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DEVELOPMENT SERVICES
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STRUCTURAL REPORT

PROPOSED OFFICES AT THE ELMS, MAIN STREET, NAILSTONE, WARWICKSHIRE, CV13 0LB.

MKC/SKC/2009/1996
4TH JANUARY 2010

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Our ref:- MKC/SKC/2009/1996 4th January 2010

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1.0 INTRODUCTION & BRIEF

This report was made at the request of Mr. & Mrs. P. Riley of Kirby Pro Seal Limited, the owners for the above property in respect to check the major structural elements for the proposed office use, from a existing cowshed.

The Elms, Main Street, Nailstone is situated approximately 14 miles North-West of the Leicester. It is a traditional brick barn construction with timber king post trusses and having a part slate and part tiled roofs. The rear section of the building is a two storey building and having a corrugated roof sheeting.

The brief for the report was that the external walls and the proposed major structural elements are satisfactory for the Office usage.

2.0 SURVEY

The survey was carried out on the 16th December 2009 and consisted of a visual inspection of the defects noted in the brief.

The references to the left and right are given in the report as being viewed from the front of the property.

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

3.0 FINDINGS

Our findings of the main structural defects
(Refer to Photographs attached in the Appendix)

1) There is cracking to the brickwork to the rear window arch opening to the left hand side elevation wall. Also, the brickwork is distorted above.

2) The rear end gable wall brickwork is slightly distorted and lacks in bedding mortar. Also, there is slight vertical stepped cracking to the rear left hand side of the wall. There are signs of recent repairs to parts of the wall where the perished brickwork has been replaced.

3) There is vertical cracking to the left hand side elevation wall where the two storey section meets the single storey section.

4) In places, the roof tiles and the slates appear to be missing.

5) The first floor timber beams to the rear section are sagging and in places there is horizontal cracking along the beams.

6) In places, the roof purlins are rotted, particularly where the roof tiles/slates are missing and the water ingress has rotted the timbers. Also, the roof rafters to some of the exposed areas appear to suffer from wet rot.

7) The timber beam supporting the brick wall and roof support where the two storey section meets the single storey section is sagging considerably.

8) Part of the timber flooring to the rear two storey section appears to suffer from rot.

9) The timber wall plates to the main roofs are not secured to the external walls.

10) The gable walls and stepped walls are not restrained at the roof rafter level.

11) In general, there is lack of mortar to the external elevations and gable walls.

12) The roof gutters to some areas are defective.

4.0 DISCUSSION

As it can be seen from the findings in section 3, the property has suffered defects to some of the main structural elements which are probably due to lack of maintenance over a period of time. Some of the roof coverings are missing in several places which has caused the water to penetrate to timber purlins, rafters etc,. Therefore, the damaged parts, of the roof purlins, rafters & battens shall have to be replaced with similar to match existing. The main king post roof trusses should be timber treated particularly at the end bearings. We would suggest that a thorough the timber survey be carried out of all the major structural items mentioned above and be treated, repaired or replaced to match existing.

Some of the timber beams which are supporting the gable walls particularly where the two storey section abuts the single storey section would need to be replaced with appropriate steel beams.

The remaining defects listed above appear to be due to local deficiencies in the structure and do not affect the overall stability of the building. In most cases, it will be necessary to break out and replace the defective element, but in situ repairs may be possible in some instances. The recommended remedial works for each specific defect are given in the recommendations below.

5.0 CONCLUSIONS

a) The present damage to this property is Moderate or Severe (Category 4-5 on the Building Research Establishment Classification of the building damage.)

b) The defects have been due to age and lack of maintenance over a period of time.

c) There is a risk that the building could become unstable in medium to long term if no action is taken.

d) The remedial works listed in the recommendations should ensure a long-term life without major structural problems, providing the property is kept in a reasonable state of repair.

6.0 RECOMMENDATIONS

The following recommendations are based on the limited survey work described in the introduction. It should be remembered that further structural defects could be uncovered during improvement works, in which case additional remedial works may be necessary.

6.1.1 The front and the rear gable walls should be strapped to the roof rafters with 30mm x 5mm galvanised mild steel straps extending over a minimum of 3 joists screwed to each joists. These straps should be turned up at least 150mm and be fixed to the wall with at least two secure fixings per strap. These straps should be placed at maximum 1200mm centres and noggins should be installed in between the joists at the straps positions.

6.1.2 Provide 30mm x 5mm x 1200mm galvanised mild steel straps to the rear wall corners secured firmly to the brickwork.

6.1.3 Carry out timber decay survey to the existing roof trusses, purlins and rafters. Also for replacing timber rafters, purlins and timber laths as find necessary to match existing., .

6.1.4 Provide steel beams supports to the rear wall supports where the two storey section meets the single storey section.

6.1.5 Rebuild part area of brickwork above window opening to the rear left hand elevation.

6.1.6 Repair and replace all perished brickwork to match existing.

6.1.7 To all internal cracks, rake out existing bedding mortar and repoint. The 30x5mm galvanised straps, 300mm long to be stitched and secured to areas of the crack at a maximum of 200mm c/c and exmet or metal lathing approximately 300mm wide to be placed in the brickwork prior to replastering to match existing.

6.1.8 To all external cracks, rake out existing mortar to a minimum depth of 20mm and repoint in 1:1:6 mortar or similar to match existing.

6.1.9 Allow for replacement roof coverings to match existing.

6.1.10 Replace damage rainwater pipes and guttering to match existing.

6.1.11 Repoint the front boundary wall to match existing.

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APPENDIX
THE ELMS, MAIN STREET, NAILSTONE, WARWICKSHIRE



NOTE THE CRACKING AND DISTORTED BRICKWORK TO REAR WINDOW OPENING



NOTE THE REAR ELEVATION GABLE WALL



NOTE THE VERTICAL CRACKING TO WHERE STEP IN BUILDINGS TAKES PLACE



NOTE THE PURLIN ROTTING WHERE ROOF COVERING MISSING



NOTE THE PURLIN SAGGING AND CRACKED AT THE END



NOTE THE TIMBER BEAM SUPPORTING BRICK WALL ABOVE



NOTE THE GABLE WALLS WHERE THE STEPS IN BUILDINGS TAKES PLACE



NOTE THE CONDITION OF THE ROOFS



NOTE THE BOUNDARY WALL TO THE FRONT