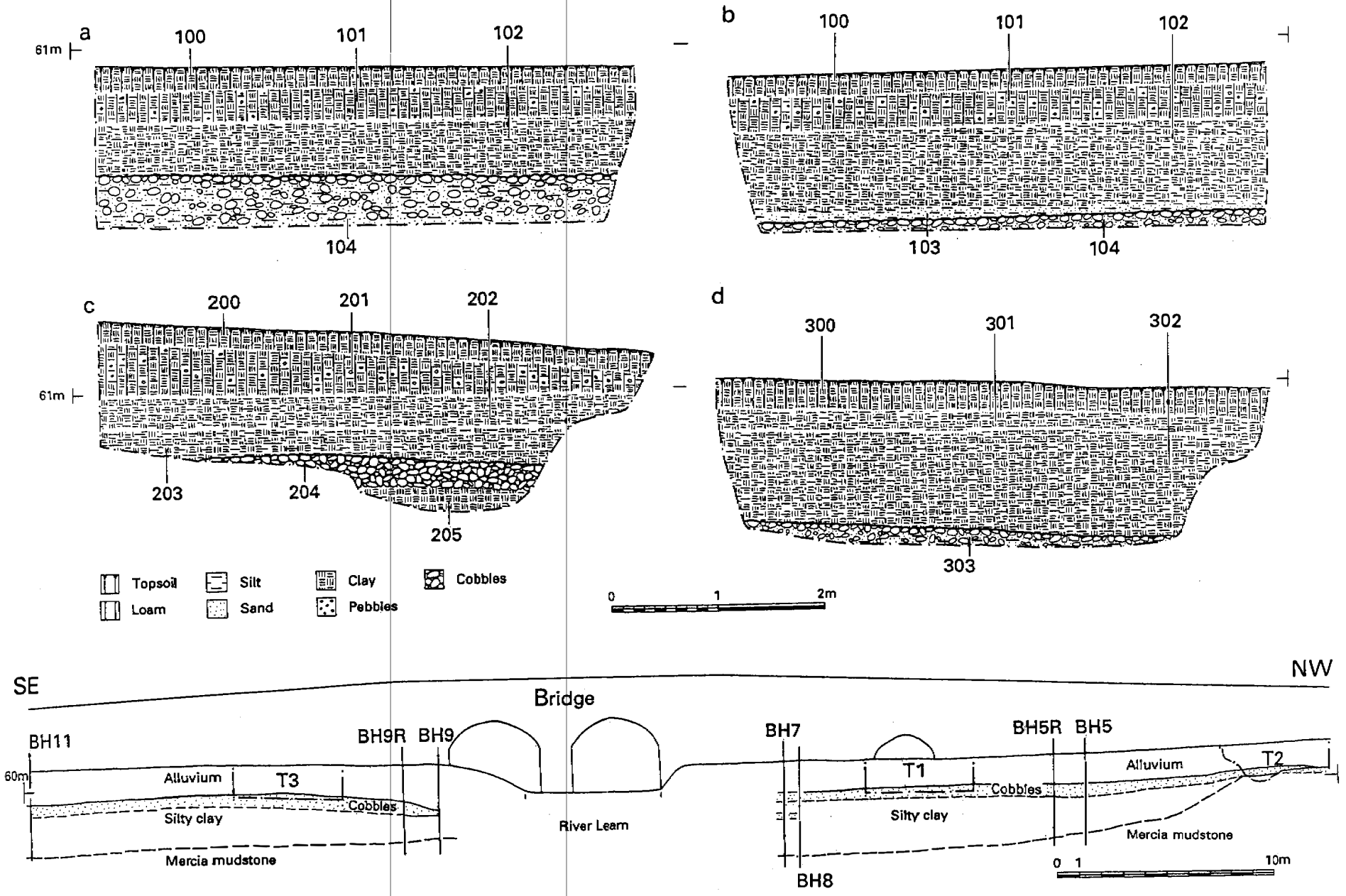


Fig 22: Trial Trenches 1-3 , cross-sections

Fig 23: Trial Trench 1

Fig 24: Trial Trench 3

Fig 23: Trial Trench 1

Fig 24: Trial Trench 3

sandy silty clay with lenses of gravel and black organic sand between 58.94m and 59.94m; in BH8 the layer was 0.30m thick with its top at 59.44m; in BH7 there was a band of grey sand with some gravel 0.10m thick with its top at 58.35m, which is probably too low to be connected (although it may reflect the slope in the layer recorded in Trench 1); in BH9 the layer was 0.20m thick with its top at 58.84m; in BH9R it was 0.60m wit its top at 59.53m, in BH10 the layer was brown with black organic patches, 0.60m thick, with its top at 59.25m; and, in BH11 it was 0.60m thick with its top at 59.39m. Neither of the two boreholes near the bridge (1982 BH1, 1982 BH2) contained the black or grey gravel layer (although 1982 BH2 did have a brown gravel layer 0.20m thick with its top at 59.60m).

5.16 Over the black/grey gravel layer the borehole logs record further layers of alluvial material, generally again silty clay, 0.95m to 1.7m thick, below 0.3-0.5m of topsoil. Again the date of this further alluviation is unknown.

Discussion

5.17 The three trenches and the boreholes thus combine to suggest the presence of a cobbled surface running across the f ood plain, which is likely to represent a road or causeway running down to an early ford or bridge. No causeway structure or piling was found in any of the trenches; but, the cobble surface was certainly compact and well made enough for the passage of carts and wagons, though no ruts were visible in the small sections exposed in the trenches. The north-south slope recorded in Trench 1 and possibly in BH7 and BH8 may indicate that the middle of the roadway was to the north of this trench.

5.18 The main problem is the total lack of dating evidence for the roadway. It is not recorded in any of the historical evidence, and, since it was sealed by a relatively thick layer of alluvial silty clay, it must be of some antiquity, although exactly how long such a deposit would need to accumulate is uncertain. If it led to a ford associated with the existing bridge then it would have probably have been immediately adjacent to the bridge rather than c.15m to the north. This makes it more likely that it lead to an earlier bridge, or a ford contemporary with an earlier bridge, or an even earlier ford. It is to be hoped that the Stage 3 work will produce further evidence, including dating evidence.

6. Conclusions

6.1 The masonry survey has confirmed that the basic surviving structure of the pre 1926 bridge and a substantial portion of its surviving masonry is original 15th century work, dating presumably to c.1414. Some later repairs to the cutwater and the facings of the main arches are evident; the sides of both the main archs (and probably also the western flood arch) were refaced in the 19th century; the south side of the main arches was refaced in 1978; and there have been a number of recent parapet repairs.

6.2 Perhaps the most significant discovery so far relates to the cobbled surface across the flood plain found in the trial trenches and boreholes north of the bridge. Although no dating evidence was found this is likely to represent a roadway leading to an early bridge or ford. It appears to consist of the surface alone – no trace of piling or other causeway structure was evident. Following discussions with the Planning Archaeologist it is not therefore felt necessary to recommend that substantial excavation in advance of construction should take place, although the chances of finding some early structural remains either side of the river channel that may require excavation during the construction work, are substantially increased.

6.3 The presence of recorded peat deposits in two of the boreholes (1982 BH1 and BH10) also raises the possibility that significant palaeoenvironmental remains may be revealed by the construction work. Any such layers encountered should be thoroughly sampled.

Acknowledgements

The Warwickshire Museum is grateful to Mushtak Ahmed of Warwickshire Engineering for commissioning this work on behalf of the Highways Agency (and for his patience in waiting for its results); to Catherine Clark, Andrew Brown and Sue Cole, the successive English Heritage Inspectors dealing with the bridge reconstruction proposals and Douglas Moir, former Planning Archaeologist for discussions about the project; and to the landowners Messrs Ellis and Vegard for permitting the trial trenching to take place. This report was written by James Meek, Joseph Elders and Nicholas Palmer, with illustrations by Andrew Isham and Candida Stevens.

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Appendix A: Summary of Borehole information (upper layers only)

1982 Boreholes (Norwest Holst 1982) Fig 3, 1982, BH1-BH2

Description of strata	*Thickness*	*OD Level (Top)*
1982, BH1		
Topsoil	0.30m	61.00m
Pale brown silty clay	1.10m	60.70m
Brown sand and gravel	0.20m	59.60m
Grey silty clay	1.00m	59.40m
Grey silty clay	0.60m	58.40m
Brown silty peat	1.00m	57.80m
Weathered Keuper Marl/Mercia Mudstone		*56.80m*
1982, BH2		
Topsoil	0.30m	60.90m
Brown silty clay	1.20m	60.60m
Dark grey sand	0.20m	59.40m
Grey silty organic clay	2.00m	59.20m
Organic sand and gravel	1.00m	57.20m
Weathered Keuper Marl/Mercia Mudstone		*56.20m*

1983 boreholes (Geotesting Services 1983) Fig 3, 1983, BH1-BH2

1983, BH1		
Tarmac and hardcore	0.60m	63.86m
Yellow brown sandy-gravelly clay	0.40m	63.26m
Brown red yellow sandy clay with gravel	1.50m	62.85m
Grey blue brown silty sandy clay	1.50m	61.36m
Blue grey silty clay	1.50m	59.86m
Blue grey clayey/yellow brown gravel	1.50m	58.36m
Red and green clay		*56.86m*
1983, BH2		
Topsoil	0.40m	61.27m
Yellow brown clay	1.60m	60.87m
Blue grey silty clay	1.50m	59.27m
Reddish brown sandy gravelly clay	0.90m	57.77m
Red brown clay		*56.87m*

1991 Boreholes (Arup and Partners 1991, Enclosure A) Fig 3, BH5-BH11

BH5		
Topsoil	0.30m	60.94m
Brown clay	0.70m	60.64m
Brown-light brown silty-sandy clay	1.00m	59.94m
Black grey sandy silty clay with **lenses of gravel and black organic sand**	1.00m	58.94m
Red brown silty clay	0.80m	57.94m
Red brown silty clay		*57.14m*
BH5R		
Topsoil	0.40m	60.89m
Green grey silty clay	0.95m	60.49m
Black sand and gravel	**0.40m**	**59.54m**
Grey very sandy clay	1.55m	59.14m

	Description of strata	*Thickness*	*OD Level (Top)*
	Red brown weathered siltstone		*57.59m*
BH7			
	Brown silty clay	0.30m	60.85m
	Light brown (silty) clay	0.70m	60.55m
	Light brown-grey silty clay	0.50m	59.85m
	Grey brown-brown silty clay with organic	1.00m	59.35m
	(Band of grey sand with some gravel)	**0.10m**	**58.35m**
	Grey brown-brown silty clay with organic	1.10m	58.25m
	Red brown grey green gravel	0.60m	57.15m
	Red brown silty clay		*56.55m*
BH8			
	Brown silty clay	0.50m	60.94m
	Brown silty clay	1.00m	60.44m
	Grey-black organic sand and some gravel	**0.30m**	**59.44m**
	Green grey-black silty sandy clay	0.20m	59.14m
	Grey-green grey silty sandy clay	1.30m	58.94m
	Grey brown silty clay	0.20m	57.64m
	Red brown clayey silty sandy gravel	0.15m	57.44m
	Red brown weathered siltstone		*57.29m*
BH9			
	Topsoil	0.30m	60.84m
	Dark brown silty clay	1.00m	60.54m
	Brown silty sandy clay	0.70m	59.54m
	Black organic sand & some gravel	**0.20m**	**58.84m**
	Dark grey sandy silty clay	0.20m	58.64m
	Dark grey silty clay	0.60m	58.44m
	Dark grey-brown silty sandy clay	0.50m	57.84m
	Grey weathered siltstone		*57.34m*
BH9R			
	Topsoil	0.40m	60.88m
	Grey silty clay	0.95m	60.48m
	Black sand and gravel	**0.60m**	**59.53m**
	Grey silty sandy clay	1.40m	58.93m
	Red brown weathered siltstone		*57.53m*
BH10			
	Topsoil	0.30m	60.85m
	Red brown silty clay	0.70m	60.55m
	Red brown silty clay	0.60m	59.85m
	Brown sand and gravel, black organic	**0.60m**	**59.25m**
	Light brown-grey silty clay	0.70m	58.65m
	Grey silty clay with peat	0.10m	57.95m
BH11			
	Red brown silty clay	1.00m	60.89m
	Brown/grey silty sandy clay	0.50m	59.89m
	Black organic sand and gravel	**0.60m**	**59.39m**
	Grey brown silty clay	1.00m	58.79m
	Orange brown sand and gravel	0.80m	57.79m
	Red brown silty sandy clay	*0.20m*	*56.99m*
	Grey green siltstone	*0.60m*	*56.79m*