THE CHURCH OF ST MICHAEL AND ALL ANGELS
MOCCAS

POST-CONSERVATION REPORT
WINDOWS nIII and nIV
August 2012

JIM BUDD STAINED GLASS
THE FOYCE
GLADESTRY
KINGTON
HEREFORD HR5 3NS

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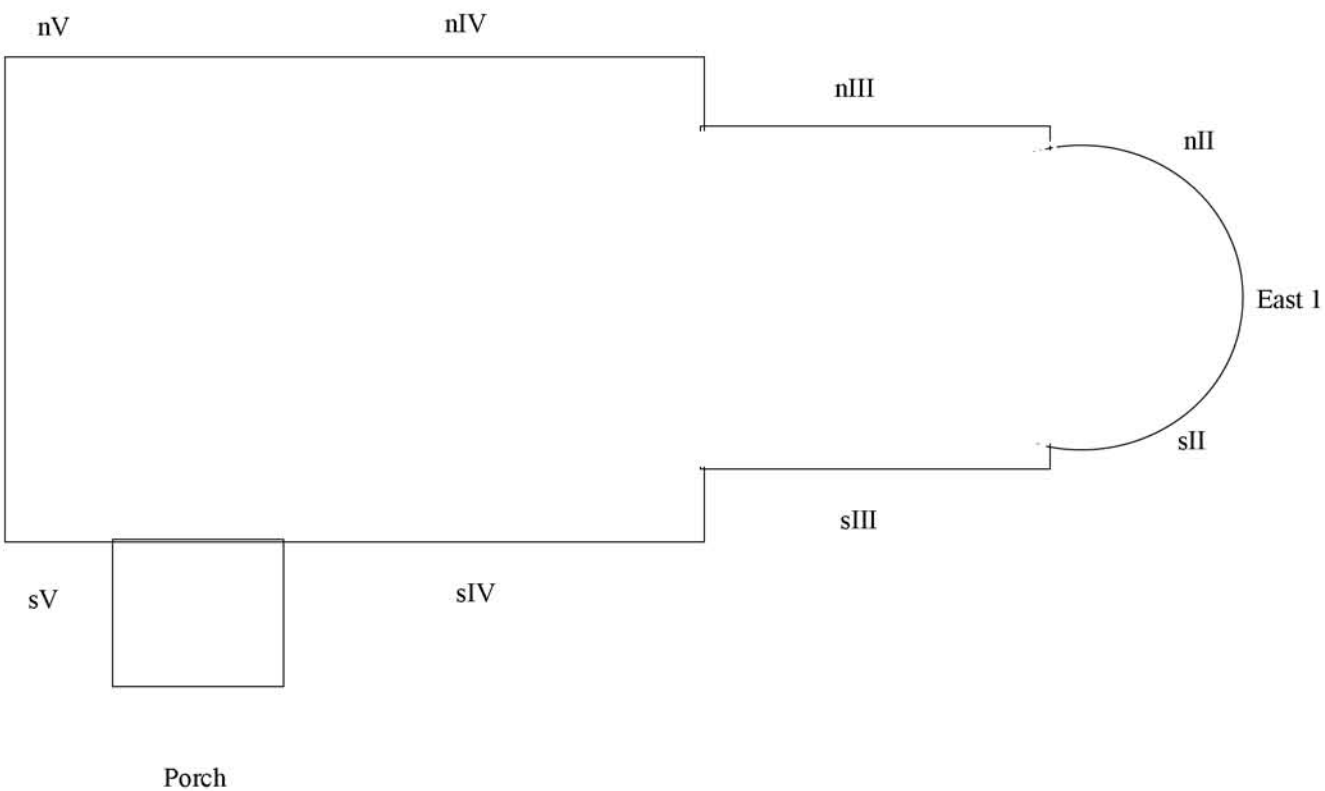
St Michael and All Angels Church, Moccas

Window Location Plan



Window no. nIII - Panel numbering.

Window no. nIV- Panel numbering

Project Data.

Location of Building : St Michael and All Angels' Church, Moccas, Herefordshire. Diocese of Hereford.

Location of Windows: Windows nIII & nIV. (see window numbering plan)

Identification of the windows: The work is of high quality and distinctively from the same studio responsible for the Great East Window at Gloucester, the Tewkesbury choir windows and the Jesse tree windows at Ludlow,Tewkesbury and Bristol as well as the local churches at Madley and Eaton Bishop.

The exact nature of this workshop is by no means fully understood, but it is thought to be in the West Country or the West Midlands and to have French influence in its work. The windows by this studio all date from 1330- 1350.

The glass was restored and possibly re-ordered in the nineteenth century when a large number of 'patinated' restoration pieces were added.

The objective of the conservation work: To protect the glass and its painted surface decoration from further deterioration by improving its protection from the wet or humid conditions surrounding the glass. To remove accretions of surface dirt and biological growths.

Conservator and Author of report: Jim Budd

Conservators working on the project: Jim Budd; Amy Hall; Peter King; Tim Littlar.

Moccas PCC Hon Secretary and Churchwarden: John Entwistle

Architect: Richard Lamb- Hook Mason

Hereford DAC Advisor: Andrew Arrol.

Previous Documentation: Pre-conservation Report on Windows n111 and n1V by Jim Budd - published January 2011.

Duration of the work: January– June 2012

Photographs: Photographs were taken using a Sony A100 digital camera.

Record of Conservation:

General Narrative.

Following the erection of scaffolding wax rubbings of the stained glass panels were taken in situ using wet-strength paper and brass rubbing crayons. The perimeter pointing was removed on the inside elevation to reveal the exact profile of the masonry. Detailed measurements were taken, augmented with laser level readings, to establish detailed working templates for each of the openings. The diamond quarrie leaded lights were removed from n111 and securely boarded with plywood. The medieval glass was retained in situ whilst the protective glazing was manufactured. Drawings for the protective glazing were prepared using the lead rubbings to provide the simplified leading pattern used. The outer glazing was manufactured using 3mm horticultural glass cut to the principal shapes and lightly kiln distorted. The main panels were designed to neatly slot over one another to provide a weatherproof seal. The diamond quarrie glazing to n111 was re-leaded. Once the outer glazing was ready, the stained glass was removed. New patinated brass bars were introduced to supplement the surviving ferramenta. The protective glazing was fixed and pointed up with hydraulic lime mortar.
The stained glass panels were adjusted to provide an acceptable fit to the shape of the masonry. This involved the removal of modern border glass on th emain panels and minimal reshaping of 8 no. pieces of original glass. These changes were recorded and the slithers of glass removed to the glazier's archive. Plywood templates of the proposed panels were cut and checked against the masonry openings. The ventilation gaps (10mm)at the top and bottonm of the panels were established to ensure that a controlled flow of air in the glazing inter-space was achieved. The panels were cleaned using cotton wool swabs and a de-ionised water/ethyl alcohol mix. All of the cleaning was undertaken under a microscope. The panels were framed in 10x 12mm mangnese bronze frames and fixed to the inner reveal of the masonry using stainless steel screws and nylon plugs.

Other works in the church included :
The provision of passive ventilation in the Nave with the introduction of 20 no. stainless steel mesh quarries.
The painting of medieval window ironwork and the cleaning of the plain glass leaded lights.

Cleaning notes.

The inner surface of the glass was very dirty and mouldy. The biological growths were more pronounced on the original medieval glass and were visibly green in colour. A cleaning solution of 4 parts water to 1 part ethanol was found to work succesfully. Stronger solutions were tried but were not found to be more effective. Because of the unstable nature of the paint all cleaning operations were undertaken under a binocular microscope using small swabs covering very small areas at a time. It was often necessary to reduce dirt and mould layers to a minimal covering where complete removal would have compromised the painted surface. A significant amount of the glass is of 19th century origin, this glass was much cleaner, however it was found that the paint was very unstable and that even a mildly abrasive movement of a swab was liable to remove particles of the painted surface. The risk was minimised by using a light 'poncing' action with damp cotton wool to just remove the top most layer of loose surface dirt.

The tracery panel nIV, A2 had previously been glazed with the painted surface on the exterior, this had resulted in corrosion pitting. The pitted surfaces were cleaned by light blasting with compressed air and sodium hydrogen carbonate powder at 50 psi. This was monitored under a microscope . The air-brasive action was confined to pitted area s of the unpainted exterior of the glass. The opacity of the corrosion products was reduced but not completely removed, so as not to cause damage to the 'gel' layer of the glass.

Isothermal framing notes.

A large number of options were considered for the framing of the panels. During the project plannng process discussions were held with Andrew Arrol, who has extensive first hand experience of framing options through his work on the stained glass art York Minster. It was decided to try to tilt the panels to allow equal ventilation gaps at the bottom and top of the panels. This became the preferred option as it required the least intervention to the original panels, whilst achieving a reasonably low visual impact internally, in this well lit and quite intimate building.
Options considered were: 1. To split the main panels and the head panels allowing a ventilation gap between the two panels. 2. To create raised ventilation points within the panels, by partial extraction/raising of pieces within the panel 3. To frame the panels and to set them approximately 12mm forward from the inner arris of the masonry in order to accommodate a sufficient air gap at the head of the panel.

The heads of the panels contained no 'sacrificial' border glass unlike the lower main panels and so the heads could in no way be accommodated within the masonry reveal without significant cutting of the original medieval glass which was considered to be unacceptable. It was clear that the shape of the head panels had been re-shaped in the nineteenth century restoration. The preferred option was therefore to tilt the whole panel (lower panel and head) so that the lower panel was within the reveal and the head of the panel projected outwards beyond the arris to allow a gap for ventilation.

To make the heads of the panels fit into a frame that could be tilted it was necessary to cut a small amount of the original material from the 'shoulders' of the head panels, at the springing area.The loss was minimised by careful alignment of the panels and restricting the cutting to a single area of un-painted glass at each side. The small off-cuts are stored in the glazier's archive.

Other treatments:

When rubbings were being taken in situ a loose fragment of red glass 'flash'was removed and labelled . It was later re-applied with Paraloid b72 adhesive. (nIV panel 3a)

A shelled fragment of painted glass was re-applied with Paraloid b72 (nIV panel 3b)

A cracked and unstable piece of glass was edge-bonded with silicone adhesive. (nIII panel 3a)

nIV panel 3b was worked on to reduce the visual impact of the leading. This panel had been repaired in the last 50 years or so using thick leads and very poorly applied (smeared) leaded light cement. The leads and smeared cement were pared back with scalpels and knives to 'lighten' the panel without the intervention of re-leading.

Recommendations for future.
Quinquenniel inspection.

Archive materials.

Photographs: Digital Format- Sony 100a camera, catalogued, with hard drive back up and on CD-Rom.
366 no. images - insitu, pre-conservation, post conservation, details etc.
Diagams: Pre- conservation rubbings; Pre- and post conservation rubbings annotated with post-conservation details;
Photographic prints used in the conservation process. Rubbings are retained in the Conservator's archive and in digital format in the digital document archive.

Material: Trimmings from the re-shaping of perimeter glass.

Conservation materials and methods used in the project.
Cleaning: Deionised water; Acetone; Ethyl Alcohol 99% MEK 1%; Airbrasive using Sodium Hydrogen Carbonate crystaline powder.
Adhesives: HMG Paraloid B72; Silcoset 153 silicone adhesive – ACC Siliones
Glasspainting: nil
Other materials:
3m 810 pressure sensitive 'magic' tape ;
Methods:
Framing: Isothermal glazing using MKM 300 alloy: Soldering: K-grade solder 60:40 Sn:Pb ; tallow candle; BLM code 3 lead sheet; Heaps Arnold and Heaps lead tape; beryllium copper fixing clips, stainless steel screws, nylon plugs. Bronze cold patination fluid & Pre-patination treatment -John Penny Restoration; copper rivets. Hodgsons colourglaze putty.
Leading: Stillemans- various sizes; tallow; grade c solder 40:60 Sn:Pb.
Brass Glazing Bars CZ 121 : 12mmround , 25x 12mm square section, patinated as above.
Medieval wrought iron ferramenta, lightly rubbed down with brass brushes, single-coated with Micacious Iron Oxide paint (Dacrylate)
Fixing: Black Hodgsons Colourglaze putty. Lime mortar, St Astier 3.5 Hydraulic lime 1- 2.5 sieved Bromfield sand with addition of pozzalanic additive (gbfs) and natural hair(goat).

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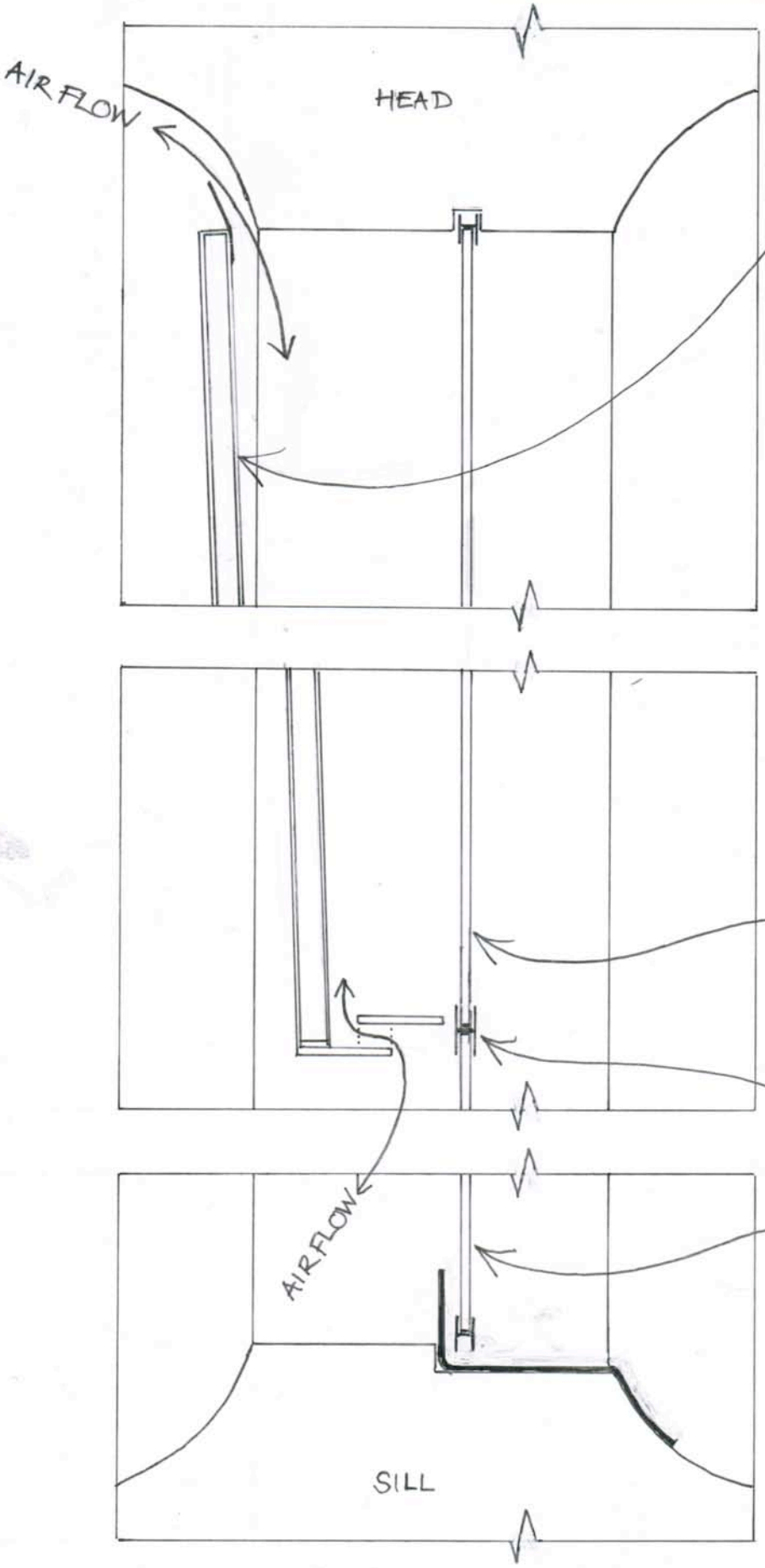
August 2012.



medieval stained glass in 10×10 mm bronze frame tilted forward at the head to allow an 8mm gap.

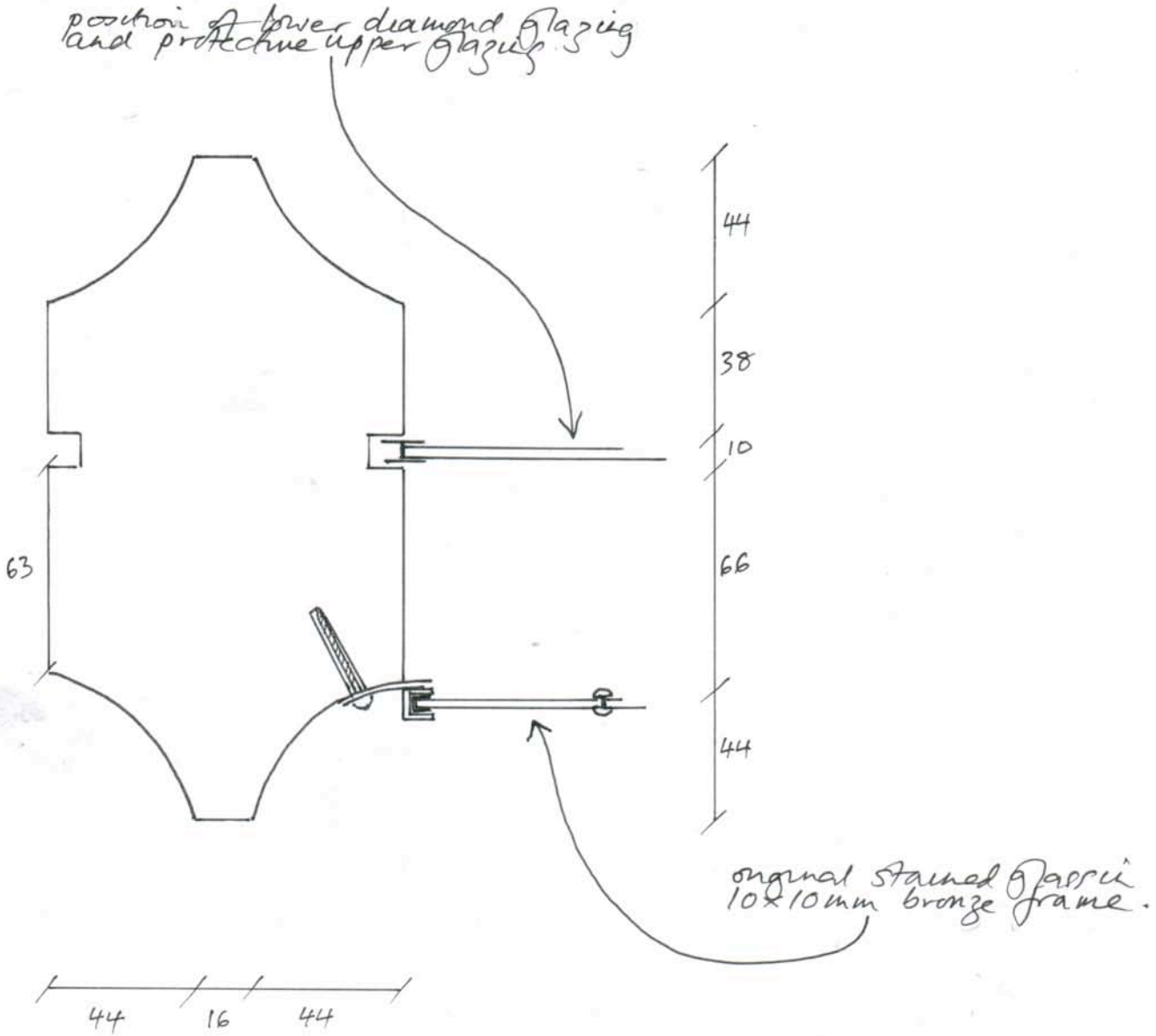
the air flow gap at the base is reduced to 8mm through the introduction of a baffle made up of 30×3 flat brass. the ventilated interspace varies from 40mm at the base to 74mm at the head.

position of the proposed protective glazing in the original glazing groove.

16×7 mm division lead.

position of the original diamond quarrie glazing in the original groove with lead condensation tray at the base.

ST MICHAEL AND ALL ANGELS MOCCAS	JIM BUDD STAINED GLASS THE FOYCE, GLADESTRY KINGTON, HEREFORDSHIRE
SECTION SHOWING THE PROPOSED ISOTHERMAL GLAZING ARRANGEMENT	SCALE: 1:2 | DATE: 05/11

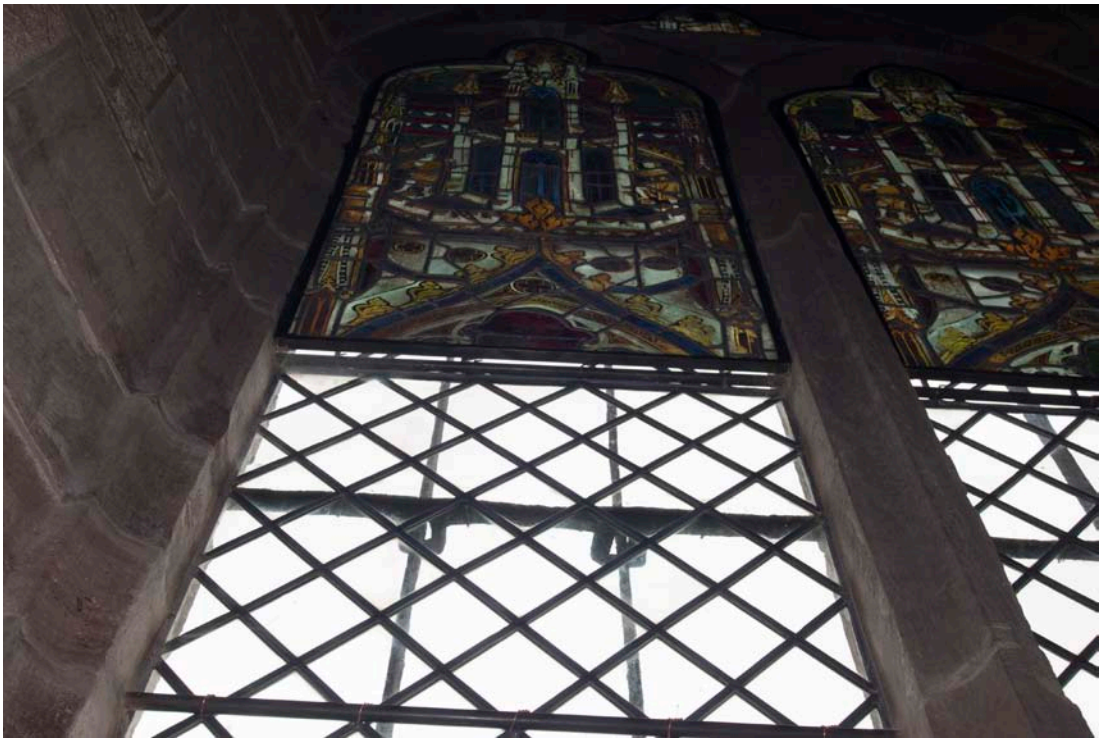


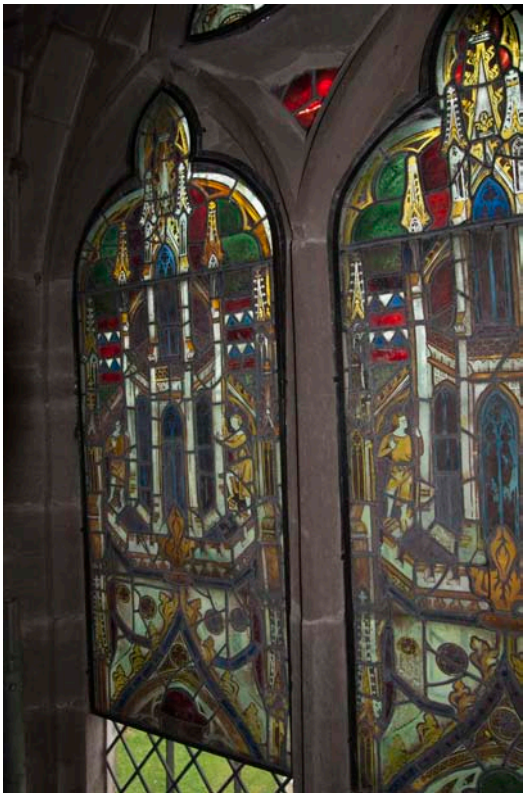
TYPICAL WINDOW SECTION

ST MICHAEL AND ALL ANGELS MOCCAS	JIM BUDD STAINED GLASS THE FOYCE, GLADESTRY KINGTON, HEREFORDSHIRE
	SCALE: 1:2 / DATE: 03/11

1. North elevation facing south-east showing nIII & nIV at completion. (01/06/2012)

2. Window nos. nIII & nIV following completion. (17/08/2012)





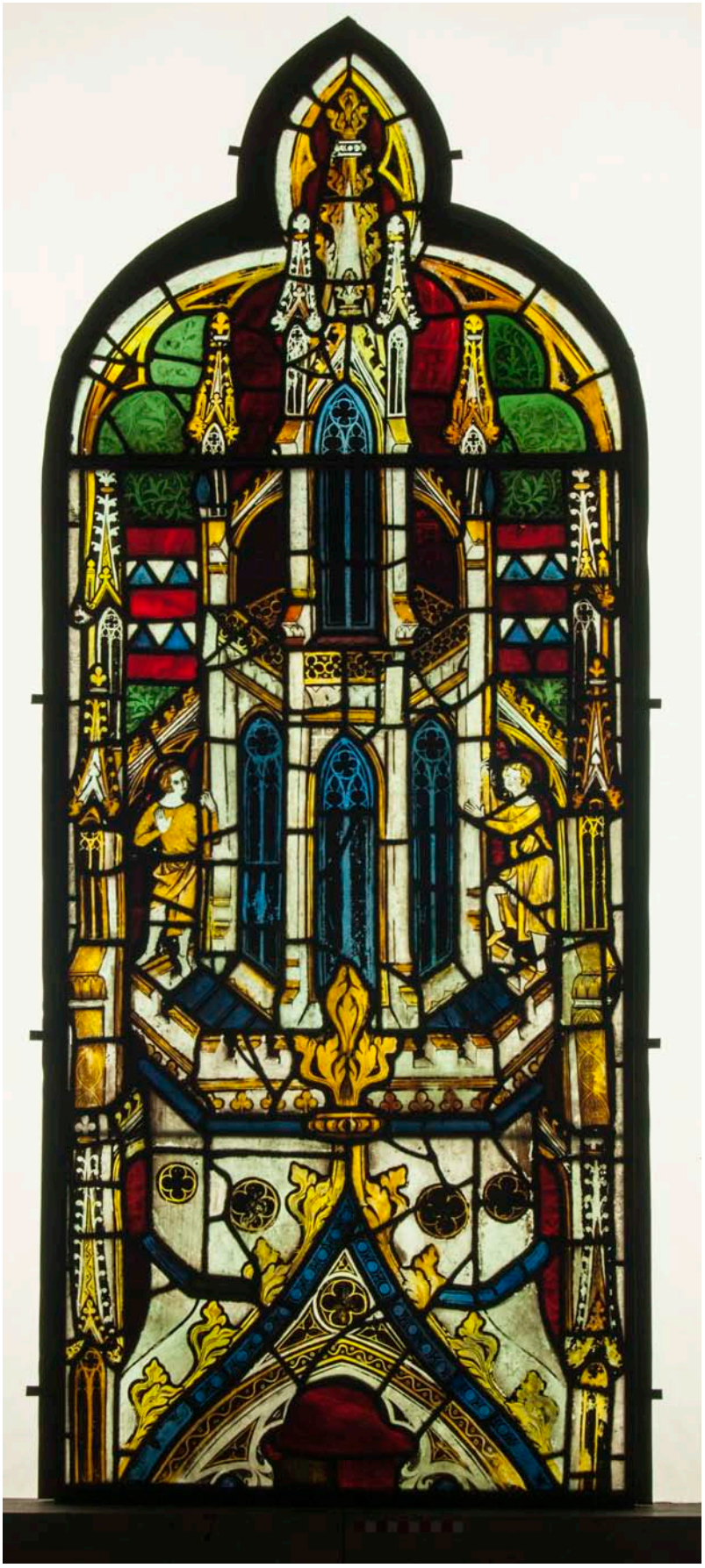
3,4,5. Window no. nIII. Details showing the ‘tilted’ isothermal framing installation (01/06/2012)

6. Window nIV panel 3a. fragment of red flash glass layer was found dislodged prior to the removal of the panels. This was saved and re-applied using Paraloid B72 adhesive.

7.Window nIV panel 3b. fragment of ‘shelled’ glass re-applied with Paraloid B72 adhesive.

Window nIII Panel B2 - at completion of studio works. 29/05/2012

Window nIV Panel A2 - at completion of studio works. 29/05/2012



Window nIII Panels 2a & 3a - at completion of studio works. 29/05/2012

Window nIII Panels 2b & 3b - at completion of studio works. 29/05/2012

Window nIV Panels 3a & 4a - at completion of studio works. 29/05/2012

Window nIV Panels 3b & 4b - at completion of studio works. 29/05/2012