

MASONRY REMEDIAL & REPAIR WORKS TO BUILDINGS 2 & 7.

**Re-Development of Existing Commercial/Industrial
Storage Buildings**

at

**Roecrofts Farm
Ulmes Walton Lane
Ulmes Walton
Leyland
Lancashire.
PR26 8LT.**

On behalf of

Mr C. & R. Barlow.

1. Analysis of the Existing Masonry Walling.

- 1.1. The existing masonry external walling to Buildings 2 and 7, as indicated on drawing No. D410/P03, is to be repaired and remedial works carried out, primarily to ensure it is structurally sound and weather resistant.
- 1.2. The existing masonry walling has been visually assessed at this stage by the structural engineer, who has made the following comments:-
 - 1.2.(a). Generally –
 - 1.2.(a).i). With regard to the overall condition of the barn with a view to it being converted into domestic properties incorporating a new inner load bearing block leaf on a raft slab, the original external brickwork becomes effectively a shell of cladding, tied back to the new internal structure.
 - 1.2.(a).ii). Viewed like this, in general the barn walls appear to be suitable, but there are areas of exception.
 - 1.2.(b). South Facing Wall –
 - 1.2.(b).i). This elevation appears to be in good condition with no significant cracking or significant out of line or level.
 - 1.2.(c). West Facing Wall –
 - 1.2.(c).i). This single storey elevation appears to be in good condition with no significant cracking, out of line or level.
 - 1.2.(d). North Facing Wall –
 - 1.2.(d).i). This elevation can be divided into three panels, basically two lower sections at each side with a higher central panel.
 - 1.2.(d).ii). The two end sections appear to generally be in good condition with no significant cracking or out of line and level defects.
 - 1.2.(d).iii). The central panel appears to be the oldest part of the barn. It has three small doorways and two bulls eye windows towards the top as well as 9 diamond pattern vents. The brick arches over the three doors have dropped along with a triangle of brickwork directly above them. The lower, larger of the two bull's-eye openings appears to have been compressed slightly and the bricks above have dropped.
 - 1.2.(d).iv). Towards the rear there is also a section of brickwork that has dropped above the doorway for the full height of the wall.
 - 1.2.(d).v). The upper pike of this gable wall appears to lean in towards the ridge.
 - 1.2.(d).vi). In general, there is some vegetation growth on this wall and the older bricks have suffered from weathering
 - 1.2.(e). East Facing Wall –
 - 1.2.(e).i). The low level section closest to the road is much newer than the other parts. The wall appears to be in good condition.
 - 1.2.(e).ii). The older original section incorporating the main arched barn door opening appears to be in fairly good condition. The arch has dropped slightly on the right hand side and internally there is

- a vertical/diagonal crack 2 or 3m from the door indicative of some historical minor settlement.
- 1.2.(e).iii). The elevation appears to be fairly plumb and of reasonable level.
- 1.2.(f). Internally –
- 1.2.(f).i). There is a very severe vertical crack in one of the main front to rear cross walls towards the front where the new lower section has been added.
- 1.2.(f).ii). On the proposed plans this wall is due to be removed, so this is not of great concern, but any new load bearing walls/slabs in this area should have the ground investigated first to establish what the historical problem was and suitable measures put in place.
- 1.3. In general it is evident that the existing masonry walls are suitable and structurally sound in the most part, requiring only localised re-building and more significant repairs.
- 1.4. The majority of the external masonry walling requires only mere cosmetic remedial works.

2. Masonry Repairs & Remedial Work General Specifications.

- 2.1. The general external masonry repairs and remedial work specifications are as follows.
- 2.2. Raking out & Re-Pointing –
- 2.2.(a). In general the pointing of the brickwork has weathered and deteriorated to the extent that general re-pointing is required.
- 2.2.(b). The existing mortar pointing is relatively soft and therefore, raking out can be carried out with a hand pick, cleaning the existing mortar to a depth of approx. 20mm.
- 2.2.(c). The raked out joints are to be wetted prior to repointing.
- 2.2.(d). The joints are to be re-pointed with lime sand mortar in the mix quantities of 3 parts lime, 3 parts sand and one part cement.
- 2.2.(e). The joints are to be fully filled with the pointing compound and pointed flush with a finger pointing trowel.
- 2.2.(f). The pointing should then be allowed to cure for a short period before brushing with a soft bristle brush to remove any unwanted undulations and excess pointing.
- 2.2.(g). The resultant pointing should be flush with the brickwork.
- 2.3. Replacement Windows & Doors –
- 2.3.(a). The existing windows/doors to be replaced are to be carefully removed.
- 2.3.(b). The resultant structural openings are to be assessed and any making good to the existing masonry reveals carried out using salvaged bricks.
- 2.3.(c). The jambs are to be squared up suitable to receive the replacement window/door.
- 2.4. Replace a Door Opening with a Window –
- 2.4.(a). The existing door is to be carefully removed.

- 2.4.(b). The resultant structural openings are to be assessed and any making good to the existing masonry reveals carried out using salvaged bricks.
 - 2.4.(c). The jambs are to be squared up suitable to receive the replacement window.
 - 2.4.(d). The bottom of the door opening is to be built up in brickwork salvaged from the demolition and down takings, building up to at least dpc level, or several courses higher as indicated on the drawings
- 2.5. Replacement Lintels to Window & Door Heads –
- 2.5.(a). To all openings the existing lintel must be assessed on site; where the existing lintel is a timber lintel, or merely structurally insufficient the lintel must be replaced.
 - 2.5.(b). In this instance the masonry above the window head is to be propped using acrow props and strongboys, or needles as appropriate to support the masonry above.
 - 2.5.(c). The existing defective lintel is to be removed and suitably sized steel composite, pre-cast concrete or steel beams, as specified by the structural engineer, are to be built into the existing masonry as appropriate.
 - 2.5.(d). The gap between the new lintels and the existing masonry above to be built up, packed and wedged with slate packers, pointed with lime sand mortar and allowed to fully cure before removing the temporary propping.
 - 2.5.(e). Once fully cured the temporary propping should be removed and any gaps due to needles and/or strongboys to be made good.
- 2.6. Re-Building of Existing Brickwork Arches –
- 2.6.(a). The existing arched head details to the windows and doors are to be re-built where the lintels are replaced or where the existing masonry has dropped.
 - 2.6.(b). In this instance the masonry above the window head is to be propped using acrow props and strongboys, or needles as appropriate to support the masonry above.
 - 2.6.(c). The existing defective brickwork arch/lintel is to be removed and suitably sized steel composite, pre-cast concrete or steel beams, as specified by the structural engineer, are to be built into the existing masonry as appropriate.
 - 2.6.(d). The gap between the new lintels and the existing masonry above to be built up, packed and wedged with slate packers, pointed with lime sand mortar and allowed to fully cure before removing the temporary propping.
 - 2.6.(e). The brick arch is to be re-created using the bricks salvaged from the removal of the existing supplemented with additional salvaged bricks.
 - 2.6.(f). Once fully cured the temporary propping should be removed and any gaps due to needles and/or strongboys to be made good.
- 2.7. Crack Stitching to Internal Masonry –
- 2.7.(a). Any nominal cracking to the masonry internally and suitable for crack stitching as deemed appropriate by the structural engineer to have remedial works carried out as appropriate.
 - 2.7.(b). The crack stitching is to be carried out to the structural engineers design and detailing.
- 2.8. Replacement of Spalled Faces to Bricks –
- 2.8.(a). The general condition of the brickwork has deteriorated over time and the faces of a number of bricks have blown and spalled due to the weathering of the brickwork due to the recessed failing mortar.

- 2.8.(b). In this case the bricks are to be cut out and replaced; for areas of several bricks, the front face of the bricks only need be cut out and replaced with suitable bricks salvaged from the demolition of the internal walls of the building.
 - 2.8.(c). For individual isolated bricks these can be cut out and turned around, or replaced with salvaged bricks as appropriate.
 - 2.8.(d). The replacement bricks are to be bedded and pointed in lime sand mortar as specified above in the re-pointing section.
- 2.9. Taking Down and Re-Building of Defective Areas of Brickwork –
- 2.9.(a). Areas of the existing masonry that is defective, become weathered beyond superficial repairs, or that has bulged, dropped, or been subject to excessive movement/displacement must be carefully taken down to the minimum amount necessary.
 - 2.9.(b). Areas of masonry requiring replacement with masonry above will require the masonry above to be structurally supported; in this instance the masonry above is to be propped using acrow props and strongboys, or needles as appropriate.
 - 2.9.(c). The brickwork is to be re-built to a reasonable line and level to ensure structural integrity and strength using reclaimed bricks from the demolition of the interior walls of the building; the brickwork is to use lime sand mortar in the mix proportions as previously specified.
 - 2.9.(d). The gap between the new brickwork and the existing masonry above to be packed, wedged with slate packers and pointed with lime sand mortar and allowed to fully cure before removing the temporary propping.
 - 2.9.(e). Once fully cured the temporary propping should be removed and any gaps due to needles and/or strongboys to be made good.
- 2.10. New Damp Proof Course –
- 2.10.(a). A suitable silicone chemical damp proof injection course is to be installed to the existing masonry walls by a specialist contractor all in accordance with the manufacturer's instructions and recommendations.

3. Building No. 2.

- 3.1. The brickwork generally to Building 2 is in a relatively good condition and to a good line and level and hence, only limited repairs/remedial works are required.
- 3.2. The general repairs required to Building 2 are indicated on drawing No. D410/P15.
- 3.3. The brickwork generally requires raking out and re-pointing generally in accordance with the basic specification above.
- 3.4. The replacement windows and doors are to be assessed on site and any replacement windows/doors are to be carried out as the methodology above.
- 3.5. The window and door openings are to be assessed on site and any replacement lintels to be carried out as the methodology above.
- 3.6. Any spalled faces to the brickwork generally are to be replaced as the general guidance above.

- 3.7. There is an area of a number of spalled bricks and deteriorated brickwork as indicated on the drawing; this area to be replaced as the methodology above.
- 3.8. The building requires a chemical injection damp proof course as specified above.

4. Building No. 7.

- 4.1. The brickwork generally to Building 7 is in a relatively good condition, especially the East, West and South elevations, generally to a good line and level and hence, only limited repairs/remedial works are required.
- 4.2. The general repairs required to Building 7 are indicated on drawing No.'s D410/P16 and D410/P17.
- 4.3. The brickwork generally requires raking out and re-pointing generally in accordance with the basic specification above.
- 4.4. The replacement windows and doors are to be assessed on site and any replacement windows/doors are to be carried out as the methodology above.
- 4.5. The window and door openings are to be assessed on site and any replacement lintels to be carried out as the methodology above.
- 4.6. Any spalled faces to the brickwork generally are to be replaced as the general guidance above.
- 4.7. There is an area of a number of spalled bricks and deteriorated brickwork as indicated on the drawing; this area to be replaced as the methodology above.
- 4.8. The brick doorway arched heads have dropped to the North elevation and require re-building as per the general instructions above.
- 4.9. The bull's-eye windows to the North elevation have deformed and the brickwork requires re-building incorporating suitable bull's-eye lintels and damp proofing trays, generally in accordance with the above methodology.
- 4.10. The North elevation also contains some areas of the existing brickwork which is bulging and excessively out of line and level; these areas of masonry are to be carefully taken down and re-built in accordance with the previously mentioned methodology.
- 4.11. The building requires a chemical injection damp proof course as specified above.

5. Programme/Timescales.

- 5.1. The brickwork repairs and remedial works to Building 7 are likely to be carried out in the first phase of the development, being within several months of securing approval of the discharge of the pre-commencement planning conditions.

5.2. The repairs and remedial works to Building 2 are likely to be carried out in the later phases of the development; the dates of which are not known at this stage.

6. Generally.

- 6.1. The structural engineer will be employed to assess the structural aspects of the existing buildings to be retained and further assessment will be carried out on site following the removal of the roof as well as further invasive investigations allowing the visual assessment of the masonry structure in greater detail.
- 6.2. The existing masonry structure will be tied back to the proposed new structural concrete block external walls supported off the new structural concrete floor slab, as well as the structural bracing of the new internal solid concrete block internal/party walls and structural floors/roof members, and hence, structural stability and integrity will be improved with the new internal structure.