

# SKILLINGTONS

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## St. Helen's church BILTON-IN-AINSTY North Yorkshire



**A record of conservation works carried out to four  
Anglo-Saxon cross fragments**

**January 2021**

**Skillington Workshop Limited**

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## **1 Introduction**

- 1.1 This report describes the conservation procedures carried out to four Anglo-Saxon cross fragments at St. Helen's church, Bilton-in-Ainsty, North Yorkshire (formerly in the West Riding). Their conditions were described and recommendations made in a report produced by Dr David Carrington in April 2019. The work has been commissioned by St. Helen's Parochial Church Council, with our point of contact being Susie Pilling. We are extremely grateful to Susie for her patience and help in seeing these works through to completion despite some of the design complexities and the best efforts of the Coronavirus pandemic to disrupt best laid plans.

The conservation work was undertaken by Simon Ebbs (site supervisor), Simon Nadin, Alex Blades and Anais Vlahakis, all of Skillington Workshop Ltd. Anais carried out the conservation work required in our workshop. Simon Ebbs is the author of this report. The project was ultimately managed by Dr David Carrington ACR, who has signed off this report.

- 1.2 The church's architect, Sebastian Rowe of Pearce Bottomley Architects, has been consulted throughout the process of designing the stainless steel tables and fabricated restraints.
- 1.3 In the report reference to 'right' or 'left' is the viewer's right or left. If referring to the object's right or left the terms 'proper right' or 'proper left' are used in preference to dexter or sinister – which are reserved for heraldry and so not applicable here.
- 1.4 The Wheel head cross was removed from the church in July 2020, when templates were made for the new mounts, with the main works in the church being carried out in January 2021.



## **2 Removing the cross sections from the church fabric**

### **2.1 Wheel head cross**

- 2.2 The wheel head cross was to be removed from the magnesium limestone corbel from beneath the west tower window. Hardboard floor protection was placed beneath the working area and an aluminium scaffold tower was erected to allow access.



Plate 2: the Wheel head cross prior to removal.

- 2.3 The cross was bedded onto what appeared to be a very hard ordinary Portland cement mortar. The cement bed was approximately 15mm to 20mm in depth. Sharp tungsten chisels were firstly employed to begin removing cement from the arris of the cross base and the corbel to eliminate any damage during its extraction. Once this had been completed we began to remove the bedding cement. This proved to be quite difficult due to its hardness relative to the stone. It was felt that due to the thickness of the bedding it would be safe to use a non-percussive drill to chain drill along the bed. A long 6mm masonry drill bit was then utilised to create a series of holes along the front of the cement bed. Once this had been completed a flat cold chisel was punched into the mortar bed, joining up the holes until the cement bed finally 'broke'. The cross was removed from the corbel and placed into a bespoke packing crate and transported to our workshop for further works.



## 2.5 Three shaft fragments

- 2.6 The three shaft fragments were set upon a very hard cement mortar, flaunching up around the sides, on the south aisle floor. Prior to work on these commencing the floor was swept and vacuumed and hardboard floor protection was placed around them and up to the location where they will be mounted.
- 2.7 Sharp tungsten chisels were firstly employed to begin removing cement from the arris of the cross base and the corbel to eliminate any damage during its extraction. Once this had been completed we began to remove the bedding cement. Flat cold chisels were then tapped into the mortar bed until the cement bed 'broke'. At this point all remaining cement on the flag floor and the underside of the cross fragments were removed. This was undertaken with sharp tungsten-tipped chisels.



Plate 3: (top left) fragment 1

Plate 4: (left), fragment 2

Plate 5: (above) fragment 3



These photographs show the stones prior to their removal.



Plate 6: During the process of removing the stone cross fragments from the flag floors.



### **3 Repairs to the Wheel head**

- 3.1 The wheel head cross was transported to our conservation workshop to receive further works. The cross was displaying numerous fractures and repairs on the right hand side from where it had been damaged. These repairs had been had taken the form of simply using a resin to bond the various elements together. In most cases the resin had discolored in UV light and was becoming brittle and failing (Plate 7). These elements were gently prized apart in readiness to be pinned back into place.



Plate 7: The Wheel head cross showing the right hand side disassembled

- 3.2 Before a satisfactory repair could be undertaken the old resin was removed. This was softened with repeated applications of an acetone cotton wool poultice and eventually picked away with scalpels. Hidden dowels were used to repair the cross. Holes were drilled into the cross to accept threaded stainless steel dowels (316 grade). Four dowels were used, each having a diameter of 8mm. The holes were drilled out at 10mm and given a thorough clean to remove any dust. The dowels were set into *General* polyester resin and the fractured stone surfaces to be joined had a thin polyester resin layer applied. All elements were fixed at the



same time and a ratchet was placed around the circumference of the wheel and gently tightened. This ratchet remained in place until all of the resins had cured.



Plate 8: The Wheel cross now fixed together. The blue lines illustrate the locations of the stainless steel pins

- 3.3 Small areas of the cross had a lime mortar applied to protect vulnerable areas. The lime mortar was devised to best match the stone in colour and texture. Trials were undertaken to establish the most preferred mix. The details of the one chosen are given below.

Proportion	ingredient
1 part	NHL 2 St Astier hydraulic lime
1 ½ parts	Baston plastering sand ( sieved) ( a yellow/orange sand quarried in the north of the Fens)
1 part	Clipsham stone dust (sieved) (A Lincolnshire limestone)
½ part	Yellow/buff brick dust (sieved)

## **4 Cleaning**

- 4.1 All four of the stones received various levels of cleaning. Firstly all of the objects were gently brushed down with soft bristle brushes and a vacuum. Care was taken to not allow the nozzle of the vacuum to come into contact with the stone surface as this can sometimes mark the stone. Once this procedure had been completed trials were conducted to establish the most appropriate level of further cleaning. The simplest test was gently scrubbing with a medium strength bristled tooth brush with deionised water. Excess water was avoided at all times, care was taken to blot away any run off with clean sponges. This removed some of the loose surface dirt and grime but the results were less than desirable. The next step was to trial 'V&A mix' (a 50/50 solution of white spirit and de-ionised water with added Synperonic A7 non-ionic detergent to the supplier's recommended dilution), followed by the use of clean water to remove any residue. This proved much more successful at removing the more stubborn deposits and required very little excessive scrubbing, minimizing any fine etching of the surface. The 'V&A' mix was indeed the cleaning medium used on all of the stone fragments.

## 5 Mounting

### 5.1 Fragments 1 & 2

- 5.2 The three stone fragments were to be mounted in the south aisle. Fragment 1 on a DPM (damp proof membrane) of code 4 lead sheet. The lead sheets wasa painted on both sides with black bitumen paint. This is to help prevent the oxidization of the lead. A stainless steel frame (316 grade) was designed and fabricated to sit on the top of fragment 1 and to then offer a cradle for fragment 2 to sit in. to offer support and stability to the top of fragment 2 two dog legged cramps were also fabricated. The frame and upper dog leg cramps were fixed into holes drilled into the wall which was cleaned of all debris. The steel projecting into the holes were given a fishtail detail and set into Hilti HY resin. Any areas of the steel frame or the restraining cramps that are in contact with each other had 3mm *Plasterzote* separating them. *Plasterzote* is a chemically inert closed cell foam. As a note fragment 2 was not flat on its underside but had a large, almost, 45° cut so would not sit in the designed frame without additional support. To aid in supporting this stone at the front a 25mm diameter stainless steel dowel was welded to the frame to carry out this function.







Plate 9: The frame for fragments 1 & 2. Note the additional support for fragment 2



Plate 10: A side view of the frame





Plate 11: The completed arrangement for fragments 1 & 2

5.3 Fragments 3 & 4 (wheel head cross)

- 5.4 Fragment 3 had a table fabricated for it to sit on displaying the shaft fragment at an angle to make all sides available for viewing. The table has four legs as support with the foremost leg left longer and inserted in between the stone floor flag stones. This was fixed using epoxy resin. To hold the upper section of the shaft shaped stainless steel was manufactured and fixed into pre drilled holes and fixed with epoxy resin. The wheel head cross was sat on fabricated dog leg cramps with a further two cramps, holding and clamping, the top section. The steel projecting into the holes were given a fishtail detail and set into Hilti HY resin. Any areas of the steel frame or the restraining cramps that are in contact with each other had 3mm *plasterzote* separating them

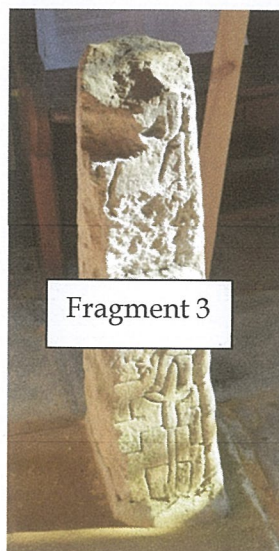
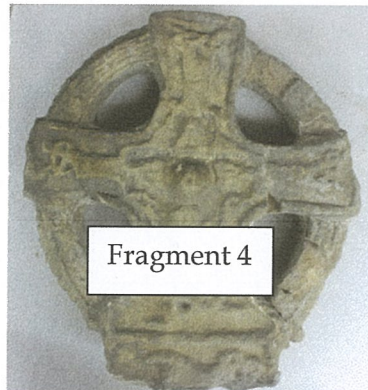






Plate 12: detail of the table for fragment 3



Plate 13: detail of one of the shaped restraining cramps for fragment 3



Plate 14: detail of the fishtail at the end of all restraining cramps fixed into wall



Plate 15: Fragment 3 in position on its table and with its restraints



Plate 16: Fragment 3 in position on its table





Plate 17: The completed arrangement of fragment 3 and the wheel head cross



## **6 Future maintenance requirements**

- 6.1 The main points here are preventative, any intervention other than by conservators - including even routine cleaning - is discouraged.
  - 6.2 Needless to say, the wellbeing of the stonework depends on the continuing good maintenance of the church, especially of roofs, drains, and rainwater disposal generally.
  - 6.3 The risk of theft of precious sculptural objects from churches is, sadly, always a risk but the mounts employed here have been designed to leave the cross fragments as secure as is reasonably possible. Nonetheless it is recommended that the PCC remain vigilant for any signs of tampering or strange activity around them. In the (hopefully) unlikely event this occurs then it may be advisable to notify the Police, and possibly to take other precautionary measures.
  - 6.4 Whenever building works are undertaken in the church particular care should be taken to protect the objects from a build-up of dust, preferably by boxing-in rather than by covering with sheets directly.
  - 6.5 They should be periodically inspected by the PCC to check for any signs of damage (cracking, salt efflorescence, impact damage, or other surface abrasion/damage), and similarly by the church's architect at his or her quinquennial inspections. If there is any sign of damage then further advice should be sought from ourselves, or an ICON accredited specialist monument conservator.
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