

Chapel Royal

Hampton Court Palace

Conservation project profile

We're carrying out repairs to the historic timber structure supporting the Royal Pew balcony



Why this project?

The principal structural timbers supporting the Royal Pew are a significant survival of the King's and Queen's Holy Day Closets constructed by Cardinal Wolsey (1514-1528) and substantially re-modelled by Henry VIII in 1535-6. In the late 17th and early 18th centuries, the Tudor Royal Pew was extensively altered and refurbished for James I, William III and Mary II, and later for Queen Anne to the designs of Sir Christopher Wren and Grinling Gibbons, leaving the Chapel much as it appears today.



How did it begin?

Investigations into the cause of apparent structural movement in the Royal Pew commenced in April 2004 when a split developed suddenly in a pilaster casing on the ground floor of the Chapel.



Removed panelling stored nearby under local environmental conditions.

In July 2004, during the course of investigations, a further movement was observed in the panelling of the principal balcony beam and it became clear that a full structural investigation was necessary in order to establish loading paths and cause of failure.



Historic Royal Palaces HAMPTON COURT PALACE

What did we discover?

The removal of the decorative wood panelling by NDB Construction Ltd between October 2005 and January 2006 revealed that the underlying historic timber structure is a complex construction, significantly altered with the reconfiguration of the Royal Pew for successive reigning monarchs.

The 17th Century structural alterations included the removal of the original central partition between the Holyday Closets, lowering the floor of the Royal Pew and widening the span of arcade columns below the balcony, compromising the structural integrity of the original construction.

A history of problems is evident in the archaeology of the structure. Remedial works undertaken during the 18th Century involved the timber trussing of the principal balcony beams, and strapping of storey posts, possibly a response to structural concerns following significant insect infestation.



Lowered floor level, hung off principal beams.



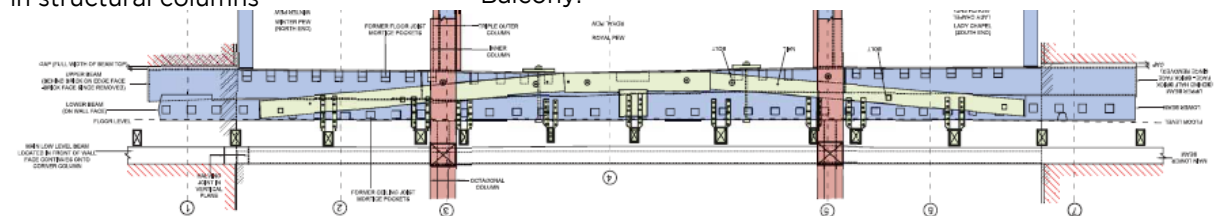
Historic bolting through front and rear columns. Splits/shakes in structural columns



Historic strapping of front columns off rear, Royal Pew Balcony.



Splits and shakes to top of column.



What is the problem?

The extensive alterations, past insect infestation, decay of timbers in masonry walls and unacceptable live loading of the balcony structure have resulted in structural problems manifested as:

- bowing / tipping of the double balcony beam



Historic Royal Palaces HAMPTON COURT PALACE

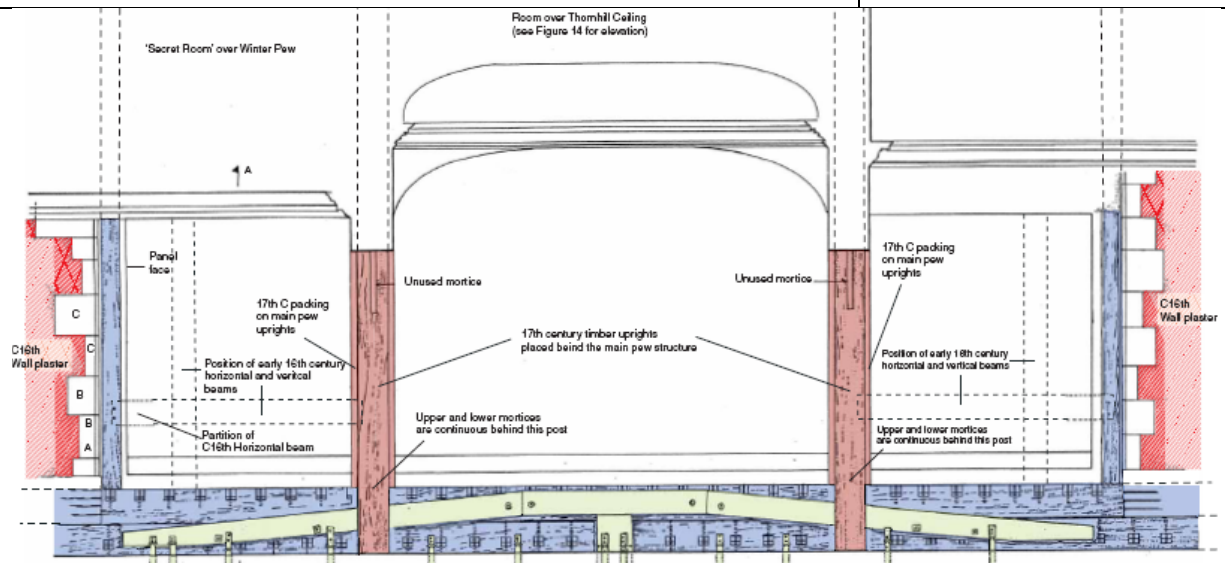
- which carries the roof structure indicating loading eccentricities and structural distress;
- loss of bearing capacity at principal beam ends, lintels and cornice beams;
- extensive shakes and splits in octagonal columns – concerns that balcony live-loading is adversely effecting load transfer between upper and lower columns;
- vulnerability of floor support structure installed in C1690 – live loading transferred via wrought iron hangers to (compromised) principal beams;
- structural vulnerability of cantilevered fireplace in Winter Closet (installed 1699) – concerns of collapse should strap support fail.

Decayed beam ends – loss of bearing / support for masonry above.



Cantilevered stone (Winter Pew fireplace support) and brick jack-arch. Load carried by strap through masonry.

A full archaeological survey was completed by Oxford Archaeology in June 2006, detailing the construction history of the Royal Pew. Dendrochronological testing undertaken as part of the recording works has identified the felling dates of individual timbers and confirmed the chronology of the structure.



What are we doing?

The development of an acceptable conservation approach has been undertaken in close liaison with HRP curatorial staff and English Heritage. The proposed work will involve conservation repairs to the principal structure, using a combination of traditional timber repairs and contemporary interventions, including the installation of new steel supports hidden behind panelling. Repair details are being developed in order to maximise the retention of the historic fabric.

When is the work happening?

April to November 2007

Who is involved?

Project Manager: Historic Royal Palaces
Architects: Martin Ashley Architects
Engineers: Hockley and Dawson
Quantity Surveyors: Press and Starkey
Contractor: Ward and Co. Ltd