



THE MEASURE OF QUALITY

Durham University Library



INSULEAD® UNITS FITTED INTO REFURBISHED OPENING CASEMENTS · ANTI SUN GLAZING

Durham Library was constructed in 1968 and is located on Palace Green, Durham between the Castle and Cathedral. Whilst not listed it is regarded with great affection and is a rare example of non-religious architecture by the famous architect George Pace with bronze windows made by the Morris Singer foundry who made Buckingham Palace gates and the lions in Trafalgar Square.

THE BUILDING

Durham Library Durham University, Architects – GSS Architecture / John Dutton, Miller Construction Durham Library was constructed in 1968 and is located on Palace Green Durham between the Castle and Cathedral. Whilst not listed it is regarded with great affection and is a rare example of non-religious architecture by the famous architect George Pace. The whole area is listed as a World Heritage Site and overlooks the river to the West.

THE BRIEF

Having been asked by the architect to survey the site for window replacement we found that the windows were single glazed, extremely high quality and essentially perfect apart from minor decorative issues with the odd missing fitting. We found evidence of makers name plates and carried out research to determine that the firm, Morris Singer of London had ceased trading but were internationally famous and responsible for such icons as the gates of Buckingham Palace and the Battle of Britain memorial. Essentially of bronze construction the windows lacked any thermal break and carried single glazed panes of glass with screwed wooden beading. A particular challenge was the extremely narrow openings, typically less than .25m but with heights of up to 2.5metres set into deep reveals hindering access. Facing a commercial decision to remove historically significant material or lose an important job opportunity, we utilized our knowledge and skills for developing innovative glazing solutions for heritage buildings. We developed a bespoke solution to overcome the significant challenge of combining historically important window frames with modern materials and techniques. We reported back our findings and explained that we were uncomfortable with the thought of removing historic frames. However our director Liz Taylor came up with an outline scheme with the following key objectives:

THE SPECIFICATION

The existing frames would be retained. A thermal break could be incorporated. The beading to be eliminated. The site was both a building of note by a pioneering architect and a world heritage site. The size and shape of the windows combined with their delicacy are intrinsic to the building design. The frames themselves are important historically being made by a renowned foundry. A high technical specification was required within the parameters discussed above including security, insulation and safety. The challenge of combining historically important window frames with modern materials and techniques. By using an innovative new product, research and our knowledge of traditional techniques and practice we were able to overcome all of the challenges presented to us. Most importantly preserving historically significant bronze window frames for future generations. Manufactured, delivered and installed in carefully timed batches we worked alongside other contractors to ensure the project was completed on time and with no additional costs. Requiring both technical and process developments the project gave both the Library and our company a legacy for the future.

THE RESPONSE

Using our patented Insulead product we proposed to install directly into the original frames. Achieving a thermal break, eliminating the troublesome wooden beads and sealing with modified polymer sealant the existing sight lines were retained. Original drainage channels cleared, resized and re used. The whole scheme was virtually invisible. Given the go ahead to install samples we fitted two units. One, an opening casement, presented additional challenges. We overcame the constraints of installing an insulating unit in a traditional, single glazed, centre pivoted frame by developing a bronze sub-frame. Additionally, the room was to be automatically vented and each of these windows required a mounting point for an electric chain opener. On subsequent visits the architect was unable to distinguish between the samples and the originals, ringing to say he could not find them! Intrigued, the architect asked us to re-survey, report and develop the

suggested solution with a view to installing a sample window, he also said that he had found invoices in the archives from Morris Singer but had been unable to allocate them to any specific feature. This second survey, which involved the removal of original glazing, confirmed the feasibility of the scheme and revealed that the glass did not comply with current health and safety requirements. However it was a solar control product with a green tint. This was later found to be the best for light transmittance whilst lowering heat gain, ideal for a library. Innovative and pioneering architect George Pace had attended to every detail using then modern materials and techniques. With this information our technical director Dave Morris created a design solution that offered a high specification in terms of safety and insulation but which matched the appearance of the original. The glass unit comprised a 6.4mm laminated K glass to the inner skin, a 20mm cavity, argon filled with Swiss U spacer and a 4mm toughened outer skin of Pilkington Green anti-sun.

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