

Project Details

Project 2: *Repairs to 15th Century roof at St. Peters' Claybrooke Parva, Leicestershire, Diocese of Leicester*

Listing Status: *Grade 1*

Client: *PCC St. Peter's Church Claybrooke Parva,
The vicarage,
Claybrooke Parva, Leicestershire*

Description of Building

St. Peters is a substantial church dating from around 1320, it appears to have been the central church of the area with small chapels of ease as at Wibtoft under its authority. The importance of this church may again relate to its position being less than a mile from High Cross which is where the Fosseyway and Watling Street intersect. The chancel itself is large



and lavish in comparison with the remainder of the church and is thought to have been constructed with early 1400's and the nave some 50 years later. The tower was remodelled in the early 1600's and then the whole restored 1876-1878, records show that the nave roof was repaired in the early 1930's

The nave roof consists of five very fine brattished, or heavily decorated and moulded, tie beam trusses, arcaded in the spandrels of the trusses and to either

side of the king-posts. The trusses are supported on carved and moulded wall posts, some with carved figures at their bases, which rise from stone corbels. The trusses carry heavily moulded wall single purlins and a ridge beam. A number of finely



carved bosses, some of leaves and foliage, others of figures, including grotesques, are also present. An illustrative example of a truss is provided



nineteenth-century rebuilding, though some of the earlier timbers, are thought, on stylistic grounds, to date from the fourteenth century.

The 1930's repair appears to have replaced every other rafter and these rafters were extended beyond the original inner wall plate to an outer plate and assisted in the formation of the gutter. New sections of truss ends were scarfed and bolted to retained timbers, not all the truss ends were treated. The majority of the carved timbers were retained. The nave was reroofed at this time.



To the north elevation of the chancel are two doorways side by side one being the priest door the other to a sacristy which has long since disappeared, the line of the is however still visible.

Description of the Project

- To investigate the structural integrity of the nave roof structure
- To ensure that the reconstruction and repair work retain all elements of the decorative carvings
- To consolidate and preserve stylistic carvings which have become delicate due to extensive beetle attack
- To identify the type of beetle responsible for the decay
- To ensure that the roof structure remains stable during the work
- To ensure that on completion the original structure retains its full visual impact and that the repair and strengthening work cannot be easily identified
- To fully record the restoration work in order that future generations are aware of the nature of the repairs

The Investigation

The quinquennial inspection using ladders had identified concern as to the stability of the post and brace in the south east corner of the most eastern nave truss.

The nave roof is some 8metres above floor level and inspection off a ladder was limited. St. Peters has the advantage of a clear nave



seating which is provided by chairs. The south porch door also has level access and was of sufficient width to allow access for a 'cherry picker'. Inspection of the whole of the roof timbers was carried out from the high level platform. The inspection revealed that: -



- Two truss ends on the northside had been decimated by death-watch beetle and were no longer bearing on the wall.
- The supporting wall posts were also in a fragile state.
- The south east corner post and brace were structurally unsound.



In consultation with English Heritage it was agreed that Messrs Ridout would be commissioned to carry out pressure drillings of critical timbers to establish the depths of decay. An initial report was prepared but was limited due to use of the equipment from a mobile platform. However there was sufficient evidence to verify that the nave roof was structurally unsound and immediate work to the roof was required.

Messrs Tower Survey's were commissioned to prepare using photographic techniques a detailed survey of the nave roof. From this data Architectural drawings were prepared and external measurement of the roof and gutter arrangements were taken. Placing the two parts of the drawing together it was possible to establish the support arrangements at the walls without disturbance of the roof covering.

A specification for the repairs was prepared and submitted to English Heritage for



approval and to the DAC, a faculty was granted. The specification and drawings were forwarded to contractors for tendering. Messrs Midland Stone Masonary were appointed as the main contractor.

The structural engineer inconjunction with Messrs Tammworth Scaffolding designed an internal scaffold that would support the weight of the roof whilst the trusses were disassembled and repaired. The scaffolding was fully boarded at level about 1800mm below the wall plate level and a raised centre section of scaffold allow access to the ridge position.



Messrs Ridout were again requested to update their initial report and take additional pressure drillings, a final report was prepared and indicated additional timber infestation problems in the carved saddles over the trusses which in turn supported the purlins.

A section of wall plate was cutaway adjacent to one of the defective beam ends



to allow visable inspection of the void between top of wall and underside of roof. This confirmed that our original combination drawing was correct, it was noted however that the 1930's repairs in which every other rafter had been replaced, there new rafters had been

extended to meet a new plate set towards the outside of the walling. With the loss of end support to the trusses it was apparent that much of the weight of the roof was carried over the new rafters and the whole roof support structure was in reverse, rafters supporting purlins and purlins supporting trusses.

A section of truss was disassembled and the wall post removed. All parts were retained on site. English Heritage commissioned their centre for Archaeology to carry out a tree-ring analysis of the timbers by dendrochronology and the felling date was placed between 1425-1450.

The Repair Solution and Philosophy

The quality of the timber carving and the extensive deterioration of the timber by beetle attack (predominantly deathwatch) made consolidation and conservation of the timbers of prime importance. Handling of the timber members and their storage required clear direction and instruction to the contractors. All carved timber work was to remain on site. A full photographic record was taken of the truss posts and carvings prior to any work taking place.



I sketched out a beam support suggestion which would sit behind the wall posts then being fastened to the clerestory walling, with a top plate resting on the top of the wall and protruding forward to form a new seat for the truss beam. Bracing to the support would be inverted to make use of the truss beam tennon holes and



vertical bracing would sit into the worm eaten void at the rear of the original joists. The proposal was discussed with English Heritage's Architect Mr. Cox and their structural engineer agreed to manufacture one support in stainless steel and offer it into position. The result was successful and consent was given to repeat the exercise when support was required. Minor modifications to the support systems was required to suit individual trusses and posts. The decorative posts were consolidated from

the rear using a specialist resin that penetrated the passage holes of the beetle but did not run to the face of the posts, where very delicate consolidation was required, resin was syringed into the holes on completion, the entire support system was not visible and the roof retained its original beauty. Midland Stone Masonry were to be congratulated on their quality of work and the care shown.



With scaffolding at clerestory window height the inspection of the window stonework was possible, the windows over the years had been repaired in a variety of material and there was little of the original stonework remaining. The contingency monies set aside for the roof repairs but not taken up, together with additional parish funding, with English Heritage's support and consent allowed the replacement of four of the clerestory windows.



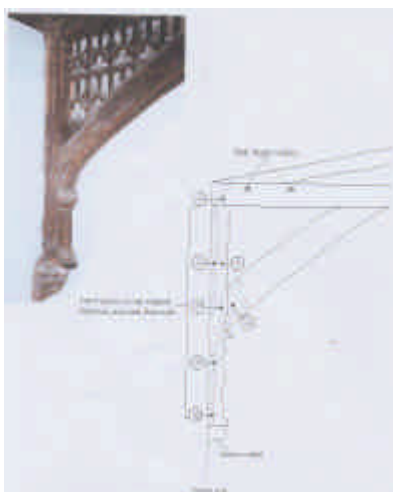
THE PROCESS OF REPAIR FOR CLAYBROOKE CHURCH



1. Based upon the findings from the quinquennial reports observations, a platform lift was hired to inspect the trusses over the nave to the church



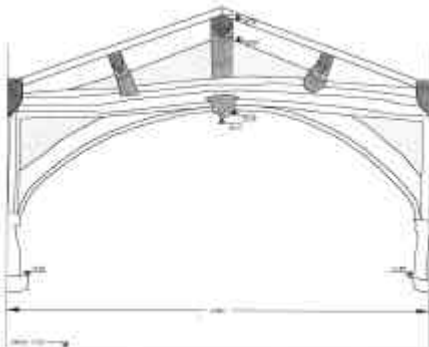
2. Messrs Ridout who are timber specialists and ourselves inspect the trusses more closely than a ground-based quinquennial could and photographically record the findings



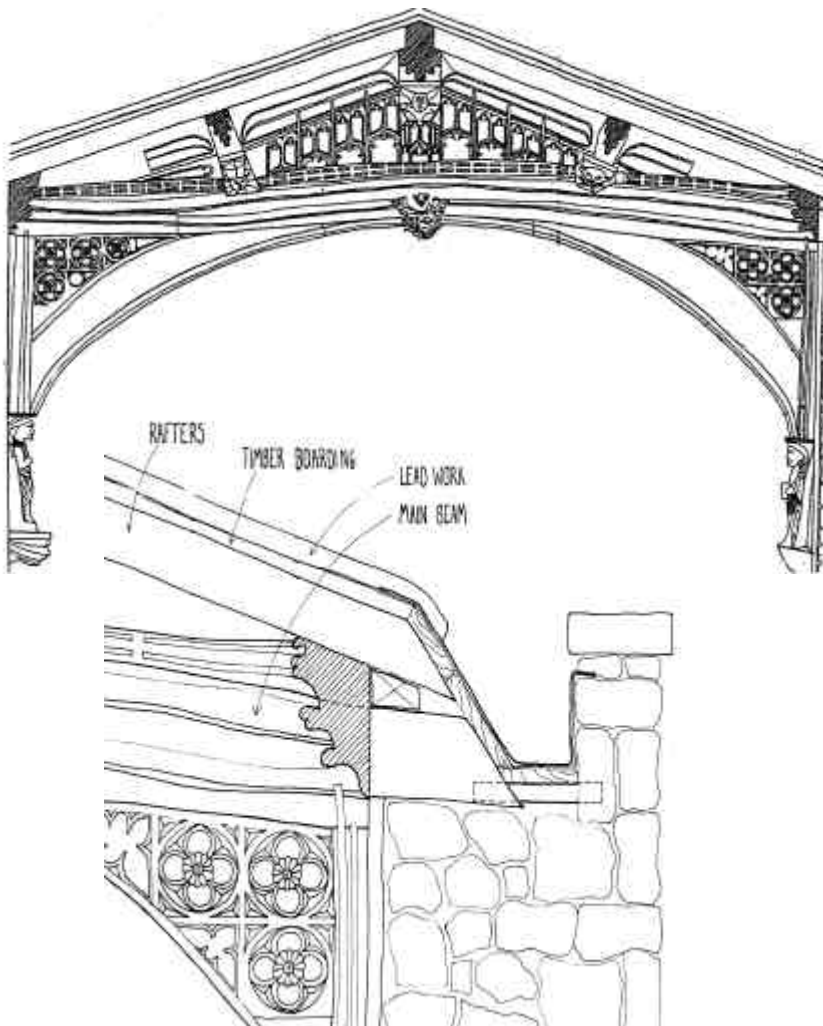
3. Pressure drillings were taken and a report prepared outlining the extent of the damage to each truss that could not be seen without actually opening up the structure



4. A specialist survey team are commissioned by ourselves to carry out a survey of the trusses giving basic outline dimensions and forms



5. The survey team produce measured drawings of the trusses



6. From these measured drawings we produced a series of truss elevations that show, with some level of detail, the ornate carvings

7. This enables us to attempt to understand without actually opening up the roof structure the detail of the gutter and truss arrangement and how the roof problems may be occurring



8. Erection of an internal scaffold in order to pressure test, examine and open the trusses up for repair



9. To carry the weight of the roof whilst repairs were undertaken the weaker trusses were propped



10. The posts and bracing was dismantled to allow repair



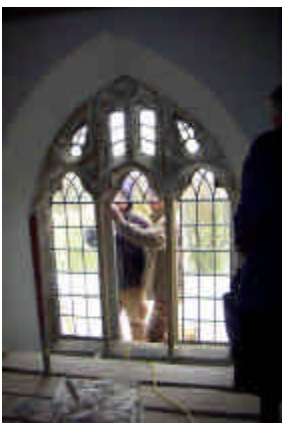
11. These photographs show the extent of the damage to the rear of the posts



12. Removal of posts, corbels and bracing pieces where necessary. This enables a design for the new support brackets to be designed



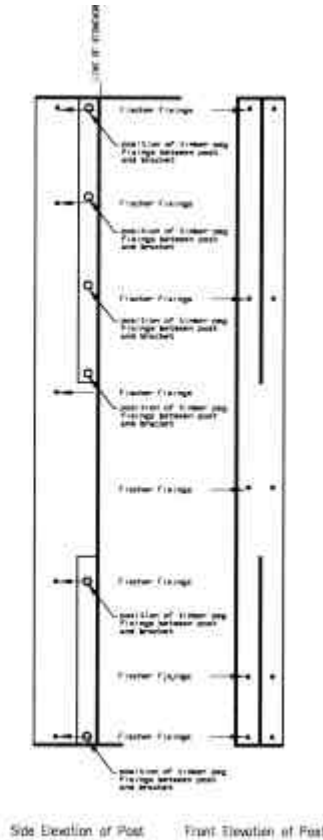
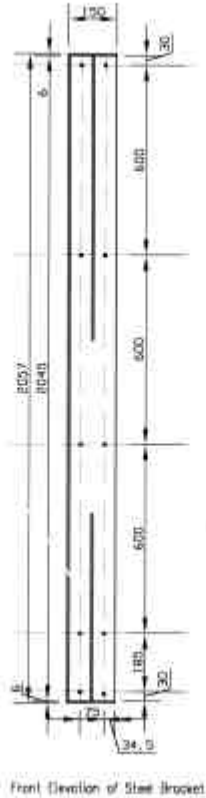
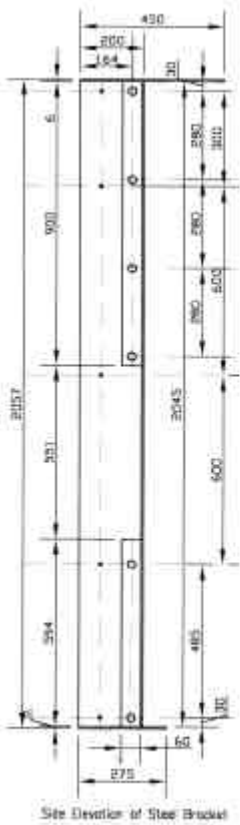
13. These photographs show the extent of the damage to the tracery of the clerestory windows. During the repair of the trusses and whilst the scaffolding was in place



14. It was decided that during the repair of the trusses and whilst the scaffolding was in place (internally) that repairs should be made to the tracery



15. Pictures of the removed bracing pieces being prepared ready to be returned to the trusses when repaired



16. A design for a stainless steel bracket to support one of the posts, this will abut the wall as shown in 12, enabling the post to be fixed back to this bracket. The weight of the roof will thus be supported on the bracket and not on the decorated post. (This is a detail of the support for the corner post)

