

Royal appointment

Susan McDonough explains the background to the restoration of the Buckingham Palace Quadrangle East Elevation

One hundred years ago, the completion of a new frontage for Buckingham Palace designed by Sir Aston Webb radically altered the appearance of the iconic building. Today, behind the famous backdrop to many royal and national events, Martin Ashley Architects has carried out a major restoration of the eastern range's internal facade.

The eastern range was built in 1847 to provide much needed accommodation within the Palace for Queen Victoria's growing household, and also to improve circulation by forming a quadrangle with the three earlier ranges built by John Nash in the 1820s. But while the Nash ranges had been faced with honey-coloured Bath limestone, the newly built eastern range was faced with paler Caen limestone from Normandy, which was undergoing a popular revival at the time following a distinguished history of use on fine medieval buildings in Britain. Almost immediately, however, the stone began to fail.

As early as 1853, the original builder Thomas Cubitt stated there was "danger of decayed stones falling on persons passing" from the Caen stone elevation. Subsequently, the elevation underwent 'improvements' including Portland cement repairs to projecting cornices and facing stonework. Moreover, the exterior stonework was painted in oil colour in an attempt to disguise the damage. While Webb's refaced Portland stone elevation arrested decay on the Mall facade, ongoing repair work and application of oil paints continued on the quadrangle side throughout the 20th century.

Paint removal

A visual inspection by the Royal Household Property Section identified problems with the condition of the painted surfaces,

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with water ingress causing decay and damage to the underlying stonework. Samples of paint were removed for analysis, revealing that 17 layers had been applied to all of the stone surfaces on the east elevation. Chemical compositions including white lead, linseed oil, oil paints, and emulsions were identified. One layer also had fine sand granules, which raised doubt that cleaning would penetrate it. It is also likely that a copperas wash had been applied as had been done to the three bathstone elevations facing the quadrangle.

A successful paint stripping trial was subsequently undertaken to a section of the east elevation. All 17 layers were removed from the stone ashlar, decorative acanthus frieze and Coade stone acanthus capital to the fluted columns using multiple applications of a non-abrasive alkaline chemical paint remover.

Initially, Klingstrip was used in the trial, but by the time the main contract was let, this was changed to Peelaway following smaller trials and on advice from the appointed cleaning subcontractor. It was applied in a similar way to a poultice, with dwell times closely monitored because the weather, location and type of stone to be cleaned means this is not a straightforward process.

Some areas required more than one application – particularly decorative features – and fine 'dental' type conservator tools were used to remove vestiges of paint within the deep undercuts of acanthus leaves. A neutraliser was then used to remove the poultice residue.

Assessing repairs

Once completed, the condition of the stonework could then be assessed for repairs. Cornices at attic storey, second storey and first floor level had dramatically failed because the top capping had been replaced entirely with concrete, and several cornice



sections replaced with cement mortar repairs. On the second storey, many Caen modillions and fleurons had been crudely replicated in cement or Bathstone. The ashlar to the attic storey and the plain corner pilaster was found to be in poor condition: the latter had been the subject of significant cement mortar repairs.

There was, however, some good news. The stone moulded architraves to the windows and their canopies had largely survived well, suggesting that the weather had not yet penetrated before they were covered in oil paint. The exquisite detail of the original Caen acanthus decoration, which had been lost under many paint layers, was finally revealed and generally found to be in remarkably good condition.

The extent of ashlar decay lessened significantly lower down the elevation, with virtually none at the lower storeys, where damage was mainly caused by rusting cramps. The slender flute ribs to the corner pilaster, however, had been previously repaired using a hard Portland cement repair mix and were beginning to fail or break up.

Sourcing stone

The choice of stone to be used in the repair and replacement work was extremely important because the consultant team was keen to ensure that the problems experienced with the 19th-century Caen stone would not be repeated. From a conservation viewpoint, it is always desirable to replace and repair existing stone with the original stone type if the quality is consistent and the stone still available.

Caen stone has a unique colour, texture and performance. There are two different types; one derived from calcite building up

- 1 Conservator tools were used to remove vestiges of paint
- 2 3 Ashlar during and after cleaning
- 4 The eastern range is now restored



- around the droppings of fish and the other formed from their skeletal remains.

A geologist was appointed to assist in researching UK quarries to find a suitable match, but none proved suitable. A site visit was therefore arranged for the client, principal stone contractor and geologist to Cintheaux in Normandy, where Quilly stone is still quarried and imported to the UK, principally for restoration work at Canterbury Cathedral.

The project team was satisfied that the mine operation was well organised and the stone of a consistently good standard with a dependable supply for the future. Following rigorous independent sample testing by the Building Research Establishment and comparative tests with the 19th-century stone, it was confirmed that the correct stone had been found for the replacement and repair work and the order was placed.

The project began on a trial bay area, where works comprised repairs to the ashlar and decorative stonework along with window joinery repairs, redecorations and new lead flashings to the cornices to protect the stonework below from rain run-off. Skilled carvers produced new modillions and fleurons to match those damaged or decayed. All previous hard Portland cement repairs on the facade were carefully removed by hand.

Following the success of the works, the team used the knowledge gained to continue with the remaining restoration. Three phases of works were undertaken covering stone repairs to the remaining facades and vehicular carriage and pedestrian passageways; repairs and redecoration of all the timber windows and doors; renewal of the lead sheet roof covering the central portico; and installing lead sheet coverings to the projecting cornices to match the adjacent Nash elevations.

The clock on the central pediment was cleaned and regilded, and sensitive conservation and minor repair work carried out to



5 Works comprised repairs to the decorative stonework and window joinery

6 7 Paint was removed from the Coade stone acanthus revealing the original detail

Edward Hodges Baily's *Nine Muses* tympanum sculpture. Finally, all the cast-iron vehicular and pedestrian gates to the passageways were taken down and cleaned, repaired and redecorated off site, and the central gates were also regilded for the first time, to a scheme approved by the Queen.

A highly skilled team of masons, conservators, leadworkers, carpenters and other specialists worked together to ensure that the highest standards of repair was undertaken. Thanks are also due to the support and guidance from the Royal Household Property Section. ●

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