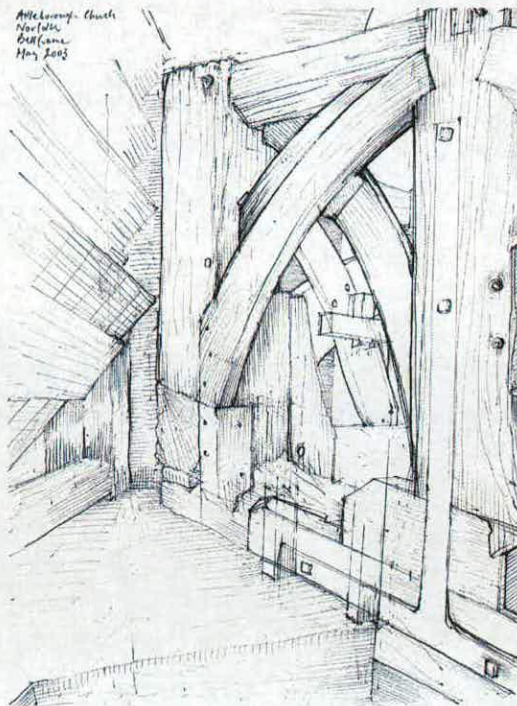


THE BELL FRAME AT ST MARY'S CHURCH, ATTLEBOROUGH, NORFOLK

An historical analysis



By
Richard Bond

Research & Analysis Team
Reports and Papers B/014/2004
2004



ENGLISH HERITAGE

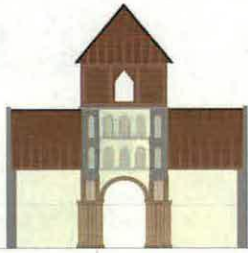


Figure 1
St Mary's, Attleborough, Norfolk
Section through lower and transepts looking east
Period A c.1100



Figure 2
St Mary's, Attleborough, Norfolk
Section through nave looking east
Period A c.1100



Figure 7
St Mary's, Attleborough, Norfolk
Section through tower and transepts looking east
Period D c.1535



Figure 8
St Mary's, Attleborough, Norfolk
Section through nave looking east
Period D c.1535



Figure 3
St Mary's, Attleborough, Norfolk
Section through lower and transepts looking east
Period B c.1300



Figure 4
St Mary's, Attleborough, Norfolk
Section through nave looking east
Period B c.1300

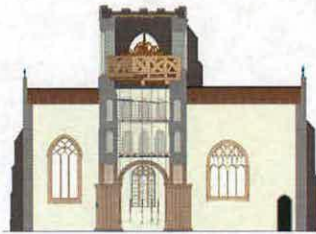


Figure 9
St Mary's, Attleborough, Norfolk
Section through tower and transepts looking east
Period E 1845

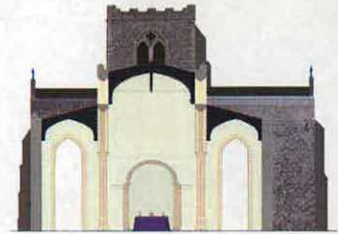


Figure 10
St Mary's, Attleborough, Norfolk
Section through nave looking east
Period E 1845



Figure 5
St Mary's, Attleborough, Norfolk
Section through lower and transepts looking east
Period C c.1400



Figure 6
St Mary's, Attleborough, Norfolk
Section through nave looking east
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Figure 11
St Mary's, Attleborough, Norfolk
Section through tower and transepts looking east
Period F As existing



Figure 12
St Mary's, Attleborough, Norfolk
Section through nave looking east
Period F As existing

St Mary's Church, Attleborough, Norfolk

Historical development
c.1100 - present

Nature of Request

A request was received from Graham Pledger of the Conservation Engineering section of English Heritage for advice on the dating and historical significance of the bellframe at St Mary's church, at Attleborough in Norfolk. The bellframe dates from the early sixteenth century and has been altered, strengthened and repaired on numerous occasions since its original construction. An archaeological recording project was carried out by Richard Bond of the Research and Analysis team of English Heritage, in collaboration with Bill Blake and Andy Crispe of the Metric Survey team of English Heritage. The study forms part of a wider English Heritage research project aimed at developing standard procedures for recording and analysing historic bellframes.

Unless stated otherwise the drawings in this report are by Richard Bond.

Origin of Request: Graham Pledger
Date of Request: January 2003
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1. Introduction

The parish church of St Mary, Attleborough, is a grade I listed building dating from the eleventh century. The Norman church had a cruciform plan with nave, transepts, chancel and central tower, of which only the crossing arches and bottom part of the tower survive. In the thirteenth century the belfry stage was rebuilt and the tower given a tall spire. The spire fell in c.1700 and was replaced by the present flat roof, and two of the thirteenth-century belfry windows were altered to plain arched windows at the same date. The south transept was converted to a chapel in the late thirteenth century (its founder was William Mortimer, d.1297), the north transept, likewise, in the late fourteenth century (its founder was Thomas Chaunticlere, d.1378). The north and south aisles, and the nave arcades, also date from the late fourteenth century, but were remodelled in the late fifteenth century. The carved timber screen, one of the best examples in the region, is dated to c.1480. The chancel was demolished in 1541.

The bellframe at Attleborough dates from the first half of the sixteenth century. It replaced an earlier bellframe dating from the same period of construction as the present belfry stage of the tower, i.e. the thirteenth century. (It is possible that the bottom pair of foundation beams supporting the present bellframe date from this period). The thirteenth-century bellframe was probably built to replace an even earlier bellframe that dated from the construction of the eleventh-century tower. This would have been a very simple bellframe, perhaps with only a single bell.

The present bellframe was designed to accommodate four bells. The bells were housed in rectangular pits arranged symmetrically around a hollow square opening. A fifth bell, dating from 1617, was fitted inside the central opening. A sixth bell, dating from 1671, was fitted into the south-east corner of the bellframe. (Its bell-pit was created by truncating the ends of the adjoining bell-pits on the eastern and southern sides of the bellframe). Major repairs were carried out to the bellframe in the early eighteenth century, and many of the present headpieces and braces date from this period. Again, in the nineteenth century, new timbers were inserted and metal straps and tie-bolts used to further strengthen the frame. In the early twentieth century, two steel girders were inserted to help strengthen the belfry floor structure. Other works were carried out at this time to renovate the tower and ringing chamber.

Most of the information relating to the dating of the bells, and the dates of later repairs and alterations to the bellframe at Attleborough in this report was supplied by Mr Paul Cattermole, based on notes made in the course of his own research into bells and bellframes Norfolk. Access to this information not only helped significantly with phasing the bellframe fabric, but allowed the historical development of the bellframe to be analysed within the context of the church as a whole. The dating of the bellframe was further assisted by a tree-ring dating project commissioned by English Heritage and undertaken by Dr Martin Bridge of the Department of Dendrochronology at University College, London. A number of core samples were removed from the timbers of the bellframe, and the analysis showed the date of construction of the bellframe to be in the period AD1520 to AD1535.

The recording project at Attleborough followed in the wake of a proposal by the church to initiate a programme of works aimed at strengthening the bellframe. Although consent had been given for the improvements in principal, as with all works to historic buildings, before the works could take place there was a need to make a record of the structure and assess the impact of the proposed works on the existing historic fabric. English Heritage offered to carry out the survey of the bellframe as a research project aimed at exploring the practical issues surrounding the recording of church bellframes, and in particular, the application of modern computer-based methods to survey and record bellframe structures. In the past, most bellframe surveys have relied on traditional hand-surveying techniques involving the use of tape measures and drawing boards. Although computer-based electronic surveying methods are now a standard part of buildings archaeology, prior to the Attleborough project such techniques had rarely, if ever, been used to record an historic bellframe. As with any archaeological recording project, the purpose of the survey was not only to produce an accurate drawn record of the structure, but also to acquire a better understanding of its historical development. If a bell frame is recorded by hand, such information will most likely be picked up in the course of the recording process. At Attleborough, however, the measured survey and on-site historical analysis were carried out as discrete operations; consequently some other means needed to be found of recording the phasing evidence, and communicating the information to the team carrying out the metric survey of the bellframe, in order for the team to show the phasing and constructional detailing of the bell frame in their drawings. After a certain amount of experimentation, a method was devised of recording the constructional information on site that was both quick and inexpensive. The method involved the use of digital photography to record the information on site, and computer photo-editing software to convert the photographic images of the bellframe into line drawings. Copies of the line drawings were then taken back to church and coloured in and annotated to show the phasing of the individual timbers

and later repairs and alterations to the bellframe. Copies of the phased drawings were sent to the Metric Survey team for the team to add the archaeological information to their 3-d computer-generated survey drawings. In practice, the use of digital photography combined with computer photo-editing software proved an extremely quick and effective recording method; in principal, the same technique could be used in any analytical recording project where the brief calls for the rapid analysis and recording of complex archaeological structures.

Once the bellframe had been drawn up and the analysis of the structure completed a final drawing was produced showing the bellframe in relation to the tower and church as a whole. The tower and east (exterior) elevation of the transepts were surveyed using electronic distance-measuring equipment ('reflectorless EDM') and a scaled line drawing was produced on computer of the internal elevation of the east wall of the tower using CAD software. Using the CAD survey drawing as a base reference, a set of cross-sectional 'photo-realistic' illustrations was produced showing the interior of the church and tower 'as existing'; these drawings then formed the basis for a further series of digital 'photo-realistic' reconstruction views that were intended to show the historical development of the bellframe, the tower and church from *c.*1000 to the present day. To create the 'as existing' cross-sectional drawings through the tower and nave, a series of digital photographs was taken inside the tower and church from top to bottom; these were then joined together to form a digital photo-montage of the interior elevation; the photo-montage images were then digitally distorted so that they fitted the drawings of the tower and nave provided by the Metric Survey team. The resultant 'as existing' cross-sectional elevational views (one through the tower and transepts, and the other through the nave) were then edited on computer using photo-editing software to create a series of conjectural reconstruction drawings showing how the church may have appeared at different stages in its historical development. When looked at in the context of the development of the church as a whole it is very apparent that the (re)construction of the bellframe in the early sixteenth century was not an isolated event, but represented just one stage in a planned redevelopment of the church that started at around the end of the fifteenth century and ended with the Reformation.

2. Architectural context: the historical development of Attleborough church, c. AD 1100 –2003

This section of the report looks at the historical development of the bellframe in the context of the historical development of the church as a whole. As the series of reconstruction drawings shows (*figs 1 – 12*), at around the same time as the bellframe was being built the church was undergoing a major phase of remodelling that included the heightening of the nave and aisle walls, the rebuilding of the roof, and construction of the carved timber screen. The Norman tower with its thirteenth century belfry and spire saw little or no alteration during this period, apart from the blocking up of its west window, and the painting of a new (or renewed) mural on its west wall above the screen. The bells continued to be rung from ground level (indeed, this was the arrangement up until 1847 when a new ringing chamber was created at first floor level above the arches of the crossing). The tower remained unaltered up until c. 1700 when the spire collapsed and a flat roof was constructed in its place. A buttress was built at the south-east corner of the tower (where there is also evidence of rebuilding inside the tower) and the thirteenth century windows were replaced on the south and east sides of the belfry stage.

The section is arranged chronologically, starting with the construction of the original cruciform church in the eleventh century. Most of the historical data relating to the bells and bellframe has been drawn from earlier research undertaken by Paul Cattermole. It is important to remember when looking at the series of reconstruction drawings (periods A to E, c. 1100 to 1845) that the views are entirely conjectural and represent only an approximation of how the church may have appeared in each historical period. For the earliest periods there was little or no existing archaeological information upon which to base the reconstructions and the drawings should be regarded as purely speculative and representative only of how one might imagine the church to have looked at this time.

Figures 1 & 2

It is likely that the Norman tower had a bell (or bells) hung from a simple bellframe. The bells would have been rung from ground level. It is not certain exactly how many bells there would have been at this time, but it is assumed probably between one and three. The ring would have been a simple chime, with the bells placed high in the tower to provide the best sound. The floor of the belfry (i.e. the compartment where the bellframe was located) would have been situated at the same level as it is today, i.e. immediately above the two-tier arcade inside the tower.

The eleventh-century church had a cruciform plan with nave, chancel, transepts and central tower. The crossing piers and upper and lower arcade within the tower date from the original construction of the church and show little signs of alteration. There is a projecting stone ledge with a carved roll moulding at the base of the lower arcade. The roll moulding is partly obscured by the present floor of the ringing chamber but it would have been visible from ground level originally. Running behind the upper and lower arcades is a narrow passageway. Originally both passageways were continuous around all four walls of the tower; however, following the collapse of the spire and rebuilding of the spire in the early eighteenth century, in the south-east corner the passageway behind the upper arcade is now blocked.¹ The lower passageway is still open around all four walls.

The rebuilding of the tower in the early eighteenth century may have removed much of the evidence relating to how the belfry stage was accessed in the eleventh-century church. The existing opening into the belfry at the east end of the south wall of the tower cuts through the ceiling of the upper passageway and probably dates from the nineteenth century. There are no openings, blocked or otherwise, linking the lower and upper arcades at any point around the walls. There is an opening with a low head at the south end of the west wall at lower arcade level, however this is likely to be a later opening that was created when the carved screen was constructed in the late fifteenth century. It is possible that the belfry was reached via a staircase at the south-east corner of the tower. An opening at the base of the staircase would have given access to the passageway behind the upper arcade. Access to the upper arcade itself may have been via a passageway formed within the roof space above the chancel or south transept. A staircase in this position may have weakened the tower in the south-east corner and could account for the present large buttress and the filling-in of the upper wall passage in the early eighteenth century. Alternatively the belfry may have been reached by an external ladder. Mr Cattermole recalls a village in Normandy (possibly Perrières) 'where access to the bell-chamber above a central crossing still is by a long ladder to the transept parapet (placed outside the church), and then by a shorter ladder to a door in the side of the bell-chamber. There must have been some connection between the two levels of wall passages at Attleborough, possibly by ladder; so if stairs existed in the tower, they may only have started at the upper level of arcading in the present ringing chamber.'

To quote further from Mr Cattermole:

'I feel sure that the best models for a reconstruction of Norman Attleborough would be in churches of comparable size in the area around Caen, or in the Bessin and Cotentin, the region from which William d'Aubigny I and II (probable patrons of the Norman church at Attleborough) came. Both men were closely connected to the Court, and built extraordinarily sophisticated buildings with a strong French flavour elsewhere, e.g. Wymondham Abbey (compare with La Trinité at Caen) and Castle Rising castle (compare with the keep at Falaise) and church (heavily restored, do not trust the tower). I guess Attleborough never had a sophisticated Romanesque masonry upper stage containing bells (like the surviving one at Gillingham, near Beccles). Later builders would have built above it (as at Great Yarmouth), leaving any decorative features that they respected (as when the tower was built against the west wall at Westhall, near Beccles) rather than pulling it down.

Several Romanesque churches in Lower Normandy still have timber belfries sitting on top of quite short towers. The bellframes appear to have their foundations in the masonry, and are protected from the weather by a timber-framed (sometimes shingled, and sometimes weatherboarded) cladding. They are often topped off with a short pyramid or saddleback roof. Even a prestigious church such as St Gervais in Falaise has a timber

¹ At the upper level, the passageway is also interrupted with a transverse wall built behind the easternmost column of the north arcade. This wall traps a length of timber used to support one of the present rope guides (a modern metal fixture) and the now disused ringing mechanism for the clock attached to the face of the north transept. The clock is inscribed with the date 1825. It seems likely that the interrupting wall was built sometime between around 1825, when the clock was installed, and 1909, when the tower was restored by Lacey and Upcher.

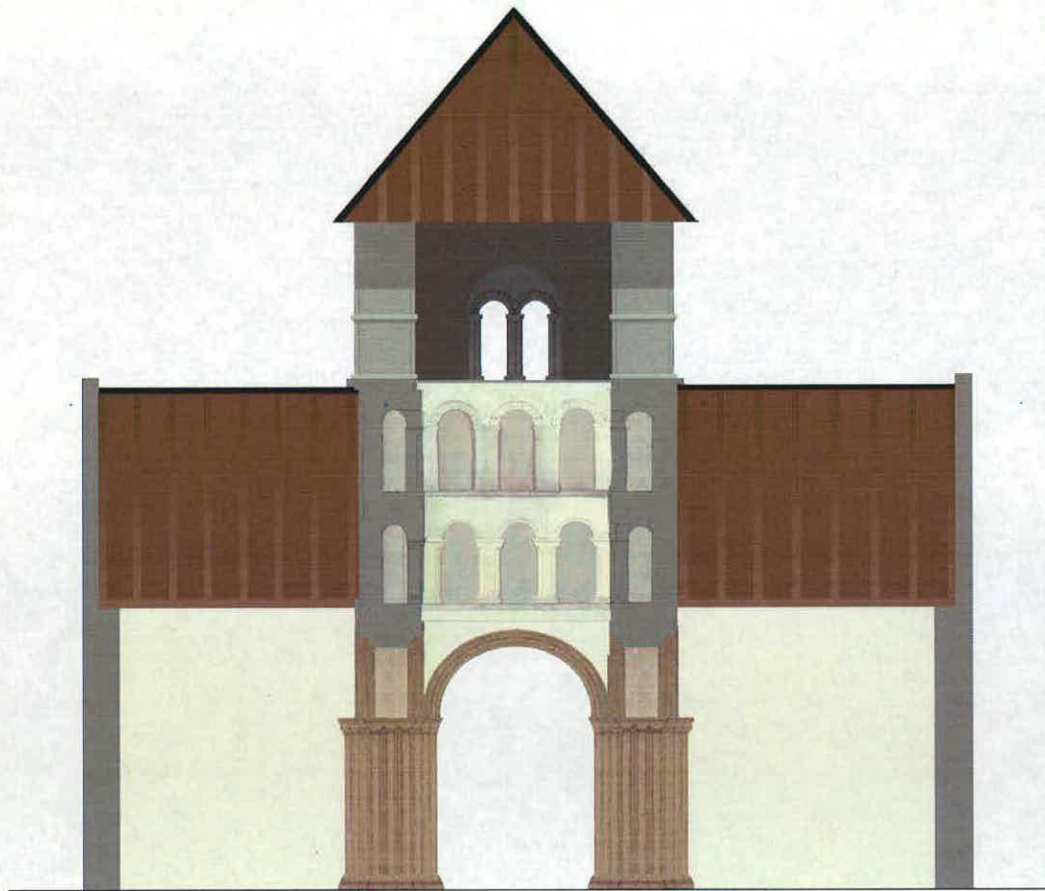


Figure 1

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period A c.1100



Figure 2

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period A c.1100

belfry on top of its Romanesque tower. The north-east view of Attleborough church by Ninham (c.1848) published by Barrett shows a very plain east wall above the east arch of the crossing, with just two slit windows corresponding to each of the two levels of arcading inside. My guess for the likely appearance of Attleborough tower in Norman times would be a quite plain tower rising to the level of the stringcourse just below the thirteenth-century bell-chamber, topped with a timber belfry and perhaps a shingled broach spire or something similar.

Two recent guide-books to Attleborough church (Turner 1994 and Clove 1957) state that the tower was originally at the west end of a church, whose nave was developed as the Mortimer Chantry. This comes directly from Barrett (1847) and cannot be correct. There is every reason to assume that the tower was originally at the crossing of a quite substantial Romanesque cruciform church'.²

² Mr. Paul Cattermole, *pers.com*.

Period B c.1300

Figures 3 & 4

The belfry stage of the tower was rebuilt and a new spire constructed in the thirteenth century. Two wide Early-English bell openings with a quatrefoiled circle in plate tracery survive on the west and north faces (the openings on the east and south were remodeled in the early eighteenth century). The lower part of the tower and the nave remained unchanged during this period. The south transept was enlarged by William Mortimer in 1297, the year in which he died. The north transept was retained in its original Norman form, as was the Normal chancel and apse.

Figures 3 & 4 are reconstruction drawings intended to show how the church may have appeared in this period. The precise form of the former thirteenth-century spire is unknown. Writing in the mid-nineteenth century, the rector Dr Jonathan Tyers Barrett told of an oral tradition concerning the spire, that it was said to have been 'one of the loftiest in the county'.³ It is likely that a new bellframe would have been constructed at this time, to go with the new belfry stage and spire, however once again there is no evidence to show what form this may have taken. There is evidence to suggest that the bottommost pair of foundation beams within the present belfry may pre-date the existing bellframe structure, and could conceivably be *in situ* foundation beams from a thirteenth-century bellframe.

³ Barrett, JT. (1848)

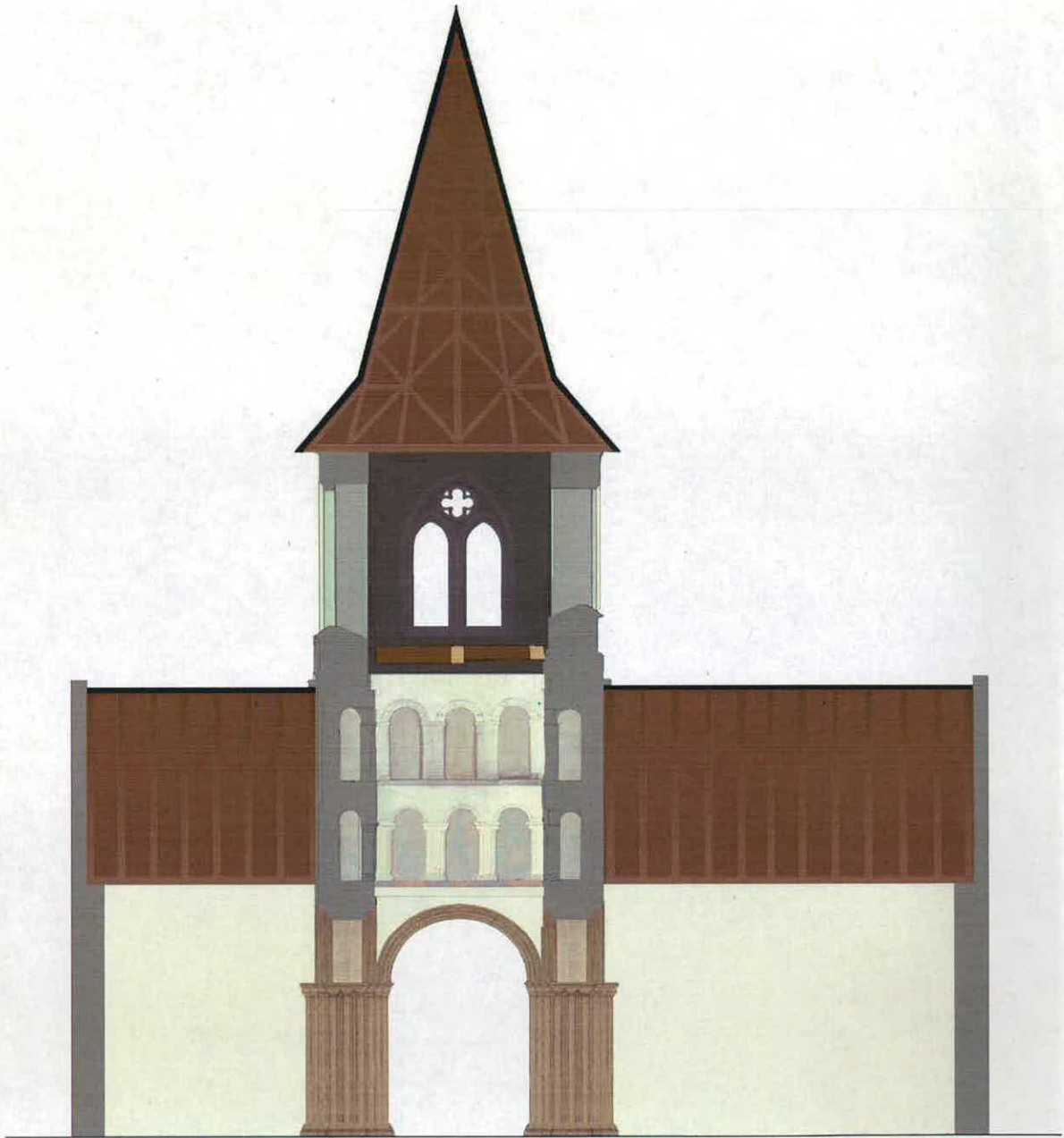


Figure 3

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period B c.1300



Figure 4

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period B c.1300

Period C Early fifteenth century

Figures 5 & 6

The church was extensively remodelled in about 1340, and is today almost uniformly Decorated in character apart from the tower and nave arcades.⁴

The north transept was rebuilt or remodelled in *c.* 1350; it followed the plan of the eleventh-century north transept. Its founder was Thomas Chaunticlere; he died in 1379 leaving £20, presumably to fund the alteration of the transept to accommodate his tomb.

The nave was enlarged in *c.* 1350 and the present north and south aisles were created (the present aisle windows date from this period). The nave walls of the original Norman church were presumably raised and cut through to form arcades, and the church was probably given a new roof (the scars of what appear to be the former roof-lines of the north and south aisle roofs can still be made out in the west end walls of the aisles).

The chancel and apse was replaced by an aisled eastern arm, built for the Mortimer family. It was completed in 1405 and given over to a college; it was demolished at the Dissolution.

The nave was again altered between 1405 and 1436 with the provision of the existing five tall bays of Perpendicular piers. The mid-fourteenth century aisle walls and their windows were kept, as was, presumably, the putative mid-fourteenth century roof over the nave and aisles. The dating of the existing west window is uncertain; it may date from the same period as the present arcade piers, *i.e.* 1405-36, or else it could have been constructed in the mid-fourteenth century along with the aisle windows. (Wilson suggests the window must have been constructed with the arcades, on account of its height; however, as this study shows, there may have been space to construct a window of this size below the supposed mid-fourteenth century nave roof).

The north porch was added in the mid-fifteenth century; it was the gift of Sir John Ratcliff, who died in 1441.

The Norman tower with its thirteenth-century spire, belfry stage and bellframe presumably remained unaltered during this period.

⁴ This section is based largely upon *The Buildings of England, Norfolk 2: North-West and South*, by N. Pevsner & B. Wilson, 1999.



Figure 5

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period C Early C15th



Figure 6

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period C Early C15th

Period D c.1535

Figures 7 & 8

Between the late-fifteenth century and mid-sixteenth century a number of alterations and improvements were made to the church.

Those works attributable to the late fifteenth and opening years of the sixteenth century were mainly confined to the nave and aisles. These included the construction of the present clerestory above the nave (in c.1505 money was left to 'make clerestories');⁵ the construction of the present nave roof (the current list description says it is late fifteenth century);⁶ the heightening of the aisles walls; (probably) the construction of new roofs over the aisles; and the construction of the rood screen.

The rood screen is dated to c.1480. The Attleborough screen and that at Ranworth church (also of c.1480) have been described as the best in Norfolk.⁷ Above the screen, on the west wall of the tower, is a large area of wall painting. The painting originally formed a huge rood composition, with figures of prophets and angels above the horizontal arm of the cross, and angels and other figures below.⁸ The wall painting probably dates from the same period as the screen.⁹

The works continued into the sixteenth century with the construction, between 1520 and 1535, of a new bellframe within the thirteenth-century belfry (see section 3 of this report). The bellframe rests on two large-section foundation beams that may originally have supported the thirteenth-century bellframe. It is uncertain how the tower was floored in this period, or indeed, whether there were any upper floors below the level of the belfry. In the accompanying reconstruction drawing (*fig. 7*), the tower is shown with two upper floors, as in period E (*fig. 9*).

At the Dissolution the eastern arm of the church was demolished. (It was built in 1405 and had served as a college of priests; it was dedicated to the Holy Cross). It has been suggested that the present east window in the south transept has been re-set, and may be the east window of the former college.¹⁰

⁵ Pevsner & Wilson, *ibid.*

⁶ DCMS List Description, last amended 1984.

⁷ Pevsner & Wilson, *ibid.*

⁸ The wall painting was whitewashed over in the post-medieval period and hidden from view until the nineteenth century. According to the current church guidebook, the plaster wash was removed in 1844 and an engraving made (a drawing of the wall painting, presumably also made at this time, presently hangs inside the church); using the 1844 drawing and photographs of the west wall of the tower as a reference, a digital reconstruction drawing was produced showing the approximate appearance of the original wall painting (*fig.8*).

⁹ However, note that the painting at the top follows the line of the arch braces of the roof (the roof is thought to date from c.1505); it is possible that the uppermost part of the wall painting was reworked following the construction of the present roof of the nave.

¹⁰ Pevsner, N. *Buildings of England, Norfolk (1st edition)*.

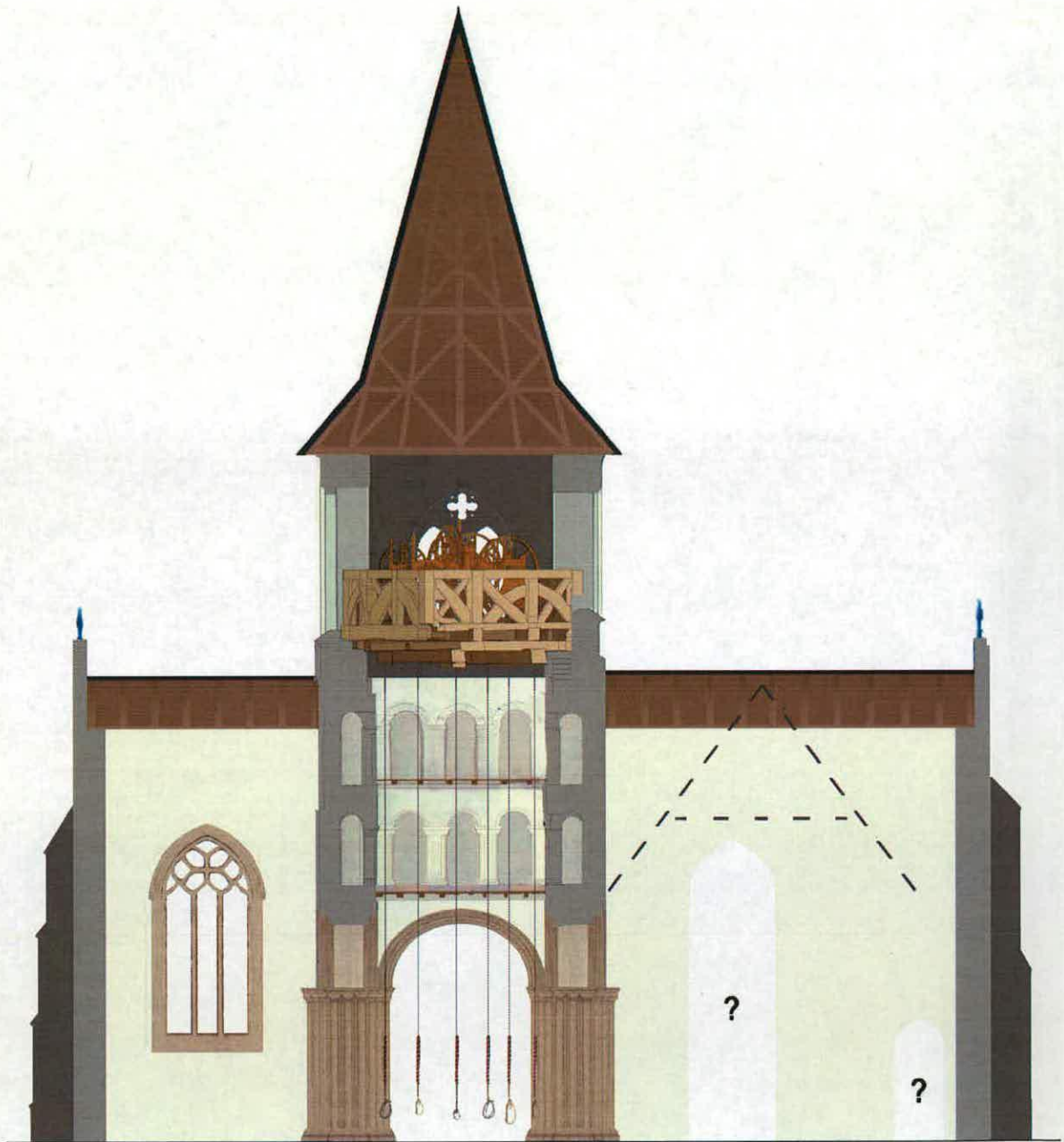


Figure 7

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period D c.1535



Figure 8

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period D c.1535

Figures 9 & 10

The tower underwent a dramatic transformation some three hundred years ago when the thirteenth-century spire was replaced with a flat roof and castellated parapet. According to the current church guidebook, the battlements on the tower were added in 1631.¹¹ From an architectural standpoint, however, it seems likely that the remodelling was carried out in the early eighteenth century (see, for example, the form of the brickwork and repairs to the bell openings on the east and south side of the tower). The mid-nineteenth century rector of Attleborough, Dr Jonathan Tyers Barrett, placed the fall of the spire around 1700, based on anecdotal evidence and local tradition.¹² The rebuilding probably included the construction of the present south-east buttress and blocking in of the arcading of the same corner of the lantern.¹³

A fifth bell was added in the central opening of the bellframe in 1617; a sixth bell, dated 1671, was fitted into the south-east corner of the bellframe. Further extensive repairs were carried out to the bellframe in the early eighteenth century (discussed in section 3 of this report).

The rood screen was taken down and moved to the west end of the church in 1845. The wall painting above the screen was uncovered in 1844 (it was presumably covered up during the Reformation) and an engraving made, but within weeks the wall was whitewashed again.¹⁴ The screen remained at the west end of the church for eighty-six years and was moved back to its original position in 1931.

¹¹ Turner, B. (1994). It is not stated what, if any, evidence exists for this dating.

¹² Barrett, J.T. (1848).

¹³ Cattermole, P. *pers. com.*

¹⁴ Turner, B. *ibid.*



Figure 9

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period E 1845

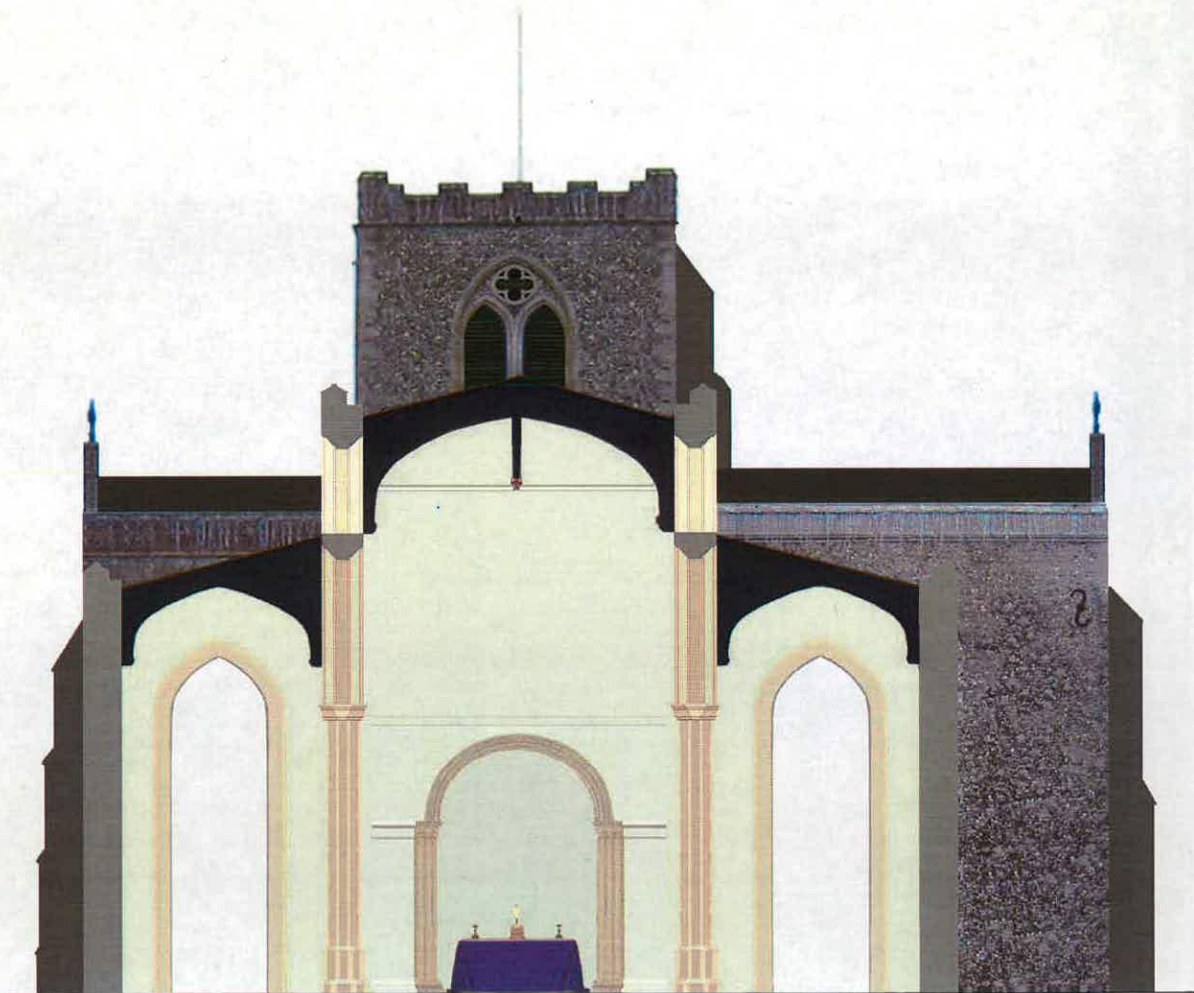


Figure 10

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period E 1845

Figures 11 & 12

Until the middle of the nineteenth century the west arch of the tower was bricked up (it is not known when the blocking was carried out). The bells continued to be rung from the ground, and the bell-ringers were screened from the nave by the brick blocking of the arch. The arch remained blocked even when the screen was moved to the west end of the church in 1844. In 1853, however, the east window was glazed with high quality stained glass, suggesting that the west arch of the tower was re-opened at this date, and the bell-ringers moved upstairs. In order to ring from the first floor, it was necessary to remove the old bell-chamber floor and replace it with a new floor above the upper row of arches.¹⁵ The new ringing chamber now had two tiers of Norman arches on each of its four walls.

A plaque in the ringing chamber records the restoration of the tower by Lacey and Upchurch Architects in 1909. It is likely that the restoration included the creation of the present window opening in the centre of the upper arcade in the west face of the tower, looking into the nave (it seems unlikely that the upper window in the west wall is an original Norman window opening given the probable roof-line of the Norman church; see *figs. 1 & 2*). Below this, an original Norman window opening, presumably blocked in the late fifteenth century when the mural painting was applied to the east end of the nave, was re-opened (it is said to allow the bell-ringers to see into the nave and follow the progress of church services); and new openings were created in the east wall of the tower to light the ringing chamber.

The aisle roofs appear to have been renewed, and may date from the eighteenth or nineteenth century. The existing parapets to the nave and aisles may be of a similar date.

The clock in the north transept of the tower bears the date 1825.

As stated above, the carved timber screen was moved from the west end of the church to its original position in 1931. The whitewash covering applied to the west wall of the nave in 1845 was removed in 1935, revealing the medieval wall painting for a second time; the wall painting has remained exposed to the present day.

¹⁵ Cattermole, P. pers. com.



Figure 11

St Mary's, Attleborough, Norfolk

Section through tower and transepts looking east

Period F As existing



Figure 12

St Mary's, Attleborough, Norfolk

Section through nave looking east

Period F As existing

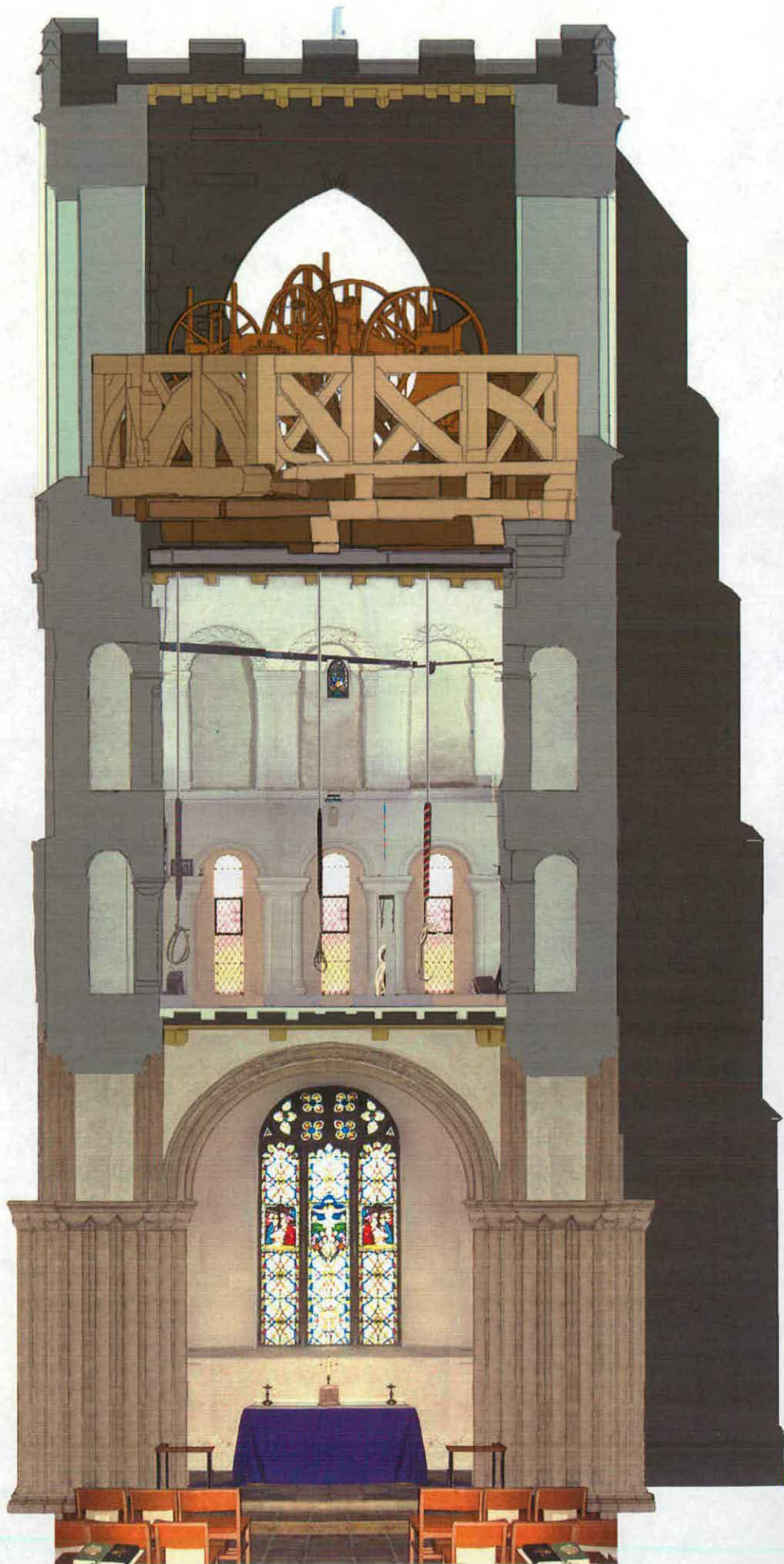


Figure 13
Section through tower looking east
As existing

3. Fabric record: the historical development of the bell frame from the early sixteenth century to the present day

The bellframe at Attleborough Church was recorded using a combination of high-tech and low-tech methods ranging from computer-based electronic survey techniques to annotated sketches and hand-survey of the timber frame. The measured survey was carried out by Bill Blake and Andy Crispe of the Metric Survey team of English Heritage. The phasing and analysis of the timber frame was carried out by Richard Bond of the Analysis and Research team of English Heritage in collaboration with Graham Pledger of the Conservation Engineering section of English Heritage. Paul Cattermole also very kindly provided much advice and assistance, and the use of his own extensive notes on the history of the bells and bellframe.

As the record survey progressed, a clear picture began to emerge of the development of the bellframe structure and the history of repairs and alterations that have been carried out to its timber frame. Being a large, complex and much-altered structure, the first priority was to develop a quick and effective way of conveying in graphical form how the frame was constructed and how it had been altered over time. Various conventional measured drawing-based approaches were tried but the best solution was found to be a photographic-based method using a combination of digital photography and digital photo-editing software. The method adopted was as follows. First, a series of digital photographs were taken of the bellframe, showing the structure from a series of angles and viewpoints. These were then transferred to computer and edited in a photo-editing programme (in this case, Photoshop); then, using one of the programme's standard automatic editing filters the photographs were digitally converted into line drawings. Prints were made of the drawings and taken to the church to be used as base drawings for recording details of the dating/phasing of the timbers and other information. Having recorded the whole of the frame in this way, copies of the coloured-up and annotated sheets were copied and sent to the Metric Survey team who used them to complete their own computer-generated two- and three-dimensional drawings of the bellframe.

This final section of the report includes a brief summary of the historical development of the bellframe from the early sixteenth century to the present day. A set of illustrations describes the form of the bellframe and the phasing of the timber-framed structure. These include CAD drawings, annotated site survey sketches, and photographs; the figures illustrate the range of recording methods used in the course of the study, and provide an insight into the recording procedure itself.

Primary construction, AD 1520-35

As originally constructed the bellframe held four bells with the bells swinging in rectangular pits on each side the frame. The bell pits were all the same shape and size and were arranged around a hollow square opening in the centre of the bellframe. The bellframe is presently set diagonally within the tower, with the corners of the frame resting on the sills of the bell openings. (For the sake of convenience, in this report the bellframe is described as though it were aligned on a north-south-east-west axis). The bellframe has a square plan, and the external dimensions of the frame correspond closely to the internal dimensions of the tower at belfry level (figure 21). This raises the possibility that the bellframe may have been designed to be aligned on a north-south-east-west axis originally, i.e. with the sides of the bellframe set flush with the walls of the tower. The internal dimensions of the belfry are as follows: north and south walls, 4.5 metres; east and west walls, 5.3 metres. The dimensions of the bellframe are: north side, 4.3 metres; south side: 4.5 metres; east side: 4.7 metres; west side: 4.6 metres.

The bellframe has been dated by dendrochronology to between 1520 and 1535.¹⁶ The frame is of oak and it was assembled using pegged mortice and tenon joints. No carpenter's marks are to be seen on the timbers (however it is possible that the inside faces of the joints are numbered, or there were once carpenter's numerals visible but these have been eroded or lost through later repairs to the bellframe). The external wall frames comprised a corner post at each end with two intermediate wall posts dividing the frames into three equal-size sections or 'bays'. The left hand bays of the external wall frames formed the end walls of the bell-pits on the return sides of the bellframe; these bays included a single arch-brace linking the corner post and the head-piece. The central and right-hand bays formed the external side walls of the bell-pits; these bays included two parallel arch-braces, the lower brace rising to intersect with the intermediate post, and the upper brace rising to intersect with the head-piece (figure 24).

It is possible that the bottom two foundation beams supporting the present bellframe are reused timbers and previously supported an earlier bellframe that was contemporary with the thirteenth-century belfry and spire. Samples were taken from the beams during the recent tree-ring dating project; however the timbers failed to date.

AD 1617

In 1617 a bell was inserted in the central opening to give a ring of five bells. The work was recorded in the baptism register by the Rector, the Reverend Robert Forby. The extract reads as follows: 'That 4 new bells viz: 1, 2, 3 & 5 were this year made in March and finished Maye 5th 1617 by William Brend Belfounder in Norwich; and so there were nowe fyve Bells where before had bene 4 bells of a greater weight'.¹⁷

AD 1671

A treble bell was added in 1671 to create a ring of six bells. A new bell-pit was created at the south-east corner of the bellframe by truncating the south bell-pit and extending the east bell-pit southwards.

c.1736

The present bellframe includes a number of replacement or repair timbers that were inserted when the bellframe was restored in the early eighteenth century. One of the timbers bears an inscribed date of 1736. It is likely that the repairs were prompted by the collapse of the tower that is thought to have occurred around the beginning of the eighteenth century. Iron straps with wedged bolts were used as a means of providing extra stiffening to the frame. These attach to the sides of the horizontal head-pieces and extend through the timber joints and around the backs of the corner and intermediate posts, suggesting that the frame was wholly or substantially dismantled and re-erected at this time.

AD 1825

¹⁶ Bridge, M. Tree-ring dating report.

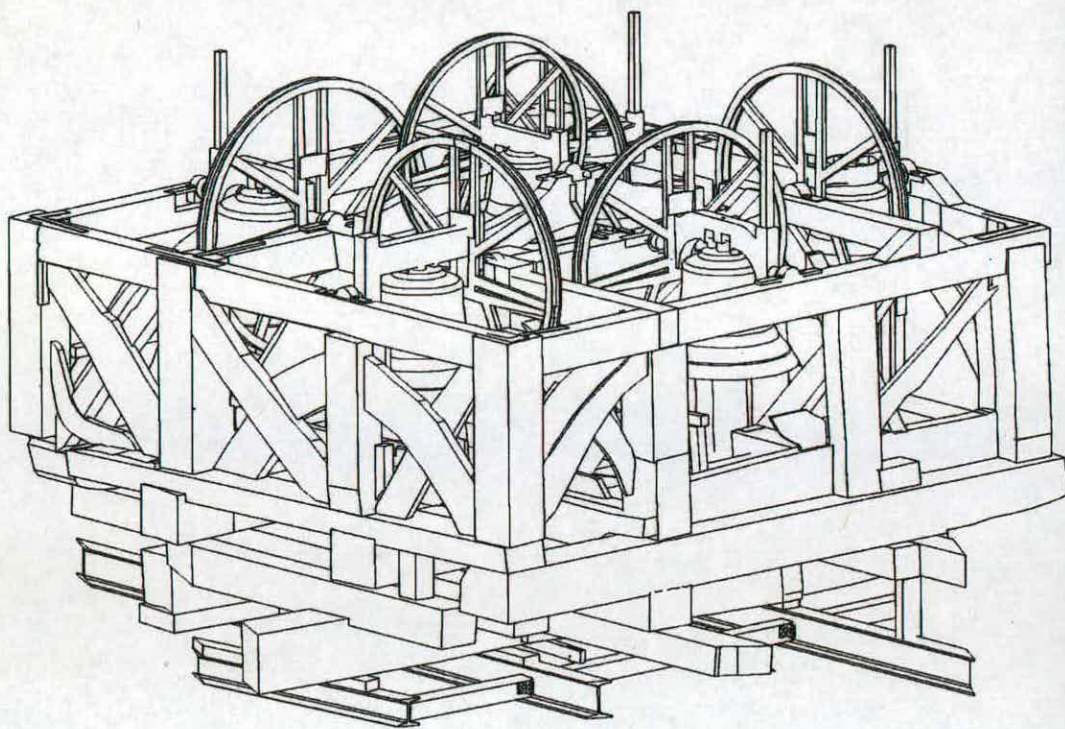
¹⁷ Transcribed in *Norfolk Genealogy*, Vol 12. 1980, p.33, by E W Sanderson; and quoted in Cattermole, P. *Attleborough Parish Church: Bells, Tower and bell-frame*, 2003

The clock presently attached to the north face of the north transept has a date inscription of 1825.

Inside the tower, the passageway behind the upper tier of eleventh-century arches is interrupted at the north-east corner by a section of wall extending northwards from the eastern pier of the north arcade. The wall traps a length of timber used to support an existing rope guide (a modern metal fixture) and the now disused ringing mechanism for the clock on the north transept. It therefore seems likely that the blocking of the passageway dates from sometime between the early nineteenth century (the date of the clock) and c.1909, the restoration of the tower by Lacey and Upchurch Architects.

AD 1909

The tower was restored in 1909 by Lacey and Upchurch Architects. The eleventh-century window opening in the west wall of the tower (in the centre of the lower arcade of the lantern) was re-opened, and a new opening was created above it (in the centre of the upper arcade). The window openings were framed in Norman style arches. A framework of I-section steel beams was inserted directly below the pair of (presumed) thirteenth-century foundation beams to provide further support and stiffening to the bellframe and tower.



**Figure 14 View of bellframe as existing showing arrangement of bells
and position of timber foundation beams and inserted steel beams
(drawing by Bill Blake/Andy Crispe)**

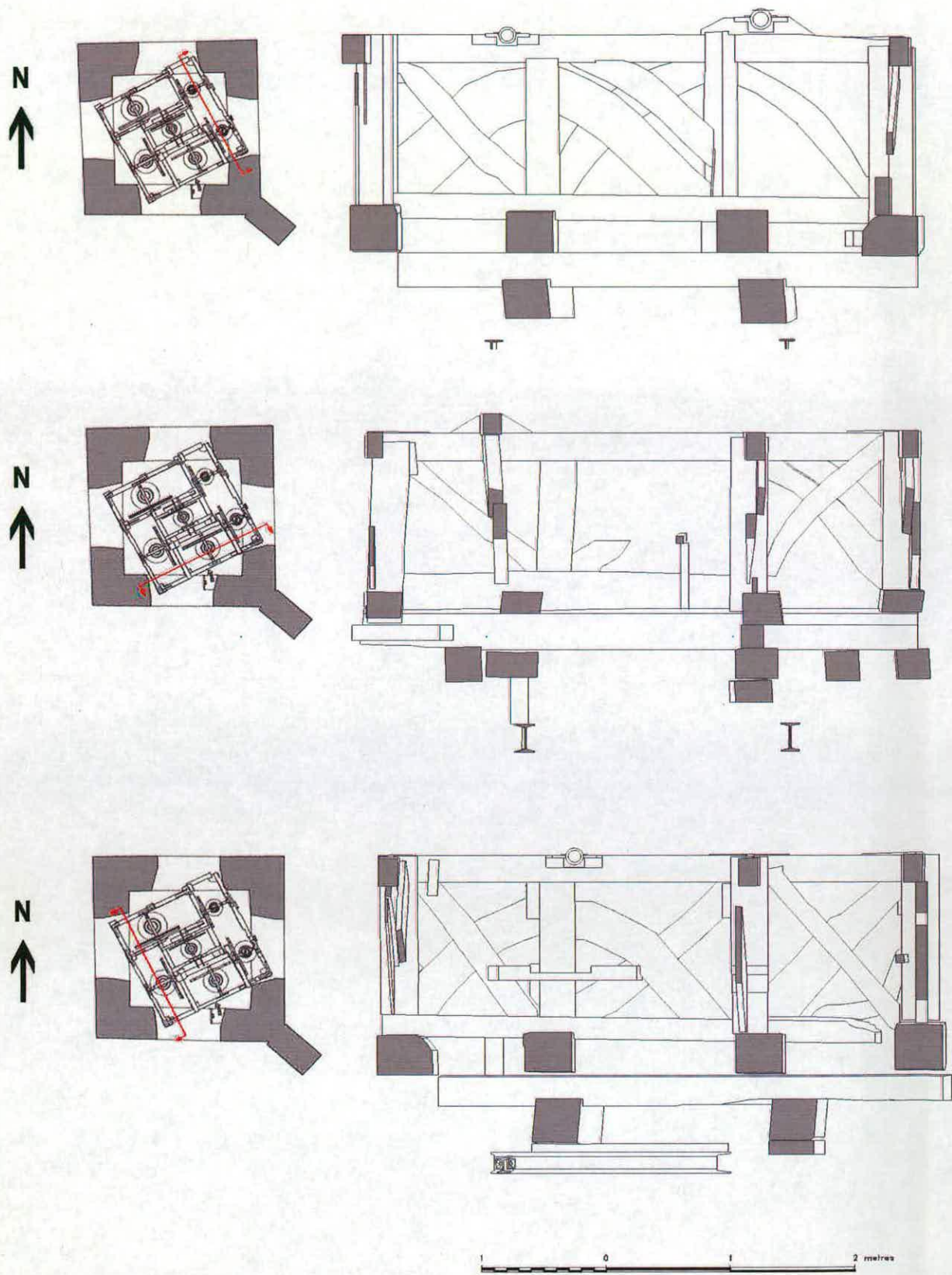


Figure 15 Sectional views: sheet 1 of 6
 (drawing by Bill Blake/Andy Crispe)

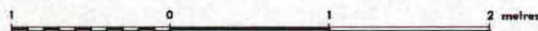
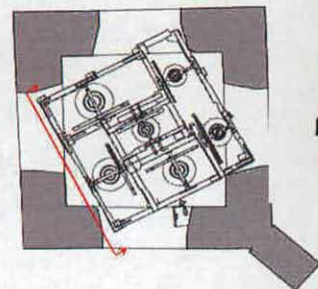
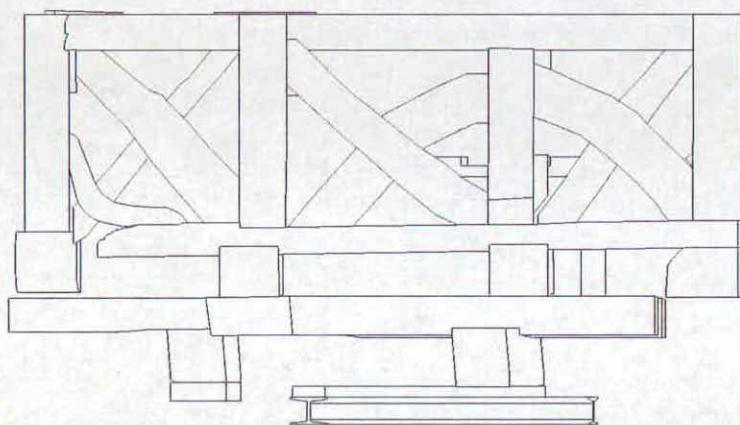
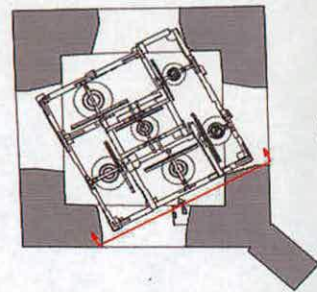
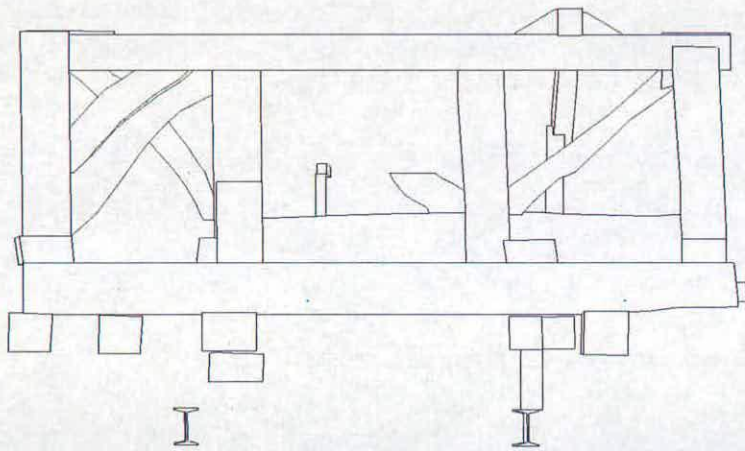
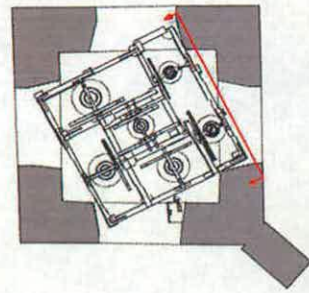
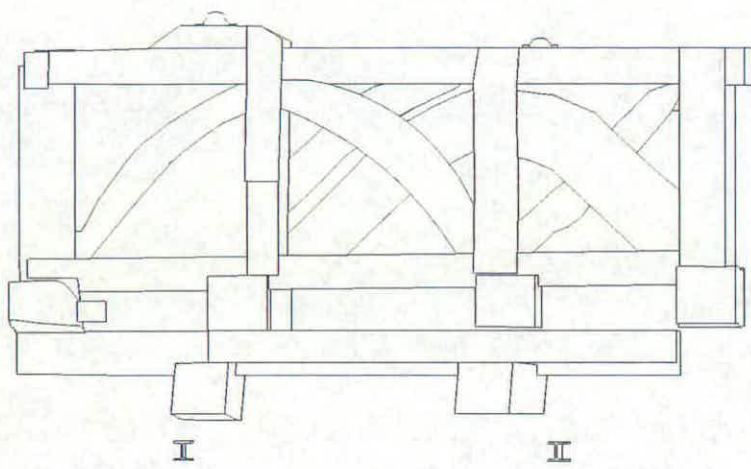
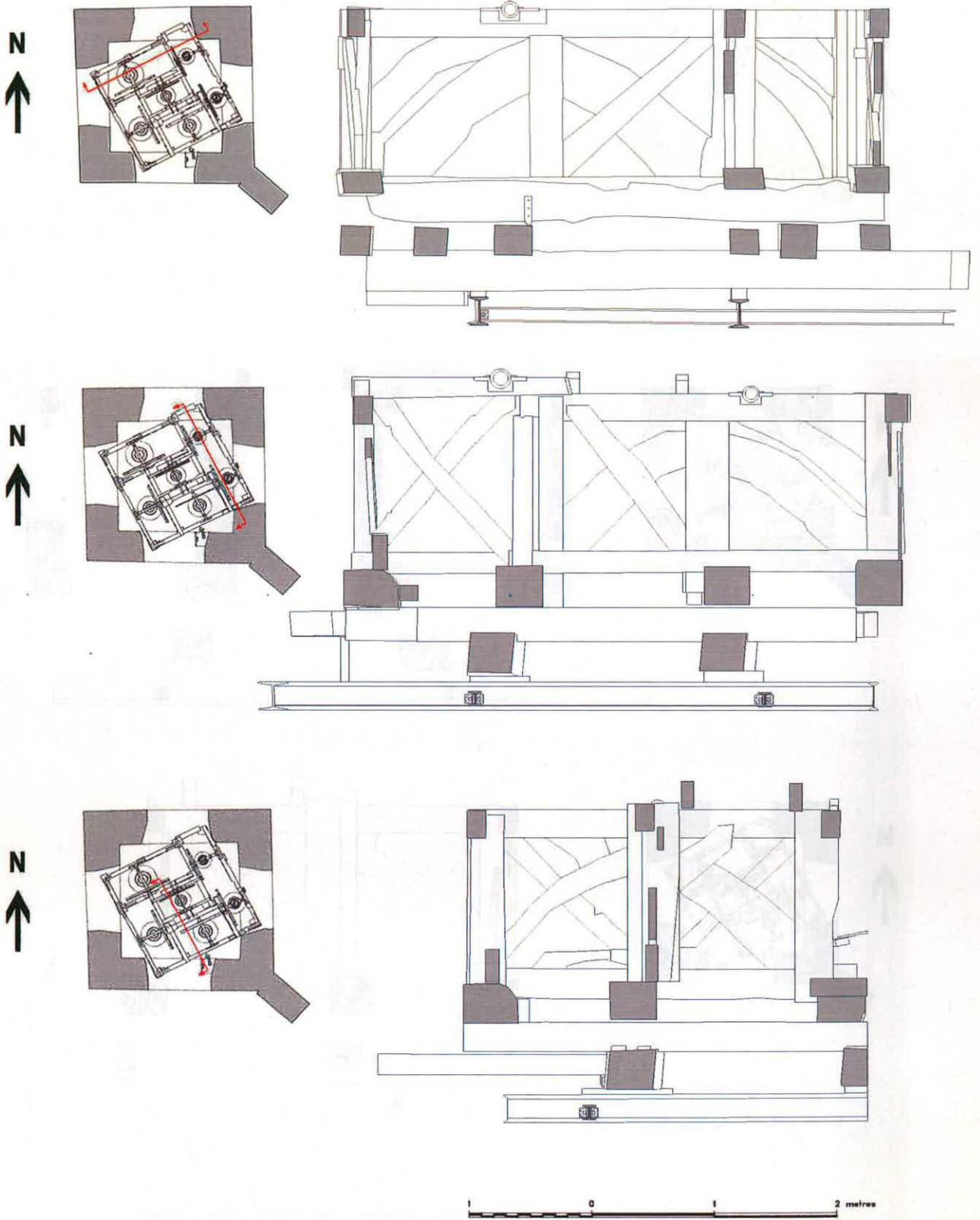


Figure 16 Sectional views: sheet 2 of 6
(drawing by Bill Blake/Andy Crispe)



**Figure 17 Sectional views: sheet 3 of 6
(drawing by Bill Blake/Andy Crispe)**

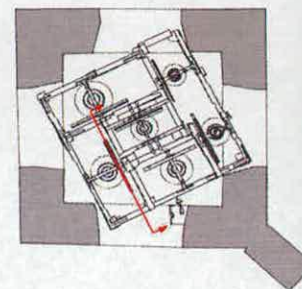
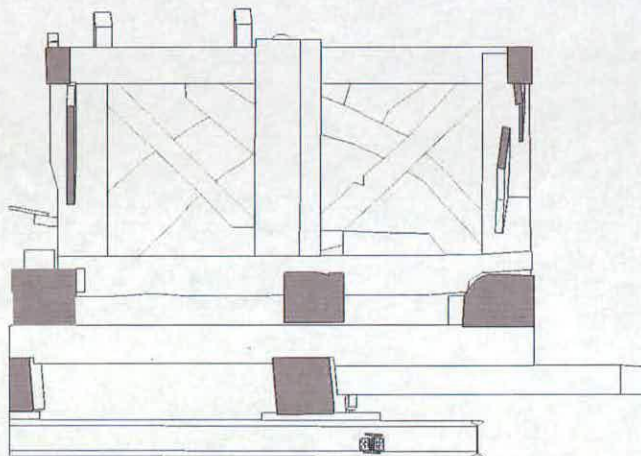
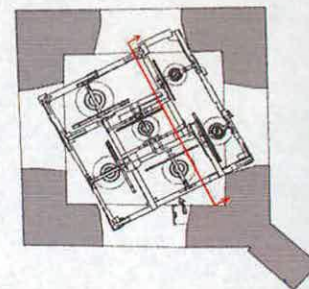
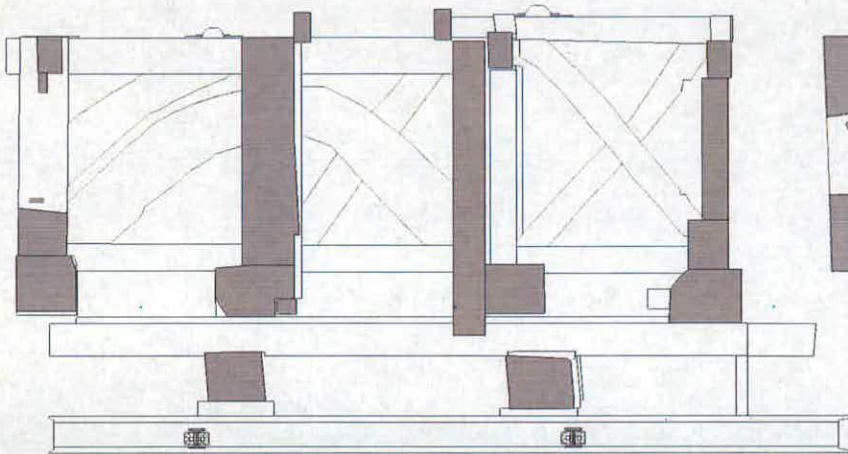
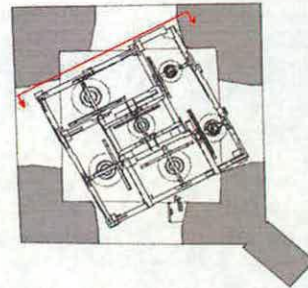
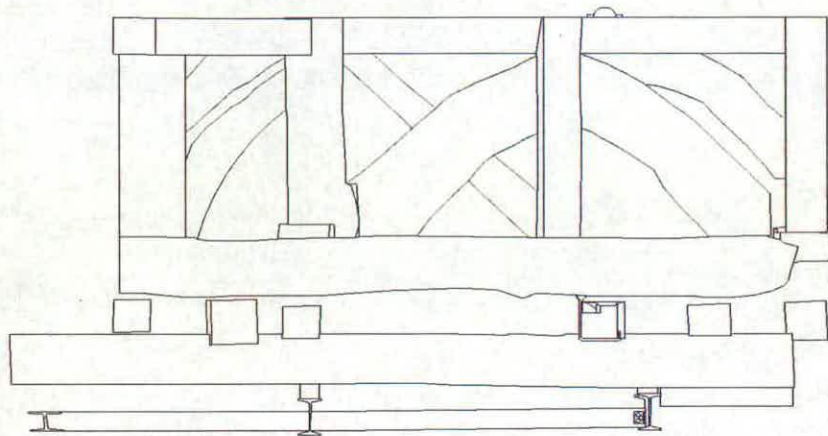
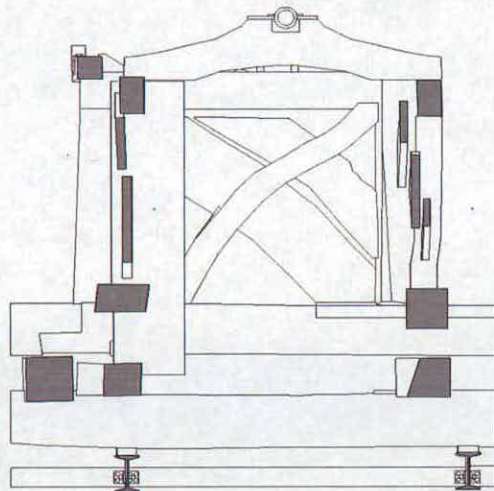
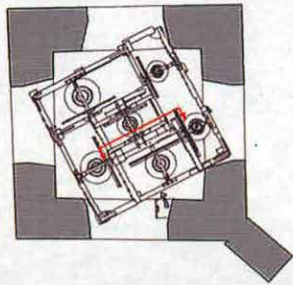
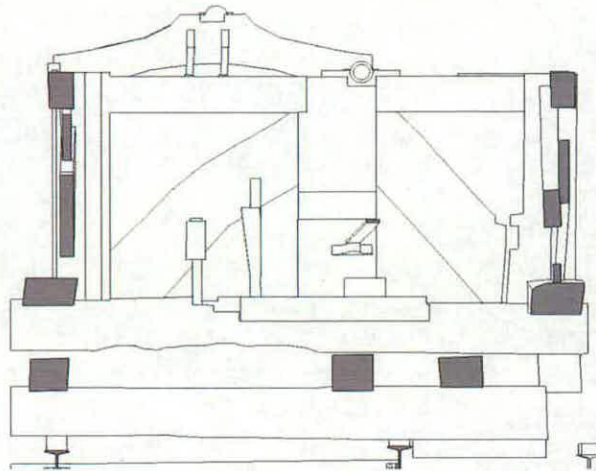
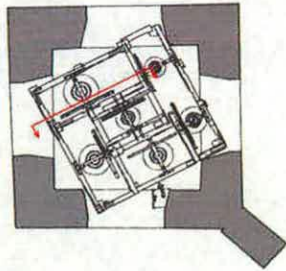
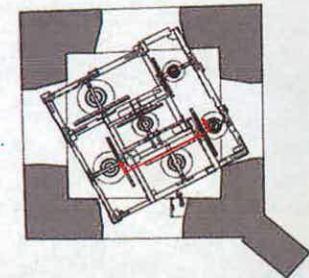
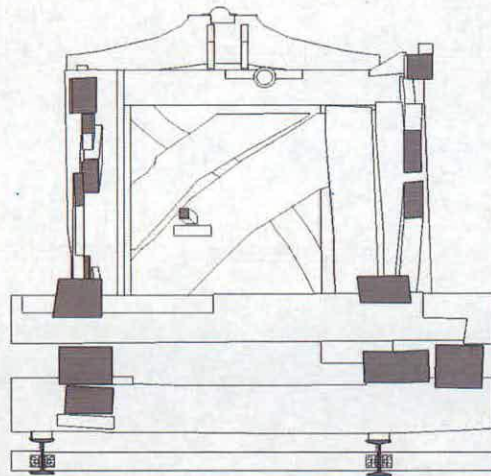
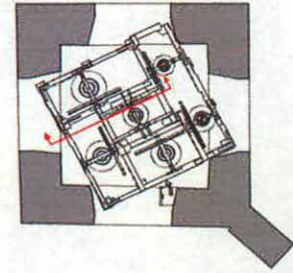
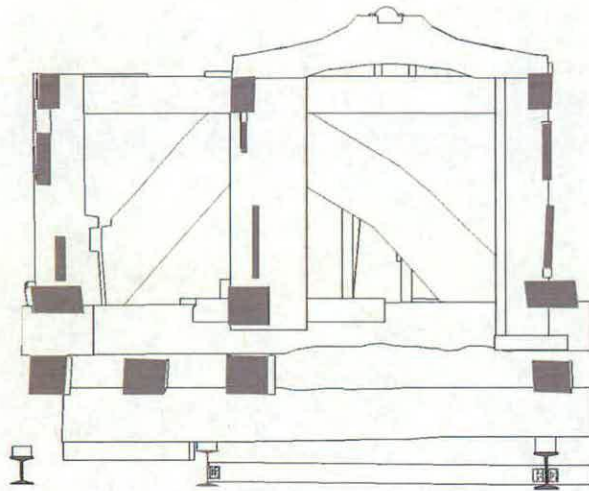


Figure 18 Sectional views: sheet 4 of 6
(drawing by Bill Blake/Andy Crispe)



**Figure 19 Sectional views: sheet 5 of 6
(drawing by Bill Blake/Andy Crispe)**



**Figure 20 Sectional views: sheet 6 of 6
(drawing by Bill Blake/Andy Crispe)**

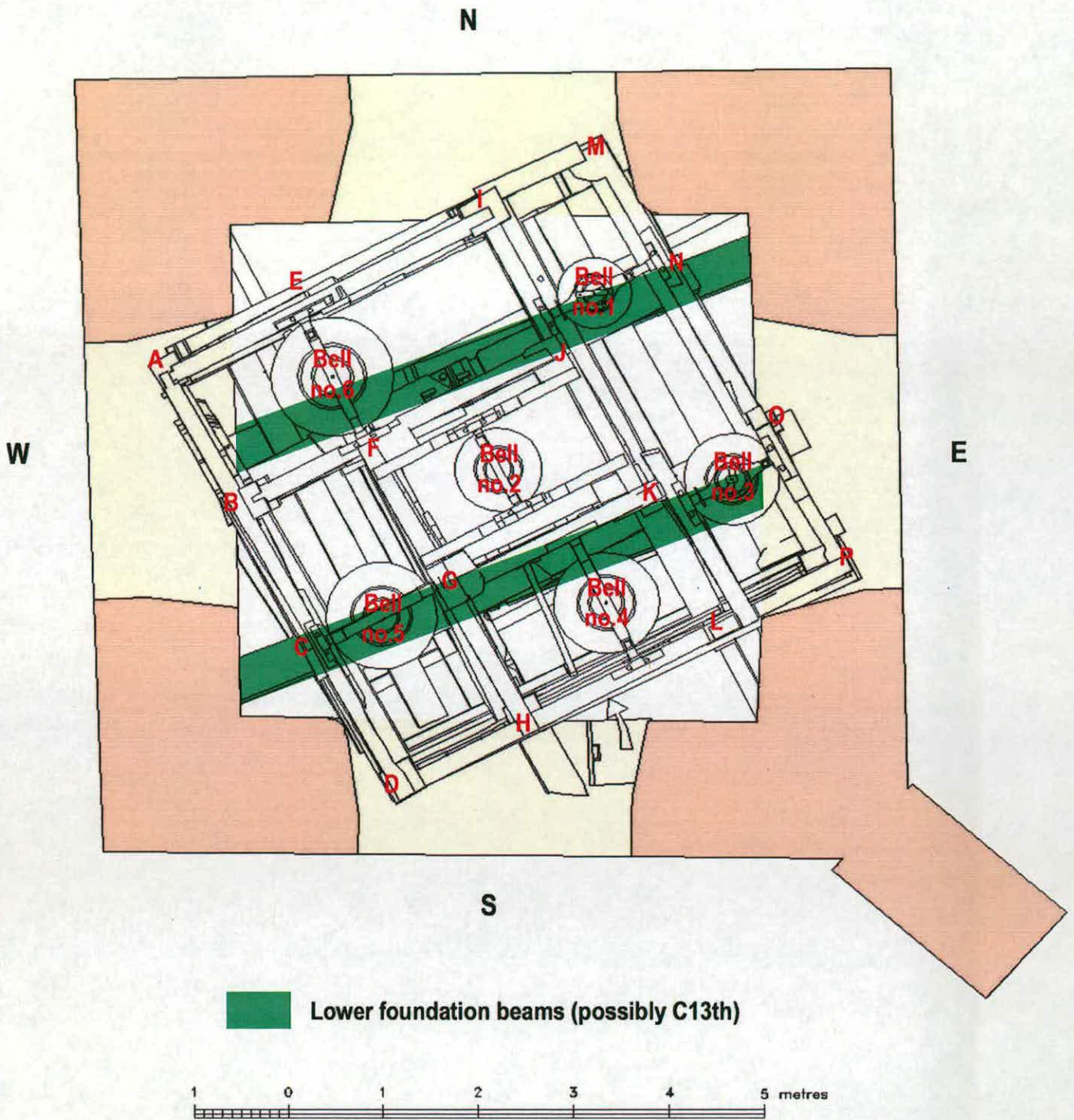
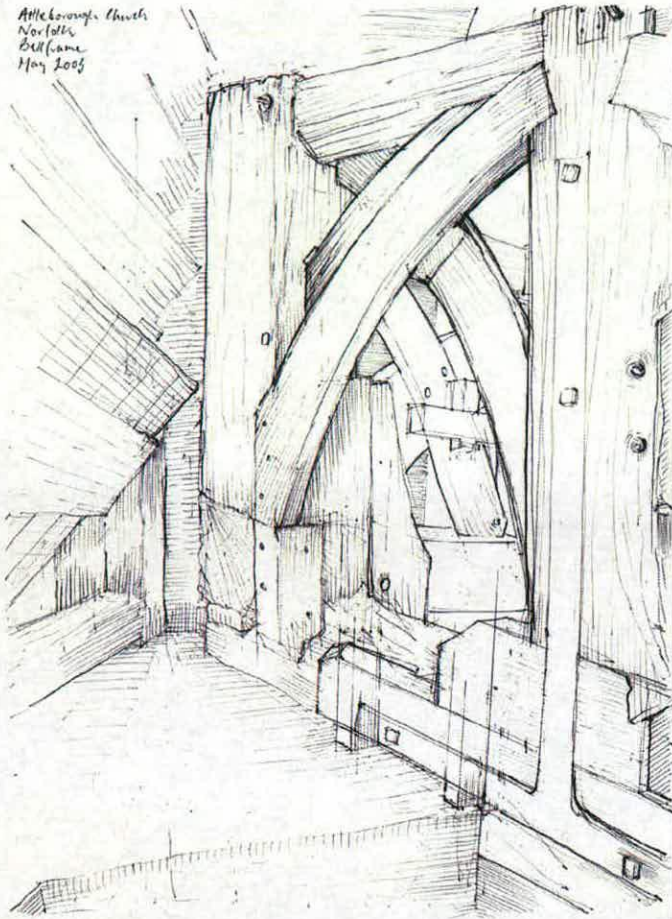


Figure 21 Plan showing positions of bells and locations of drawn carpentry details (drawing by Bill Blake/Andy Crispe)

Atleborough Church
Norfolk
Bill Lane
May 2003



Atleborough Church
Norfolk
Bill Lane
May 2003



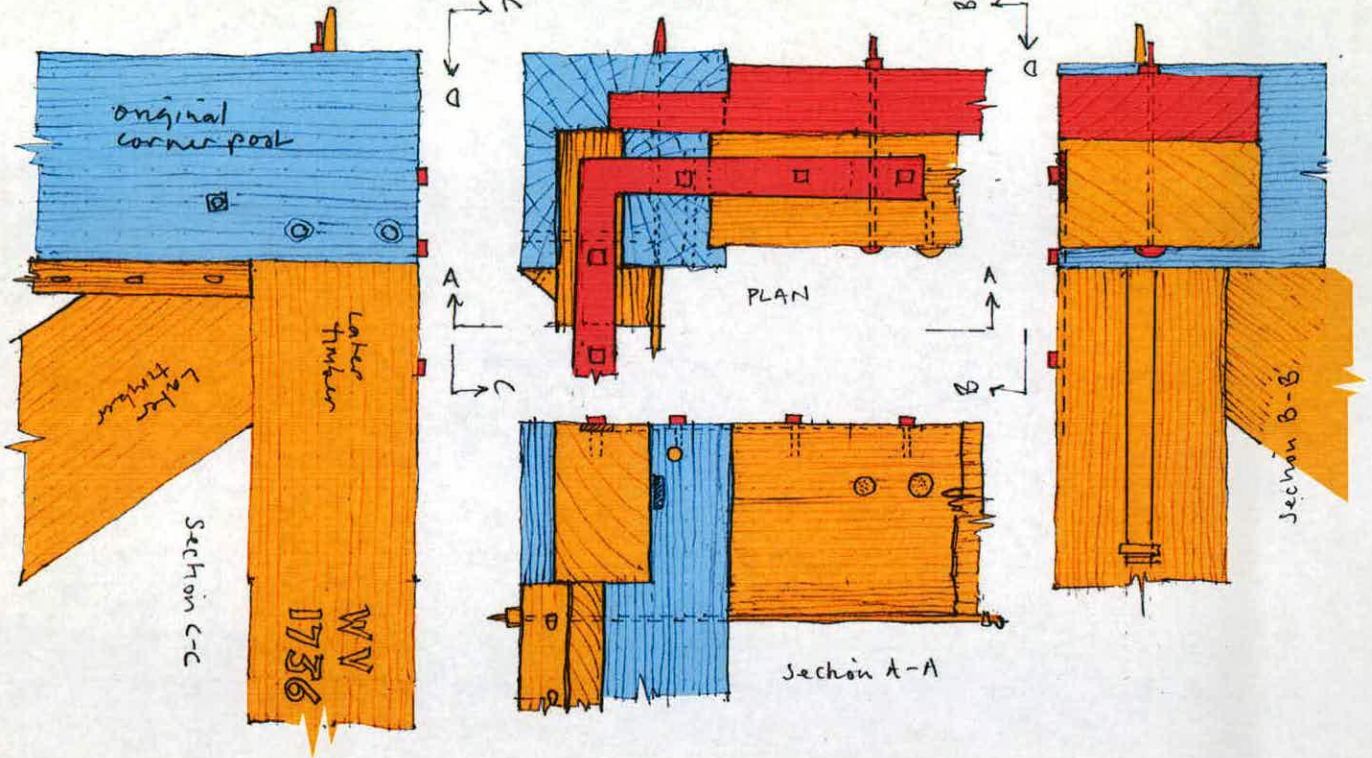
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

Figure 22 View from entrance looking towards south-west corner of belfry. Original sketch on left; edited sketch showing phasing of timbers on right

NW corner
Assembly of
upper part
of frame

Section D-D

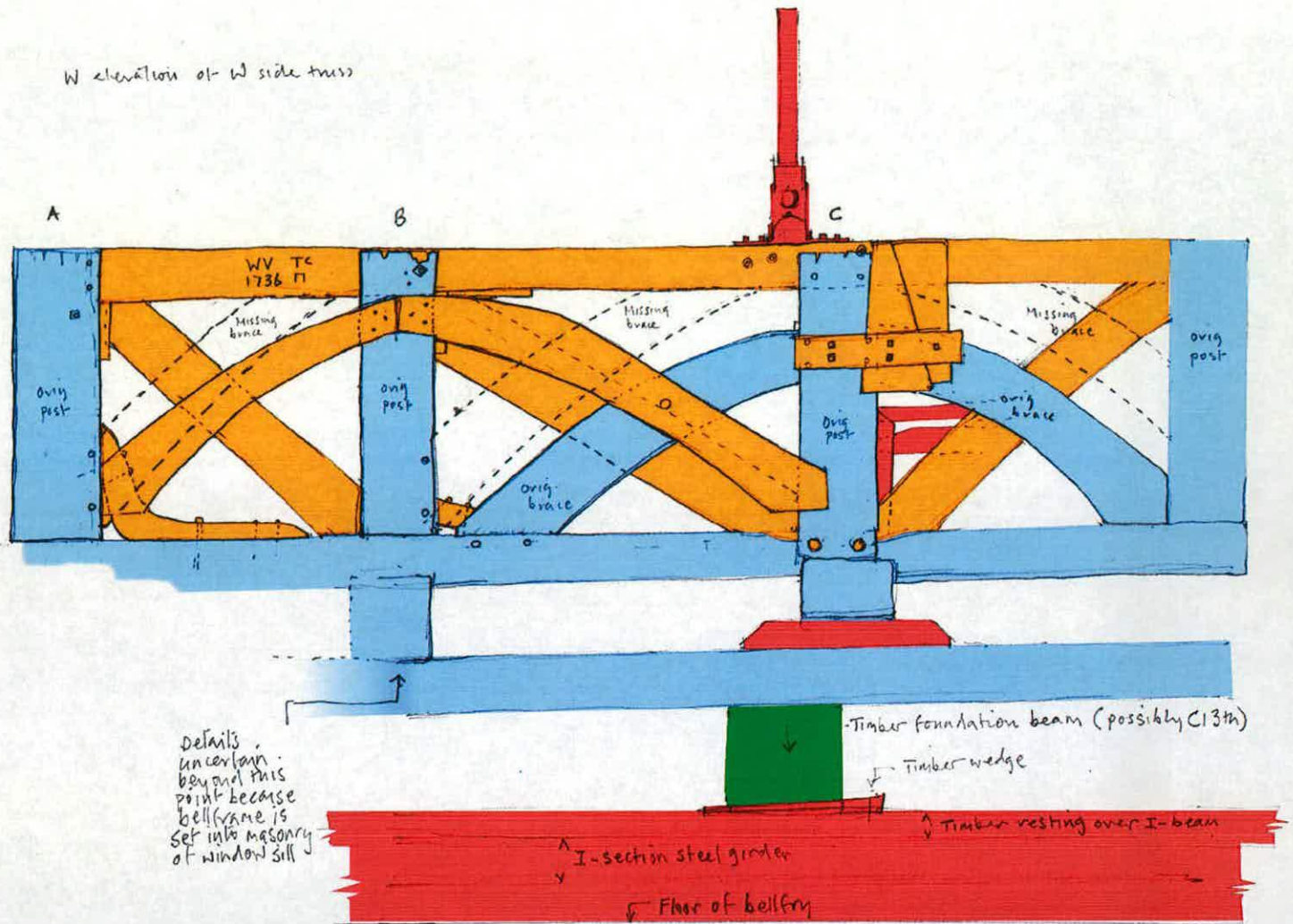
Atleborough
church, Norfolk
Bellframe.
Detail at A.



- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909

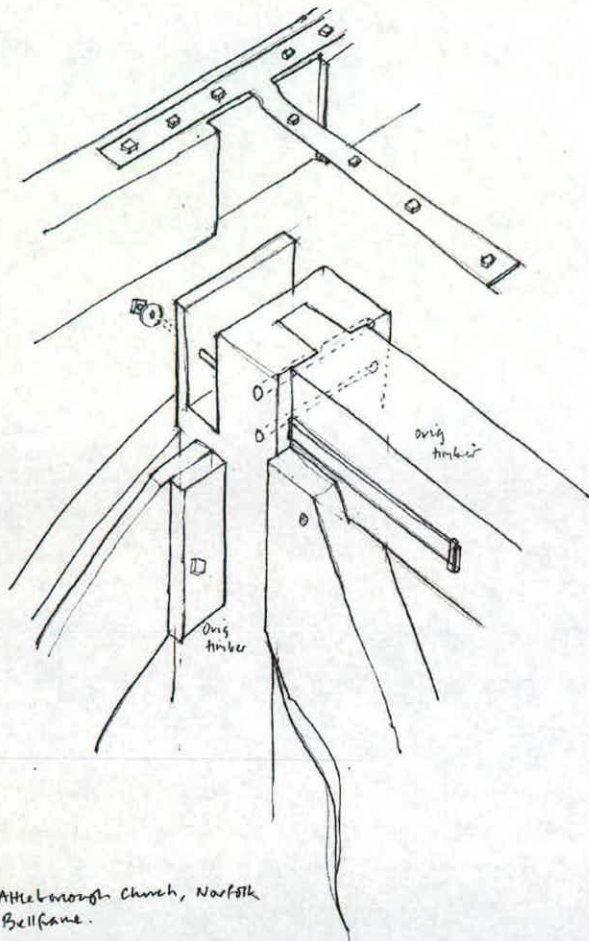
Figure 23 Detail at A. Series of sketch plan and elevational views showing the assembly of the upper part of the bellframe at the north-west corner. The original drawing has been coloured to show the phasing of the timbers

W elevation of W side truss

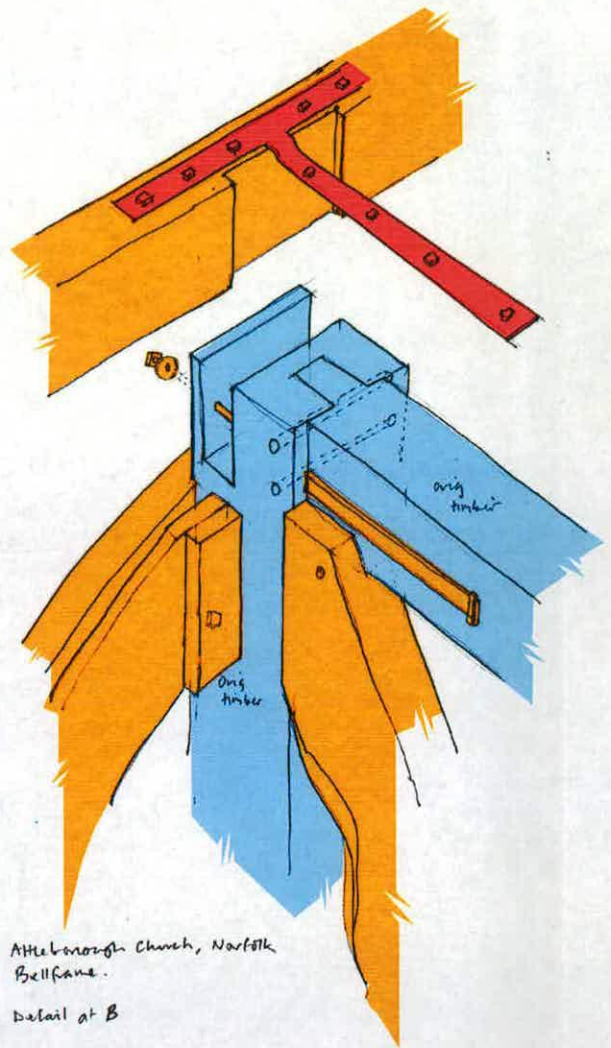


- Possibly C13th foundation beams
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909

Figure 24 West (external) elevation of west side of bellframe.
The original sketch has been coloured to show the phasing of the timbers



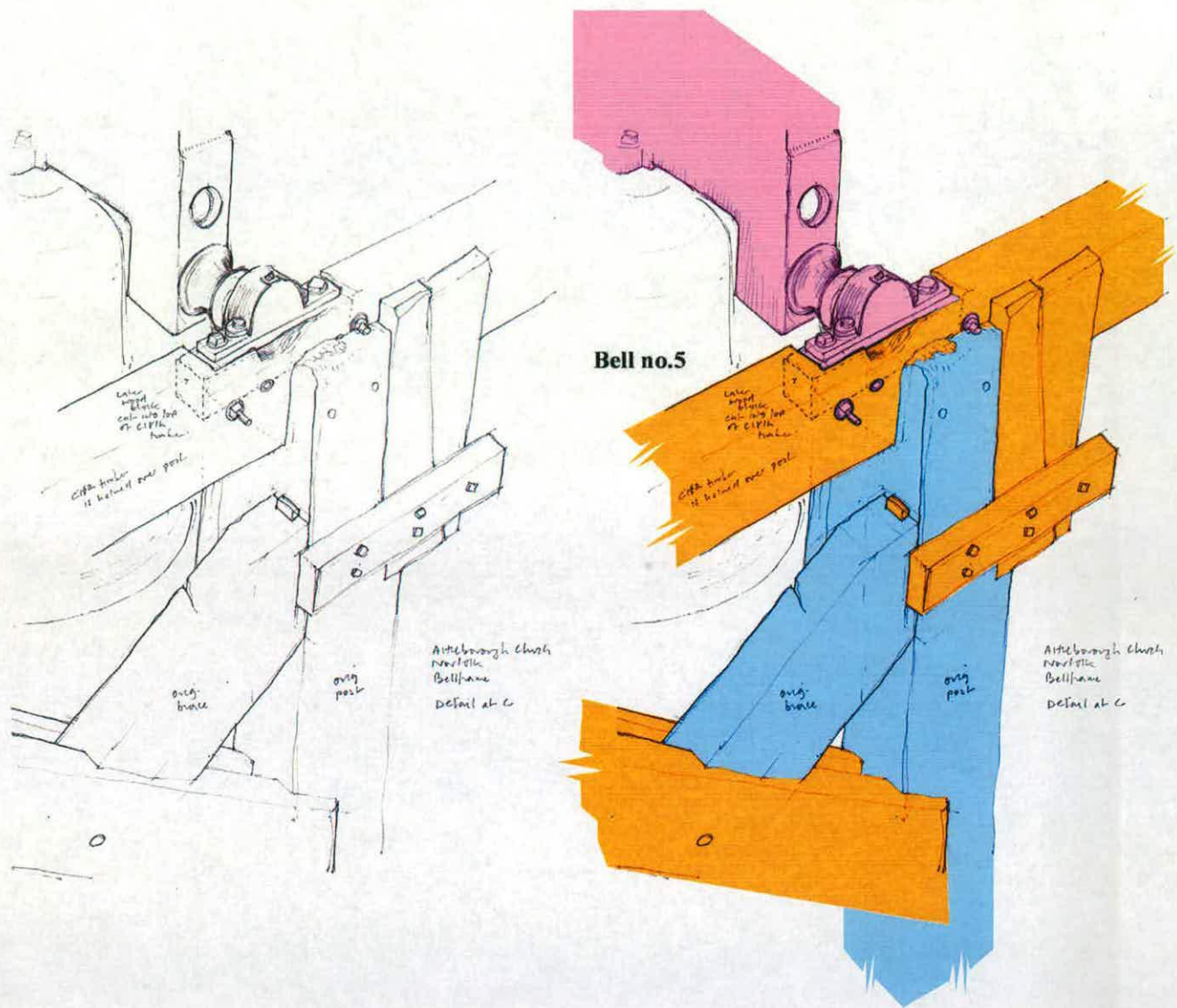
Attleborough Church, Norfolk
Bellfane.
Detail at B



Attleborough Church, Norfolk
Bellfane.
Detail at B

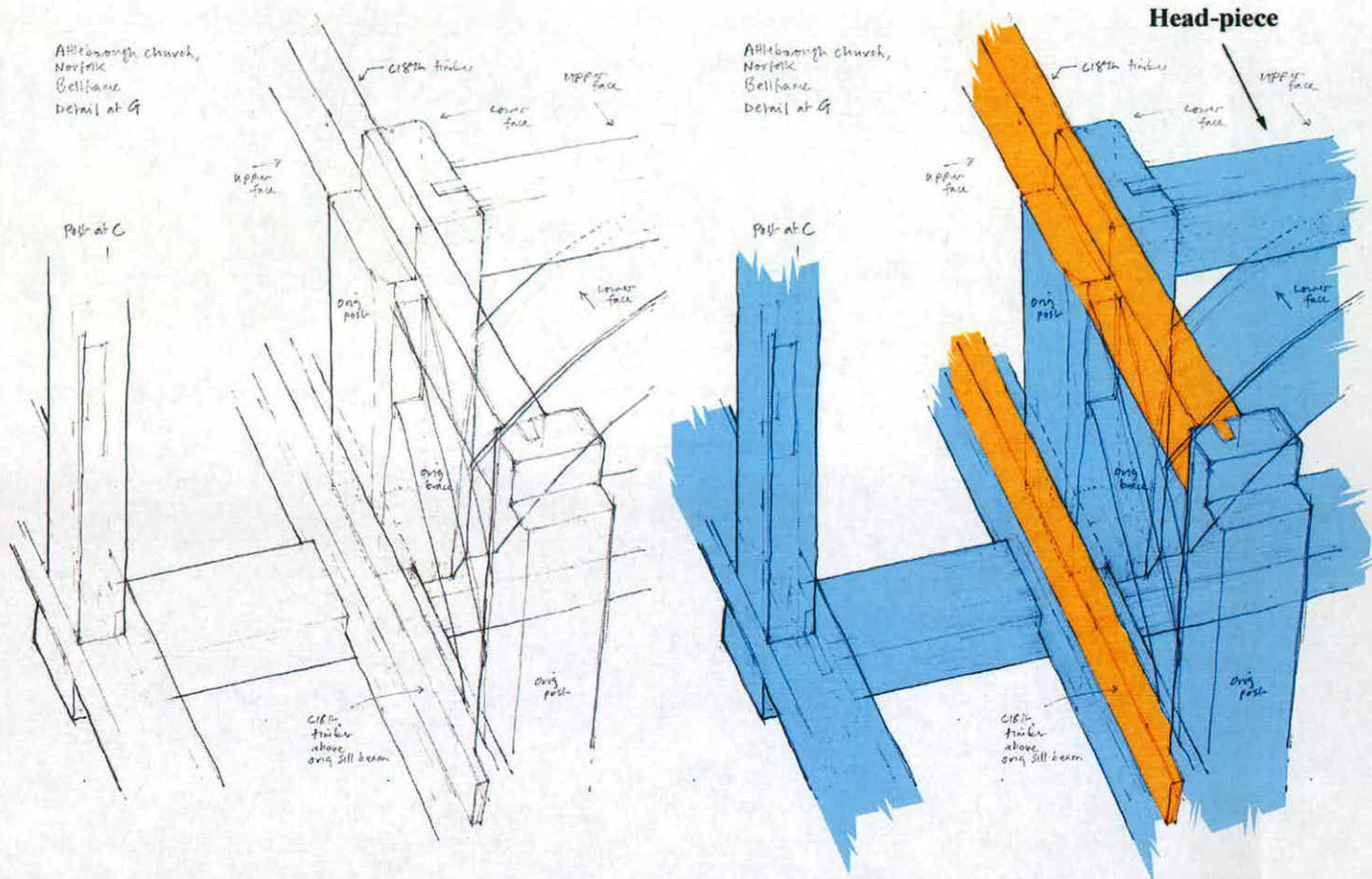
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909

Figure 25 Detail at B.
Original sketch on left; edited sketch showing phasing of timbers on right



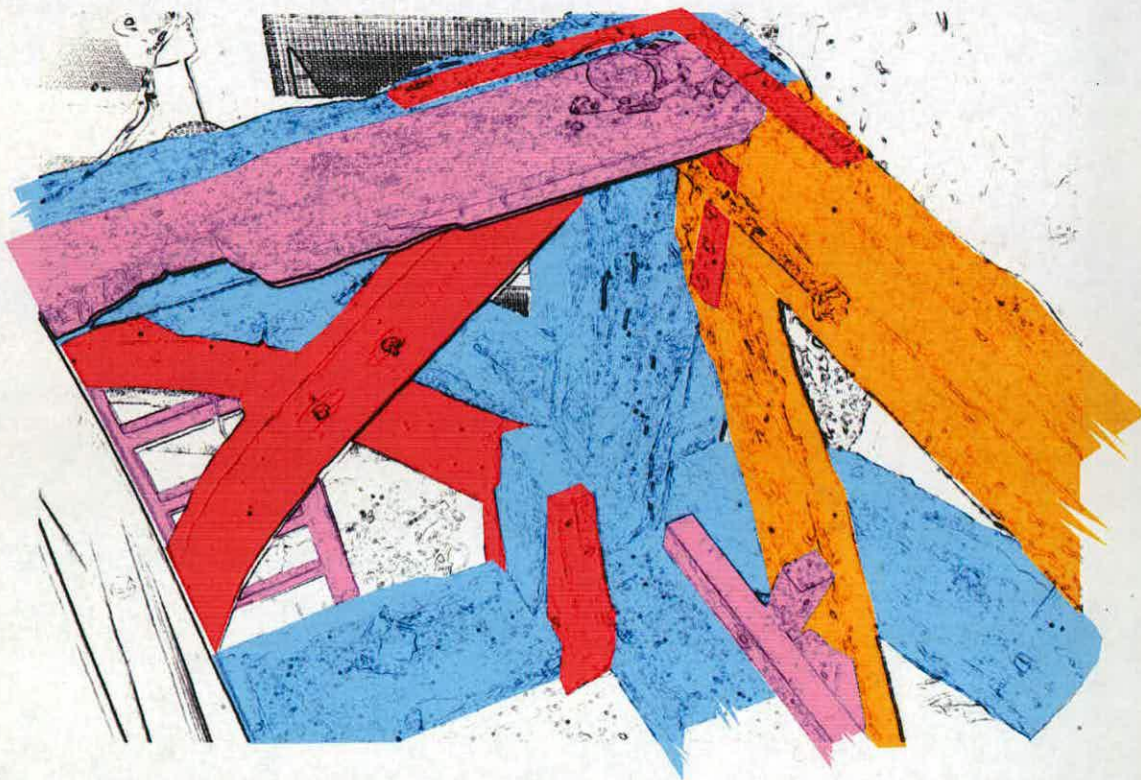
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

Figure 26 Detail at C.
Original sketch on left; edited sketch showing phasing of timbers on right.
No.5 bell. Inscribed date of 1581; recast in 1926



- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736

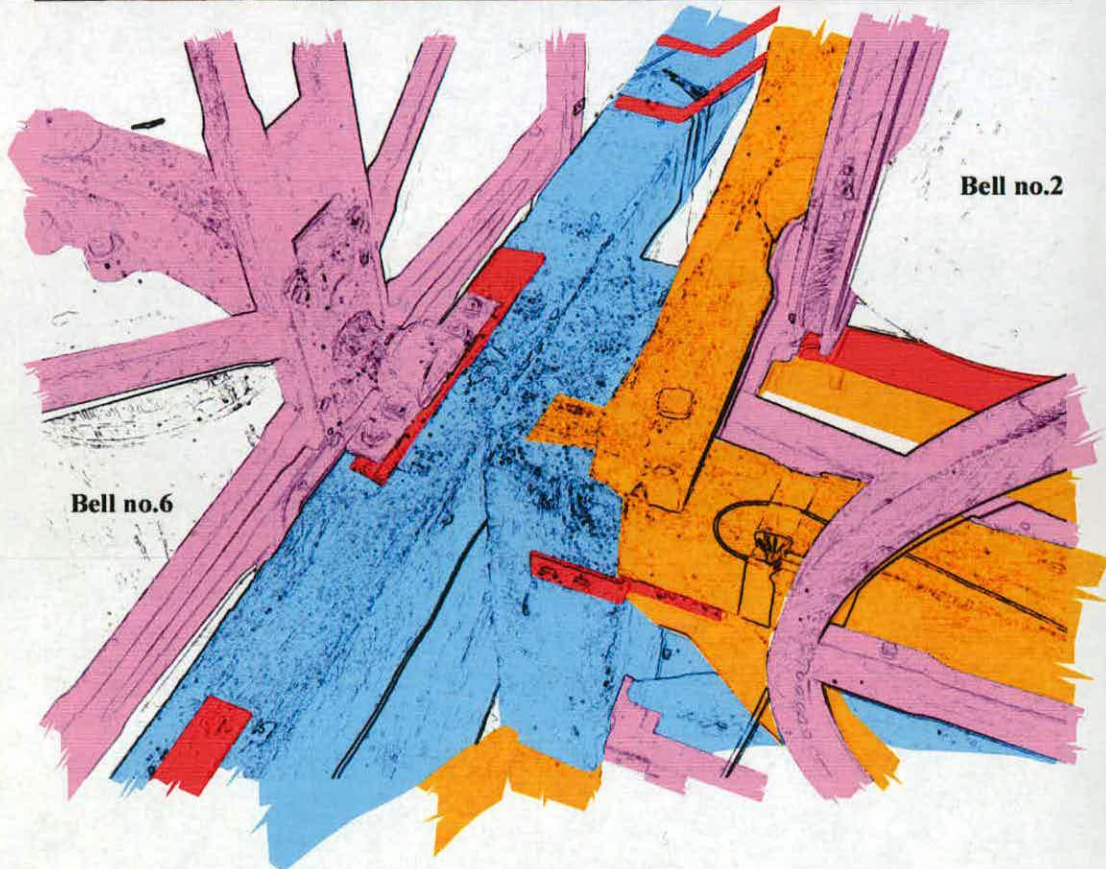
Figure 27 Detail at G.
Original sketch on left; edited sketch showing phasing of timbers on right.
Head-piece is probably an early C16th timber reset in early C18th or c. 1909



- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

Figure 28 Detail at D.

**Original photo above; edited photo showing phasing of timbers below.
The head-piece of the south side frame is probably an early C16th timber
reset in the early C18th or c.1909**







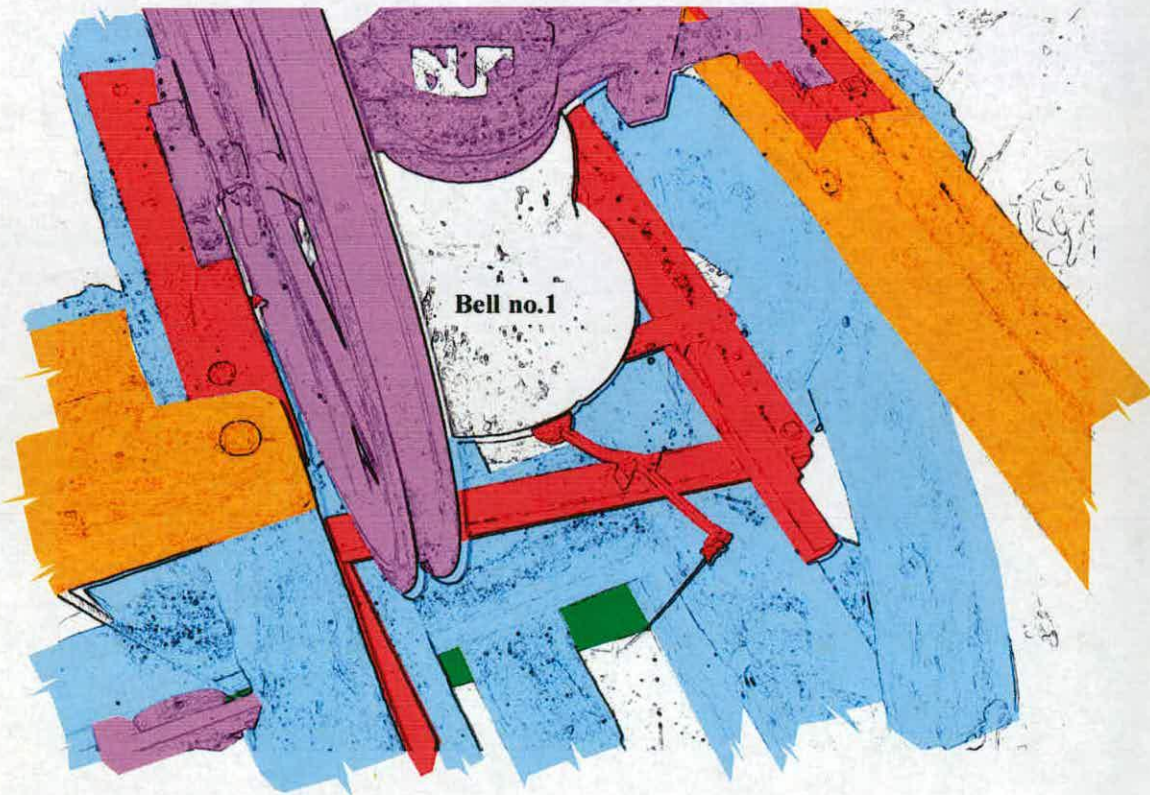
-  Original framing elements, AD1520-35
-  Replacement timbers and associated metalwork, c.1736
-  Timber repairs and associated metalwork, C19th or c.1909
-  c.1959 or Taylor's restoration of 1973

Figure 29 Detail at F.
Original photo above; edited photo showing phasing of timbers below








-  Possibly C13th foundation beams
-  Original framing elements, AD1520-35
-  Replacement timbers and associated metalwork, c.1736
-  Timber repairs and associated metalwork, C19th or c.1909
-  c.1959 or Taylor's restoration of 1973

Figure 30 Detail at N.
Original photo above; edited photo showing phasing of timbers below







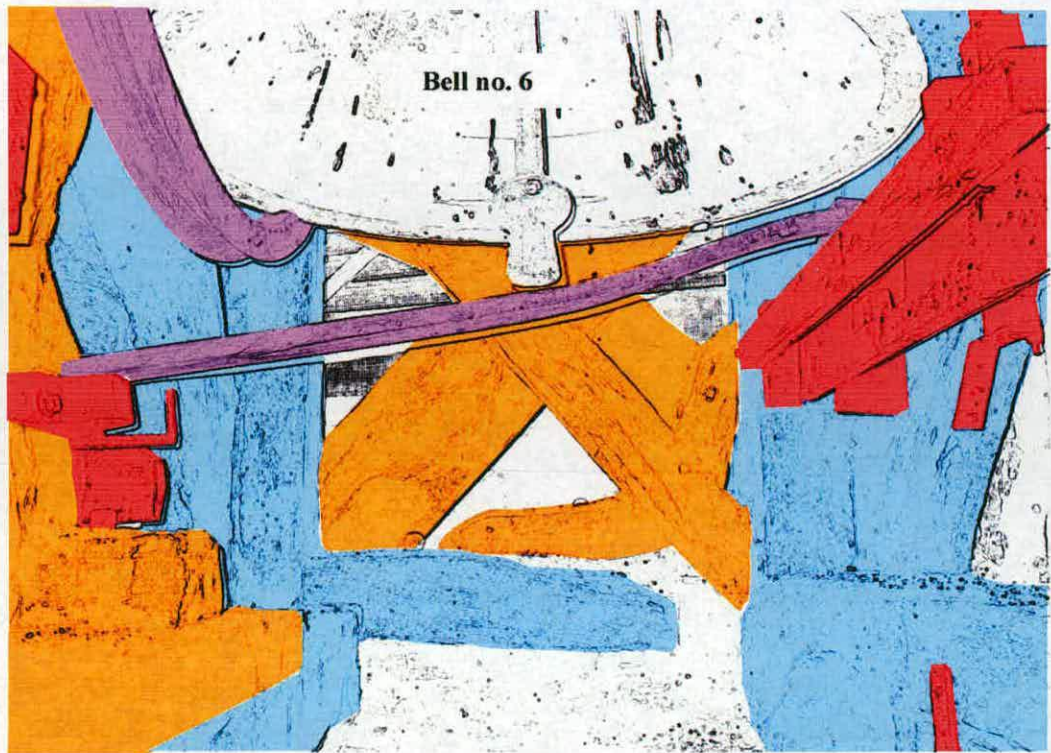
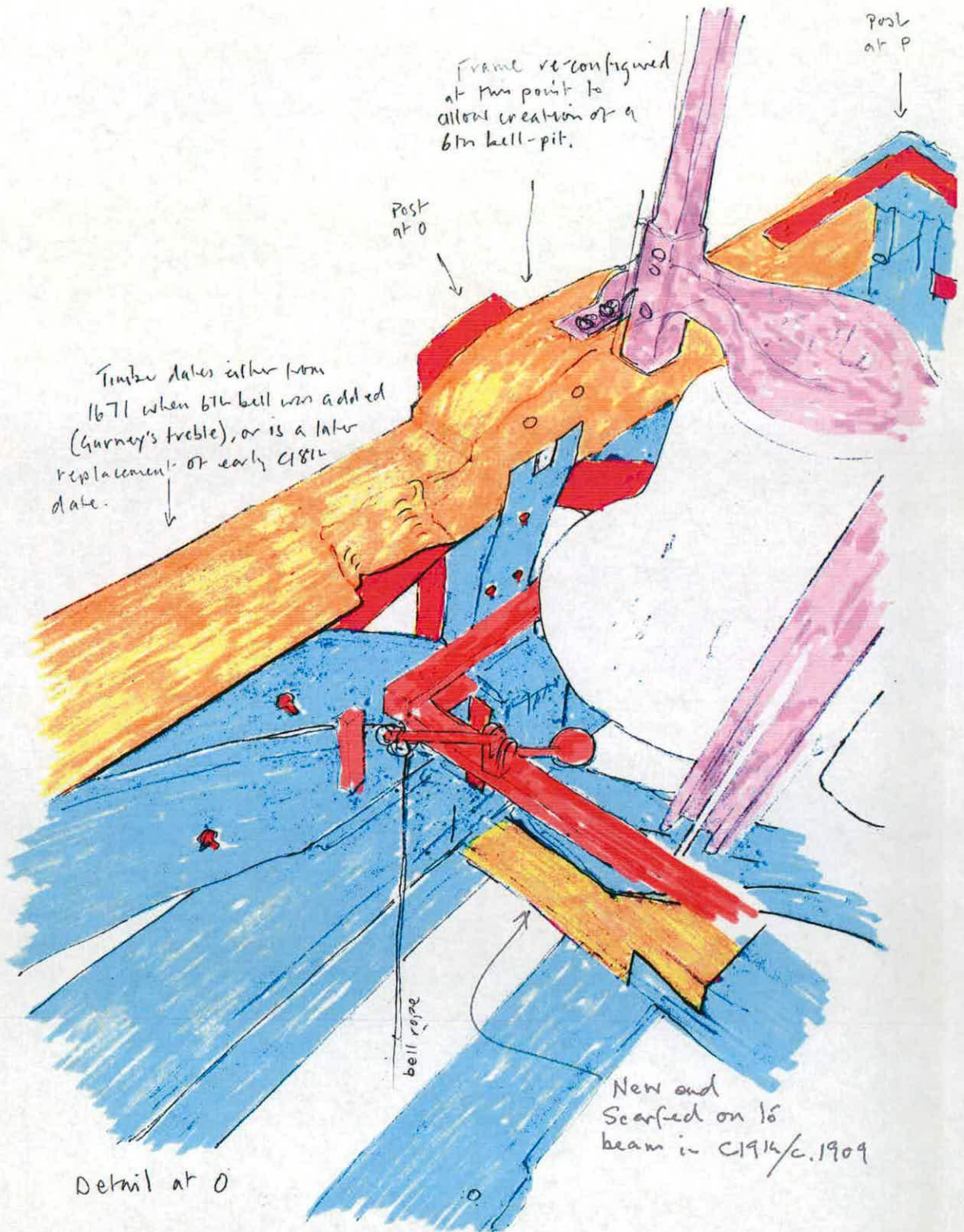
-  Original framing elements, AD1520-35
-  Replacement timbers and associated metalwork, c.1736
-  Timber repairs and associated metalwork, C19th or c.1909
-  c.1959 or Taylor's restoration of 1973

Figure 31 Detail at C from east.
Original photo above; edited photo showing phasing of timbers below



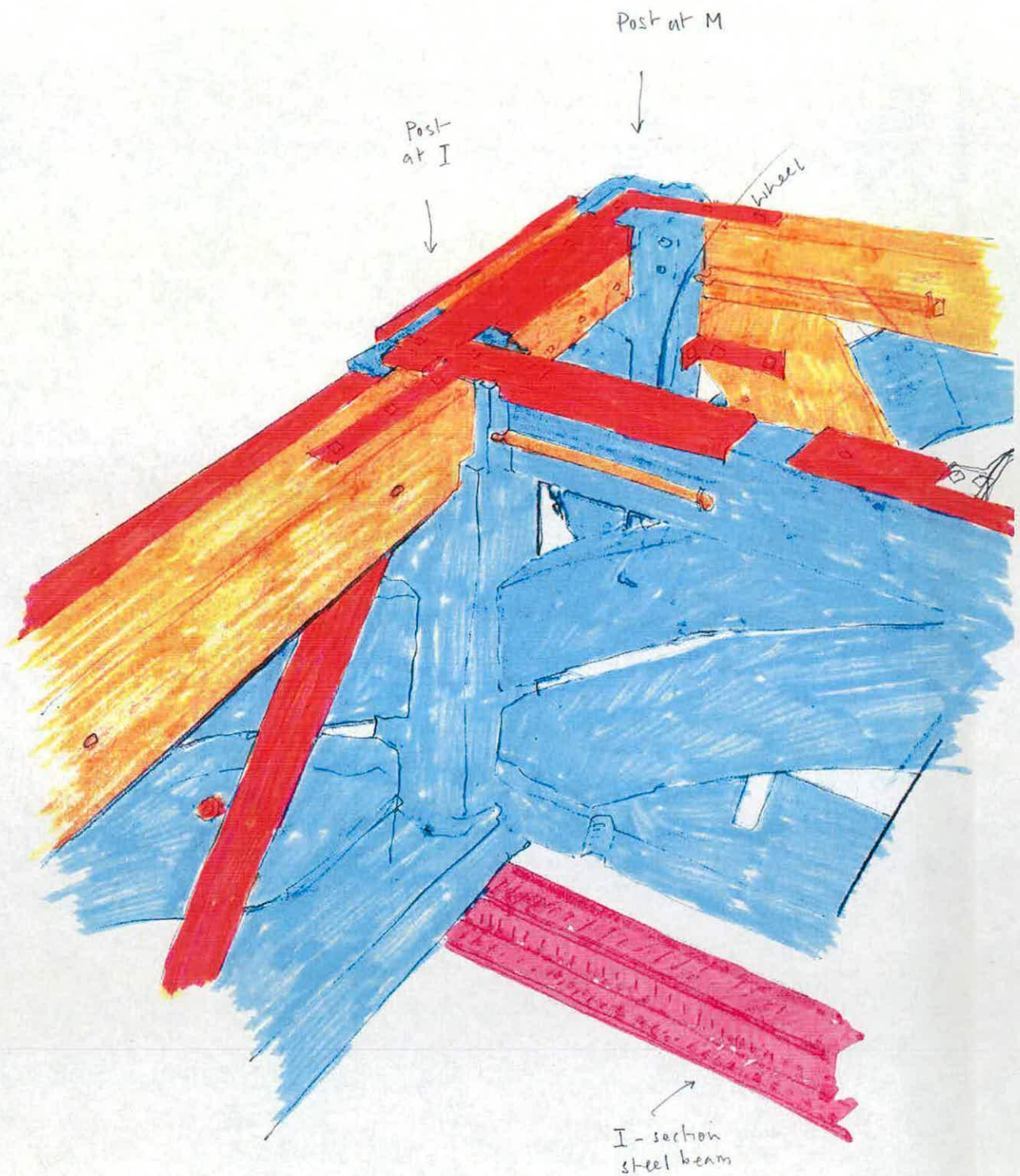
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

**Figure 32 North end of west side frame from east.
Original photo above; edited photo showing phasing of timbers below**



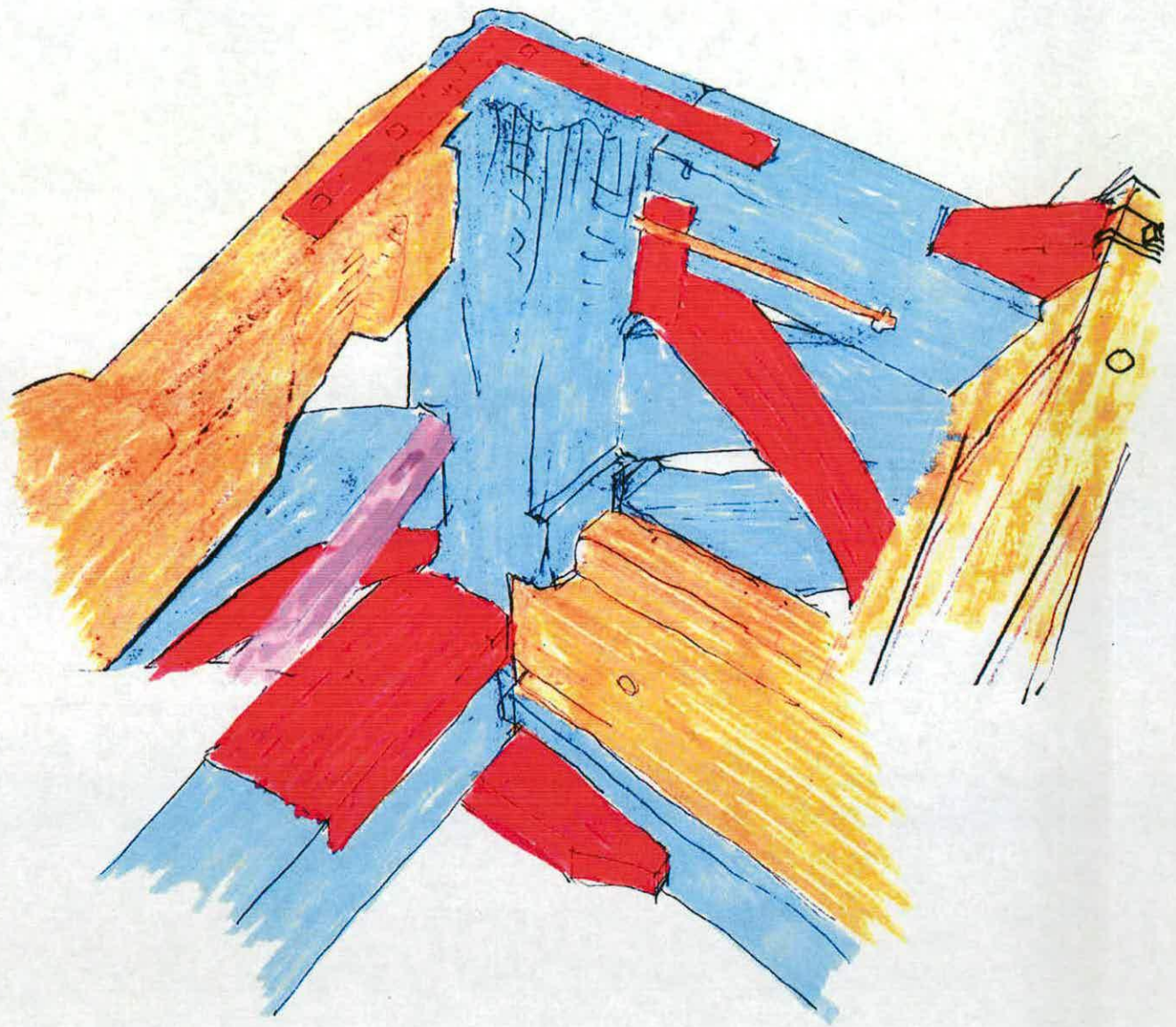
- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

**Figure 33 Detail at O from west.
Edited photo showing phasing of timbers**



- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

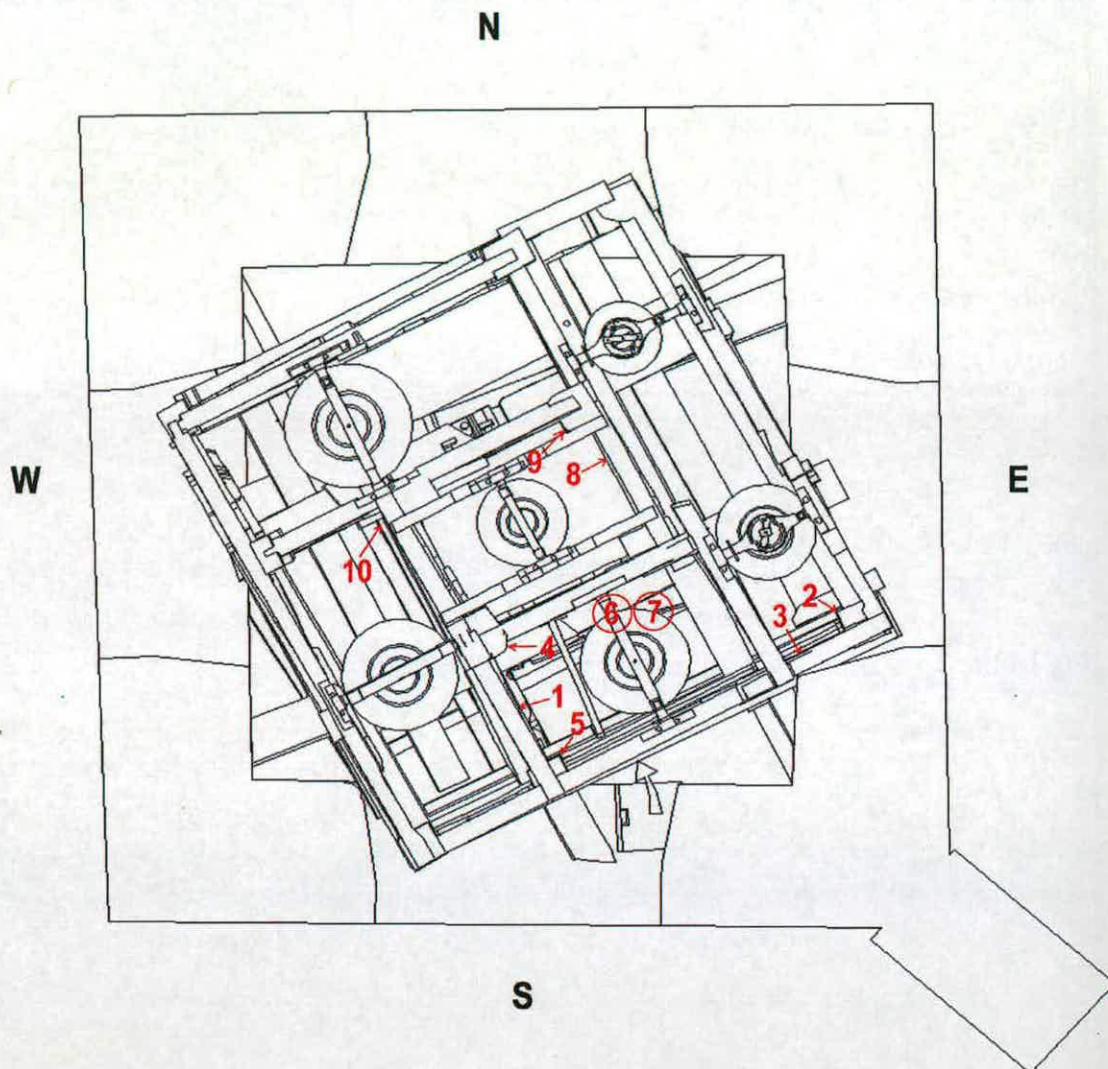
**Figure 34 Detail at I from west.
Edited photo showing phasing of timbers**



Detail at P

- Original framing elements, AD1520-35
- Replacement timbers and associated metalwork, c.1736
- Timber repairs and associated metalwork, C19th or c.1909
- c.1959 or Taylor's restoration of 1973

**Figure 35 Detail at P from west.
Edited photo showing phasing of timbers**



- ⑥ South lower foundation beam (possibly C13th)
- ⑦ Bearer above sample no.6



Figure 36 Plan of bellframe showing locations of timber core samples removed for dating by dendrochronology

Acknowledgments

I would like to thank Mr. Paul Cattermole for his assistance with this project, and for allowing me the use of his own unpublished research into the bells and bellframe at Attleborough. I am also grateful to Mr John Eisel for providing help with the interpretation of the structural development of the bell frame. Dr Martin Bridge of University College London, and my colleagues at English Heritage, Graham Pledger, Bill Blake and Andy Crispe, also provided much useful advice and help during the course of the project.

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