STRUCTURAL APPRAISAL
OF
DALTON COTTAGE
EGTON BRIDGE, WHITBY
NORTH YORKSHIRE
FOR
MR O FOSTER

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1.0 BRIEF:-

This report has been prepared on the verbal instruction of Mr O Foster.

The property, Dalton Cottage, is a Listed Building which has fallen into disrepair following a landslide during the 1970s. Our client, Mr Foster, intends to renovate the building. This report is required by the Local Authority in order to support the planning application to restore the building.

The object of this report, therefore, is:-

- To assess the extent of any visible damage
- If possible, to advise on the probable cause of any damage.
- To advise appropriate remedial measures or further action.

This report is a structural appraisal of the current status of the building and is NOT a full specification for carrying out any remedial works.

We have not inspected the woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are, therefore, unable to report that any such part of the property is free from defect.

Dimensions noted in this report are rough visual estimates for identification purposes only. No actual measurements have been taken at the site.

2.0 INTRODUCTION:-

The property is a detached former dwelling situated in the village of Egton Bridge near Whitby, North Yorkshire.

The age of the property is not known, but we anticipate that it is well in excess of 200 years.

2.1 Grid Reference:-

The Ordnance Survey grid reference is NZ 803 / 050.

2.2 Date of Visit:-

The property was visited for the purpose of this report on the 10th May 2011.

2.3 Weather:-

The weather was mild and dry. Following a very cold and damp winter, the last three months have been quite mild and dry locally.

2.4 Topography:-

The site is situated in an elevated location on the north facing slopes of the Esk Valley in Egton Bridge. Approximately 100 metres above sea level and 15 km from the North East coast.

Generally the land slopes steeply down towards the North. We understand that there was a significant landslip in the 1970s which led to the building becoming uninhabitable.

There is a significant amount of relatively new vegetation close to and in some cases on the building. In recent years some quite large trees have been able to establish themselves immediately adjacent to the building.

We would describe the site as being reasonably exposed to inclement weather.

2.5 Geology:-

The British Geological Survey one inch series sheet 43 indicates that the subsoil should comprise Alum Shale beds of the Upper Lias series and that the site may be close to or on a Basalt intrusion (Whin Dyke).

At this stage no subsoil investigations have been carried out.

3.0 GENERAL:-

3.1 Type of Building:-

The property comprises a detached stone dwelling of 'L' shaped plan with 2 small outbuildings to the south east. Walls are typically 450mm thick coursed solid sandstone. The pitched roof is a traditional timber purlin and rafter construction covered with slate.

3.2 Overall Stability:-

Overall stability is provided by the external masonry walls and also the internal masonry walls.

Walls and openings are of normal traditional proportions.

3.3 Alterations:-

The original building appears reasonably unaltered. A lean-to extension on the east gable may be of similar age to the main dwelling. The two outbuildings appear to be more recent construction. One is quite old and appears to be a mixture of stone and brick masonry, the other appears to be relatively recent and has rendered masonry walls.

4.0 OBSERVATIONS:-

Damage assessment has where possible been made in accordance with Building Research Establishment digest No.251 (BRE 251), "Assessment of damage to low-rise buildings". The digest has six categories '0' (negligible) to '5' (very severe).

4.1 External:-

4.1.1 East Elevation (gable adjacent access track)

At the South East corner is a small, relatively recent outbuilding. Construction appears to be rendered masonry against an original stone wall. The corrugated sheet roof together with supporting elements has collapsed a long time ago.

There is an old stone lean-to to the gable of the main dwelling. Some slates are loose or missing. Guttering is missing. An old doorway has been blocked-up a very long time ago. Masonry for this small unit appears in reasonable condition.

There is a large amount of ivy/creeper growth up the Southern verge of the roof and completely covering the chimney.

There is comparably little evidence of significant structural movement to this particular gable wall of the main building.

4.1.2 North Elevation

The main part of the dwelling appears to be on the right hand side facing West and the left side appears to be an original rear extension (probably built at the same time or exceedingly soon after the original house.

The slate covered roof appears slightly bowed. Much of the guttering is missing.

To the East there are two window openings, one to each floor. They have stone lintels and sills. Over this eastern side there are two main crack lines. One vertically from ground level to eaves on the East side of the window, varies between 200mm at ground level to approximately 30mm at eaves level. There is also up to 400mm of lateral displacement of the wall across this crack. At mid-height, adjacent to the Eastern gable, there is a diagonal crack approximately 50mm wide.

Centrally in this part of the building there is a vertical crack approximately 30mm wide. Below this a further vertical crack.

There has been some very significant lateral movement of this wall.

Where the eaves meets the gable verge of the Western half of this wall, (i.e. approximately centrally), there is a good deal of vegetation growth. There are

some vertical cracks below this point, which could be attributed to water/weathering.

Centrally in the gable wall of the right hand (western) half of this elevation there is soot staining and a vertical crack. We would attribute this damage to deterioration of the main flue from heat, sulphates and general weathering/deterioration.

Damage to this elevation as a whole can be separated into two areas. The Eastern half of the wall has clearly suffered some very significant lateral displacement, (up to 400mm), and is beyond reasonable repair. Relatively, the Western half, (gable to original dwelling), appears to be in much better condition and the damage is quite repairable.

In accordance with BRE 251 we would classify the visible evidence of damage on the western half of this elevation as category 3 (moderate) for which the digest remarks "*...these cracks require some opening up and can be patched by a mason. ...Repointing of external brickwork and possibly a small amount of masonry to be replaced...*".

In accordance with BRE 251 we would classify the visible evidence of damage on the eastern elevation as category 5 (very severe) for which the digest remarks "*...This requires a major repair job involving partial or complete re-building...Beams lose bearing, walls lean badly and require shoring.... Danger of instability...*".

4.1.3 West Elevation

This appears to be the main original frontage of the dwelling.

Considering the amount of obvious damage generally, the roof ridgeline appears remarkably level.

On the Northern side there is a series of vertical cracks, which extend from ground level to eaves. At mid-height and eaves level these cracks are typically 50mm wide. There is an old rainwater down-pipe at this corner. Damage does suggest that there could have been some slight settlement of the North gable. This damage has probably been significantly amplified by weathering and general deterioration of the building.

Centrally there is a failed stone lintel over the entrance door. A crack then extends from this lintel up to eaves level. The crack is typically 15mm wide at door level, tapering to zero at eaves level.

To the South around the windows, there are some predominantly vertical cracks. Typically 10mm wide at ground level and 30mm at eaves level.

Although the cracks on this elevation are significant, overall the wall visually appears reasonably level and plumb. Mindful of the listed status of the building, we believe that damage on this elevation is repairable.

In accordance with BRE 251 we would classify the visible evidence of damage on this elevation as category 3 (moderate) for which the digest remarks are as noted earlier.

4.1.4 South Gable

Visually this wall appears reasonably level and plumb.

Approximately 1 metre from the base of the wall a small, stone, retaining wall is collapsing.

4.1.5 South Elevation (general uphill side of property)

There is a small, mono-pitched, store/outbuilding, comprising a mixture of stone and brick construction. The mono-pitch roof is missing entirely.

On the rear wall, (East facing), of the main dwelling, a great deal of mortar jointing has deteriorated due to weathering/water action etc. This has probably been aggravated in the past by the close proximity of some large trees.

The lintel over the rear entrance door has failed and much of the masonry immediately above has collapsed. This in turn has led to localised collapse of the valley area of the roof. Generally there also appears to have been some lateral movement Northwards of this wall.

On the South facing section of the wall there is a 75mm wide vertical crack, accompanied by lateral displacement.

In accordance with BRE 251 we would classify the visible evidence of damage on the east facing wall of the main house as category 3, the south facing wall of the rear extension as category 5.

4.2 Internal:-

The building is most certainly unsafe to enter. Therefore, a full internal inspection was not possible.

Ground floors appear to vary between timber and solid. Some internal partitions are collapsing. Floorboards at the top of the stairs are missing and the first floor was, therefore, not accessed at all.

5.0 CONCLUSIONS:-

A land-slip a long time ago (1970s) has caused significant damage to the property generally. The landslip occurred a long time ago and appears to have been a predominantly a surface flow movement probably brought about by extensive moisture (eg flooding following heavy rain). Although there is evidence of very serious movements to the building general we did not feel there was a serious foundation problem, provided appropriate measures to restore stability to the uphill slope are carried out.

Much of the damage to the Western half of the building can be attributed to long-term neglect and deterioration of the building structure.

The western half of the main building has a significant number of serious structural cracks. Bearing in mind the Listed status of the property and noting the stocky proportions of the solid wall construction we believe that the western half of the property is repairable.

The eastern half of the building has suffered badly. There are very large cracks accompanied by large lateral displacements. The amount of past movement is such that this half of the building is no longer stable. This section of the building needs to be rebuilt.

6.0 RECOMMENDATIONS:-

Urgent matters are defects considered by RAA Ltd to represent actual or developing threat to structural stability of part or all of the building. Urgent matters should be remedied as soon as possible.

Significant matters are those which, while not necessarily posing an immediate threat to the fabric of the building or personal safety, could if left unattended for any significant time progress to an urgent matter.

6.1 Urgent matters

- Carefully demolish and rebuild eastern half of building.

6.2 Significant matters

- Demolish and excavate 2m wide strip behind existing retaining wall. Install land drain leading to small ditch to west of property and backfill to wall with granular material.

- New low-level retaining wall to Southern side of building. Construct new retaining wall on reinforced concrete foundations to engineers' later design to whole length adjacent south side of property (effectively to replace existing collapsed masonry wall).

- Install land drains to uphill slopes of property for a minimum extent of approx 30 metres. Establish new planting trees and shrubs to this area.

- Install land drains to downhill slopes directly to north of property. Establish new vegetation.

- Repairs to existing structural cracking.
  Cut out horizontal bed in masonry 50 mm deep. Apply approx 10mm bead of epoxy resin to back of saw-cut. Fix 6 mm diameter stainless steel 'helifix' resin anchor bars 1000mm long or similar approved. Apply second bead of resin to cover helical bar. Repoint with gauged mortar to match existing.
  North gable (15no. – 6 near eaves, 9 centrally)
  West elevation – (approx 21no. alternate courses across cracks throughout)
  South & east elevation (allow possible 15no.)

  Final details may vary slightly depending on materials found on site

- Replace stone lintel over door in West elevation.

6.3 General & maintenance issues

- Demolish 2 no. small outbuildings to rear of property.

- Remove ivy/creeper growth from the building entirely. Remove other large shrubs/trees from within 3 metres of buildings. (All of these are recent, self-seeded vegetation).

- New flashings/rainwater goods throughout.

- New flue liner to North & south gables of western half of building.

Signed for
Richard Agar Associates Limited

Eur Ing RICHARD AGAR
BSc(Hons) MSc CEng MIStructE MICE MCS MCIArb FConsE
Chartered Structural Engineer
Chartered Civil Engineer
Director.