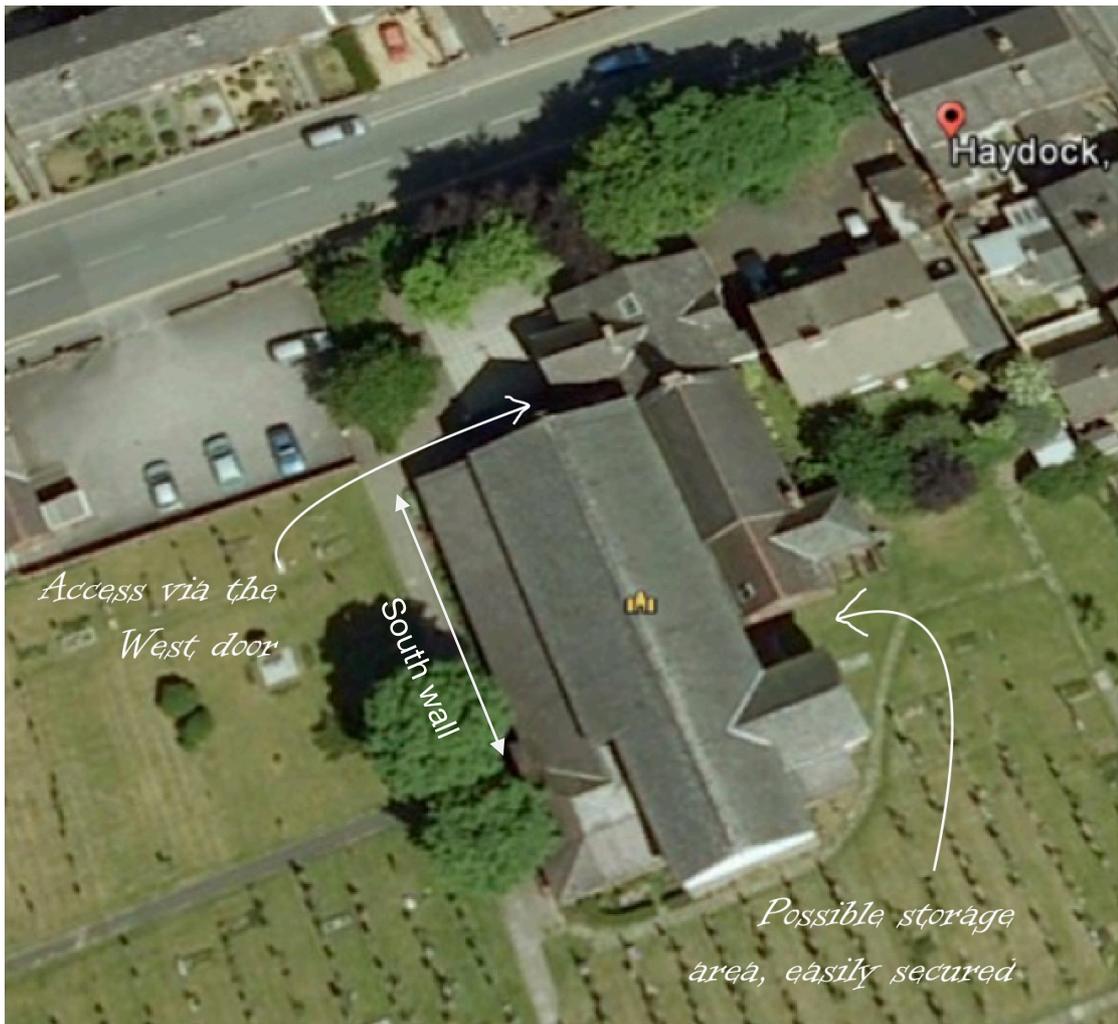


Haydock St James the Great

Schedule of Works and Methodologies

1.0 Introduction

- 1.1 The project is for repairs to the timber framed wall on the south aisle of the church. The sole plate (or cill beam) and several of the bases of the posts are decayed and long-term, if left unattended, the structural integrity of the wall will eventually be affected, together with water ingress internally.
- 1.2 The worst of the decay seems to occur where there have been persistent problems in the past (over a period of many decades) with rainwater goods. The church has remedied this matter in recent years and at the time of the inspection, the timber was dry indicating that the problem is now resolved.
- 1.3 The timber framing has a quite unusual, and potential original arrangement – the timber framing is oak with pegged joints and has a depth of around 230mm, but fixed to the front face of each member is a timber board approximately 25mm deep. The boards are flush with the brick infill panels and there is no evidence of the oak frame having been hacked back – this indicates that either this was the way it was built or that it is the result of a major reconstruction quite some years ago.
- 1.4 A further matter of interest is that at some point in the past, it appears that the brick infill panels have been taken out with the bricks rebbed in a hard, cement based mortar (i.e. not simply a matter of later hard pointing). It is unlikely that in the late 19th century such a hard mortar would have been used. Whilst the hard mortar does not appear to be yet causing damage to the bricks, it will be accelerating the decay of the more vulnerable timber. It is therefore specified that, where a panel is to be disrupted as a result of a timber repair, the brickwork is rebuilt with lime mortar. Other panels are generally proposed to be left untouched as rebuilding is likely to result in the damage and loss of some of the bricks.
- 1.5 There have clearly been attempts at repairs in the past to prevent the decay of the timber without apparently getting to grips with the cause – i.e. a considerable amount of mastic is used and felt has been tacked on to the back sides of the timber boards where they face the sole plate.
- 1.6 A damp proof course or membrane will not be incorporated in the proposed repair work as it will increase the chance of water sitting on top of the plinth and rotting the sole plate. With the correct maintenance of rainwater goods, the timber frame and plinth will not experience a high degree of water saturation.



2.0 General Matters

- 2.1 The works will be carried out under a JCT minor works contract.
- 2.2 It is expected that the church will remain in full operation for the during of the works. The health and safety of all users of the building and its grounds will be paramount and therefore there will need to be clear site boundaries and, for instance, agreements as to vehicle movements. These matters will be agreed at a pre-contract meeting before the works commence.

- 2.3 Noise and dust will also need to be minimised – the contractor will need to be responsible for ensuring that dust does not unduly spread through the church and both parties will need to agree a protocol for allowing mid-week services and other regular events to function without disruption.

3.0 Schedule of Work

3.1 Preparatory Works

- 3.1.1 The contractor is to arrange for an experienced carpenter / joiner to carefully take out 12 pews (max) and set aside in an agreed location within the church. Please note, the contractor is to be responsible for making good any damage caused.
- 3.1.2 The contractor is to arrange for a qualified plumber to temporarily remove the radiators from the affected area (up to 3 – there are radiators under each of the south elevation windows), isolate the pipe and drain the part of the system to ensure no water damage is caused. Store the radiators in an agreed area.
- 3.1.3 Please note that the door at the east end of the south aisle functions as a fire door and therefore must be kept clear.
- 3.1.4 The contractor is to prepare a secure and dust-proof compound area within the church – the exact extent of which will be agreed with the church warden and architect prior to starting, but it must be full height with taped joints and left without trace at the completion of the project. The contractor must also protect the carpets along the access route from the main west door.
- 3.1.5 The contractor is to provide a secure compound area externally, e.g. with 2m high fencing. The best place for this might be to the north side as shown on the aerial image on the previous page. Care must be taken to ensure graves / headstones are not damaged. The security of the church must not be compromised.
- 3.1.6 The contractor should consider whether it is necessary to protect any of the windows near the adjacent areas, e.g. with temporary plywood covering. It should be noted that any damage caused will be the responsibility of the contractor to put right.
- 3.1.7 The stone plinth must be protected from damage, together with the exposed church interior – e.g. floor etc.
- 3.1.8 The church will temporarily remove some of the plants and cut others down to low level. The contractor should take reasonable care to avoid damaging remaining plants and should allow to protect up to 3 specific plants during the works (e.g. commemorative roses).
- 3.1.9 The contractor is to provide their own welfare facilities. There is an external tap on the north side of the church. The contractor can use the church's electrical supply but must be careful to guard against power theft by other parties.
- 3.1.10 The contractor is to provide the following samples for approval at agreed stages in the contract:
- 3.1.10.1 Green seasoned oak
 - 3.1.10.2 Kiln dried oak
 - 3.1.10.3 Hardwood for cover panels
 - 3.1.10.4 Coating to the timber (on both new and old areas) (approx. in 0.5m² area)
 - 3.1.10.5 Lime mortar pointing (brick and stone) – 1 panel
 - 3.1.10.6 Removal of black paint to retained timber framed elements (approx. in 0.5m² area)

3.2 Investigation

- 3.2.1 Once a secure and dust-proof working compound has been secured in the church, the contractor should initially remove the cover panels and carry out an initial inspection with the architect – some removal of internal plasterwork may be necessary. This will confirm the initial scope of works.

3.3 Dismantling of Brick Infill Panels

- 3.3.1 The required areas are shown on drawings 02 and 03 – this will need to be confirmed by the architect prior to starting. Before starting, each panel is to be photographed. Where indicated, the brick infill panes are to be carefully dismantled in accordance with Methodology 1. The contractor must allow for adequate time and to do this with care to minimise damage to bricks. The bricks are to be removed using hand tools, carefully removing all the hard mortar. They are to be stacked and labelled according to their panel number, noting the possible requirement for replacement bricks. The contractor must source matching salvaged bricks (they are a Ruabon type appearance pressed red brick). Once the affected areas are taken down and samples of potential replacements for damaged bricks are provided, it will be decided whether put all imported bricks into one panel or to distribute them where needed.

3.4 Timber frame repairs

- 3.4.1 Following the dismantling of the scheduled areas of brickwork, the final scope of works to the timber frame will be confirmed.
- 3.4.2 The contractor is to allow for the repairs as shown on drawings 02 and 03 and in accordance with Methodology 3. The contractor is to allow for the insertion of a new section of soleplate using the method shown in Detail A in the methodology.
- 3.4.3 Upon completion of the works to the framing, replacement facing panels are to be fitted. These are to be fitted on using countersunk and pelleted stainless steel screws. The contractor is to allow for new facings to the full length of the soleplate and to all lower, or lower halves of posts. The contractor must state the timber that is intended to be used. The timber must be FSC certified, suitable for the intended use and have a long service life (around 50 years +). It should be noted that meranti and sapele will not be accepted unless thorough evidence of their sustainable sourcing is provided. FSC jatoba or FSC larch are options to be explored.
- 3.4.4 The contractor is responsible for ensuring the timber frame and structure above is fully propped during the work.

3.5 Stone Plinth

- 3.5.1 Remove all redundant fixings from the stone plinth. Repoint joint between the timber and stone to its full length and patch-point elsewhere as required (allow for 10m).

3.6 Reinstatement of Infill Panels:

- 3.6.1 Once the timber framing has been inspected by the architect, the infill panels are to be reinstated in accordance with Methodology 1.

3.7 Church Interior:

- 3.7.1 Allow to replaster 8 panels internally.
- 3.7.2 Allow to make repairs to the plasterwork of a further 3 panels
- 3.7.3 Plaster is to be Fat Lime Internal Plaster by Ty Mawr unless otherwise agreed. Thickness as existing. Application as per manufacturers instructions and number of coats to suit depth (allow 3).
- 3.7.4 The contractor is to allow for redecorating all areas of infill panels to the south aisle wall internally, using an agreed natural paint (to be confirmed as it will need to be able to over coat the existing emulsion).
- 3.7.5 The contractor is to allow for redecorating all areas of timberwork on the south aisle wall internally, using eggshell in agreed colours.
- 3.7.6 Upon completion of the decoration, the radiators are to be reinstated.
- 3.7.7 Once the radiators are reinstated, the pews should be returned and fixed back into position, with any potential damage made good to the floor.

3.8 External decoration:

- 3.8.1 The existing windows are to be painted in external eggshell paint in accordance with manufacturer's instructions. Colour to be confirmed.
- 3.8.2 The existing remaining (black) timbers are to have their thick gloss paint removed where reasonably possible – the method of removal is to be agreed with the architect (allow for application of a softener in accordance with the manufacturer's instructions – Paint-Rid by Stoneheath unless otherwise agreed). Allow for the frame to be assessed by the architect before recoating. All currently black painted areas are to be coated with Sikken's Cetol BL Opaque (in black colour) in accordance with the manufacturers instructions, together with the advised primers etc. It should be noted that the solvent based stain is considered more durable than the water based alternative, but it should not be used inside the church or where there is not adequate ventilation.

3.9 Upon completion:

- 3.9.1 Upon completion the contractor should remove all hoardings, internally and externally and make good any damage.
- 3.9.2 All debris should be removed both internally and externally, hand-picking any fragments if necessary from the flower bed or grass.
- 3.9.3 The affected area of grass should be raked over and reseeded.
- 3.9.4 The contractor should thoroughly clean all affected areas of the church.
- 3.9.5 The contractor must reinstate the covers of the lightning conductor tape and repaint them to match the adjacent timber.

3.10 Provision Sums and Additional Items

- 3.10.1 The contractor should state the cost to return in one year after the completion of the contract to repoint any joints opened up as the result of shrinkage / drying out of the new timber. Note: if it is envisaged that modern mastics are to be avoided it possible, with all pointing undertaken with lime mortar.

- 3.10.2 Provisional sums to be priced by contractor but not included within the works unless otherwise instructed:
 - 3.10.2.1 Replacing the bottom half of a post – fixing new timber with a scarf joint at the top.
 - 3.10.2.2 Replacing a further 2m length of the sole plate.
 - 3.10.2.3 Carefully dismantling a small brick infill panel (e.g. like B3c) and reinstating on completion of works with lime mortar.

4.0 Methodologies

4.1 Methodology 1 – Brickwork

- 4.1.1 All works must be carried out by a time-served bricklayer / mason with a high level of experience in working with historic buildings and lime mortar. The brickwork should be rebuilt to the original coursing pattern – English Garden Wall bond, with vertical joints neatly lining up with those below. Mortar joint sizes should be carefully replicated.
- 4.1.2 The dismantling of the historic masonry should be carried out with care by experienced bricklayers / masons to conserve the maximum number of sound units. Each brick is to be carefully cleaned during dismantling to remove any mortar, avoiding breaking off arrises during the process. Bricks should be stacked in order, labelled and protected from damage or theft.
- 4.1.3 No cleaning agents or fungicides are to be used either before or after repair works, except on the express authority of the Architect.
- 4.1.4 The use of angle grinders and other mechanised cutting tools are not permitted. The only possible exception to this will be to form a groove in a very hard horizontal cement filled joint in order to cut it out with a chisel. A fehn saw is preferred to an angle grinder in this instance. The Architect's approval must be given before using this method.
- 4.1.5 *Rebuilding:* Bricks should generally not be rotated from their original orientation – this should only happen when their condition is very good and there is not an alternative replacement. Unless agreed otherwise, bricks should go back to the panel they came from and reference should be made to the photographs taken to reinstate their original arrangement and bond.
- 4.1.6 Mortar for the reinstated brickwork is to be a hydraulic lime mix strictly without the use of cement or other additives. The anticipated mix is 1:3 (NHL3.5: sand). The required colour and texture will be achieved through careful selection of different sand types and will be agreed between the mason and architect.
- 4.1.7 The reinstated brickwork is to be flush with the face of the timber.

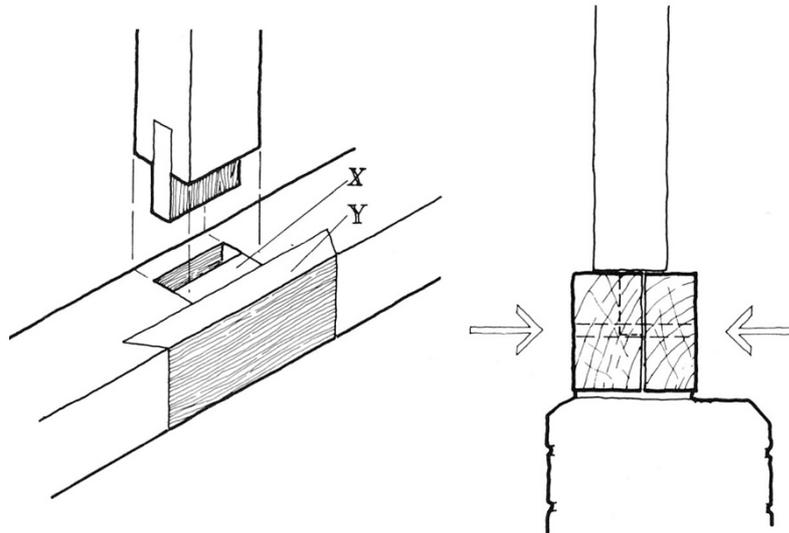
4.2 Methodology 2 – Pointing of Brick and Stonework:

- 4.2.1 All works must be carried out by a time-served bricklayer / mason with a high level of experience in working with historic buildings and lime mortar.
- 4.2.2 Samples of mortar mix and pointing should be prepared for architect's approval and retained on site as a control sample for the duration of the works. Again mortar for repointing is to be a hydraulic lime mix strictly without the use of cement or other additives. The anticipated mix is 1:3 (NHL3.5: sand). The required colour and texture will be achieved through careful selection of different sand types and will be agreed between the mason and architect. It is possible that different mixes will be needed for the brick and the stonework.
- 4.2.3 In preparation for re-pointing works, rake out all loose jointing material to a depth of not less than twice the joint width. All raking/cutting shall leave a clean, square face at the back of the joint.
- 4.2.4 The prepared face and joint should be carefully cleaned out with a bristle brush and thoroughly flushed out with clean water. All dust and loose material must be removed, working from top to bottom of the wall.
- 4.2.5 It is essential to thoroughly dampen the masonry before pointing commences. In dry conditions the wall may need to be wetted down two or three times. No water should be left lying within the prepared joints.

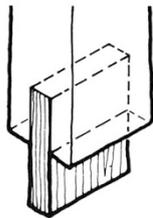
- 4.2.6 The mortar should be pushed into the joint and firmly ironed in with the maximum possible pressure and minimum over-working. Pointing irons should be used, not trowels. The pointing irons should be of a width which will fit into the joint and ensure full compaction is achieved throughout the depth of the joint each time mortar is placed rather than from the surface alone. The Contractor should be aware that it may be necessary to fabricate pointing irons to undertake the works.
- 4.2.7 Re-pointing work should begin at the uppermost section of the wall and proceed downwards, ensuring that all the mortar is pressed well into the joints to achieve good compaction. Fill all the joints solidly with the approved mortar mix finishing either flush or very slightly back from the masonry, in accordance with the approved sample.
- 4.2.8 The mortar should be left to take its initial set and then be worked over with a stiff bristle brush. This should counteract shrinkage and provide a suitable finish. The bristles should not be dragged across the face but tapped against it. Timing is critical. If this technique is applied too early the mortar will be removed too easily, if too late, it will be difficult to make the required impression. The timing will depend on the weather. The aim should be to produce a joint brushed back 1-2mm from the arriss of the bricks or stone.
- 4.2.9 Any slight fractures due to shrinkage must be cut and re-made.
- 4.2.10 In warm weather lime mortar should be protected from drying out too quickly with damp hessian. In cold weather lime mortar work should only be carried out when temperature is min. 5 degrees and rising. Protect overnight.

4.3 Methodology 3 – Timber Frame Repairs

- 4.3.1 All works must be carried out by a time-served joiner with a high level of experience in working with historic buildings and in particular timber framing.
- 4.3.2 For replacements exceeding 100 x 100mm in cross-section, 'seasoned' green oak should be used, having been felled for about 3 years. The timber should be straight-grained and free from sapwood or waney edges or shakes over 150mm in length. Large members should have the heartwood well-boxed and smaller sections must be free from heartwood.
- 4.3.3 The contractor should notify the architect of the intended supplier so that the choice of timber can be discussed. The use of salvaged / second hand timber will not be accepted.
- 4.3.4 Pegs and smaller repair sections should be made from kiln-dried oak to avoid shrinkage.
- 4.3.5 Resin or other similar repairs may be considered for some of the smaller repairs if a detailed proposal is provided by the contractor. They will only be used if it can be shown that they will considerably reduce the disruption to surrounding otherwise sound fabric. The use of resin repairs at pinned joints will be generally avoided as it would change the important nature of the timber frame being allowed to move through its lifetime.
- 4.3.6 Wherever possible, traditional pegged mortice and tenon joints are to be used. There will inevitably be instances where this is not possible without disrupting too many other sound areas. In these instances, an alternative method of fixing (e.g. concealed steel plate is to be agreed with CA).
- 4.3.7 Where possible all repairs are to be undertaken with traditional methods, however, where plates, screws or bolts are required, they must not be left visible and must be of stainless steel. Again, these are not to be used unless agreed/ specified by the architect.
- 4.3.8 Generally, shakes and old holes in the oak are to be left open.
- 4.3.9 Details for repairs (from SPAB Technical Pamphlet 12 – The Repair of Timber Frames and Roofs):



(Left) Detail A for a new full width sole plate when some posts will remain in situ– it will be slid into position horizontally, held in place with infill pieces – ‘X’ from the front and then ‘Y’ from above following the insertion of the post. (Right) Detail B – An alternative, simpler approach, with the new soleplate in 2 sections, bolted together,



Detail C – Slip tenon – to be used when the rest of the post is sound.