



Stephen Bacon Design

Structural Engineering Excellence

Client



Project

18222

Structural report for re-use of building

Site Address

Monkomb Farm

East Claydon

Bucks

MK18 2LF

April 2018

29 Upper Queen Street, Rushden, Northamptonshire. NN10 0BT
Telephone: 01933 386759 Web: www.sbacondesign.co.uk Email: mail@sbacondesign.co.uk

Registered in England and Wales No 5800901 VAT Registration No 909 2720 24
© Stephen Bacon Design Ltd 2018

INDEX

Preface	Page 2
1.0 Introduction	Page 3
2.0 Brief Description of Property	Page 3
3.0 Investigations	Page 4
4.0 Findings	
4.1 Existing building	Page 5
4.2 Proposed change of use to storage building	Page 6
5.0 Conclusions and Recommendations	Page 7

PREFACE

- a) This report has been prepared for the specific purpose stated.

- b) This report has been prepared for the exclusive use of:-

Lyntonross Ltd
The Old Dairy
42a Main Road
Drayton Parslow
Buckinghamshire
MK17 0JS

- c) This report is issued exclusively to the persons stated above on the express understanding that Stephen Bacon Design Ltd will not be held responsible for the actions of others who place any reliance on any part of the findings, be they stated or implied.

1.0 INTRODUCTION

In the grounds of Monkomb Farm in East Claydon is an agricultural storage building. It is proposed to change this building into a residential building.

This will require some minor modifications to the building fabric and Stephen Bacon Design have been appointed to assess the feasibility and structural implications of this proposed change of use.

This report will be used to accompany a planning application which is to be submitted to the Local Planning Authority.

The property was visited on Friday 12 January 2018 to carry out a survey of the structure. Mr Barrie Norman of Lyntonross Ltd and Mr Marc Friend of Friend Associates were both present during the survey. Mr Norman also provided some information regarding the history of the building.

2.0 BRIEF DESCRIPTION OF PROPERTY

Barn D is located on land within the grounds of Monkomb Farm. It is a precast concrete framed structure with a steel framed mezzanine structure contained within the building envelope.

Barn D is approximately 17.8m long x 6.7m wide and 6.7m high to the ridge line.

The building is open sided to one of the long elevations with the remaining elevations clad with metal sheets supported by steel angle section sheeting rails. The roof of the building is clad with cement fibre corrugated sheet supported by precast concrete purlins.

It is unknown when the building was originally constructed, although it is thought likely that the building dates from the 1960's. The building is currently used as an agricultural machine storage building.

3.0 INVESTIGATIONS

The following survey and investigations were carried out:-

- An external survey of the property
- An internal survey of the property.

This survey was limited to items relating to the structural condition of the building. We did not carry out an inspection of building services (gas, water, electricity) and make no comment on the suitability of the services installed to adequately service the building.

No intrusive investigations were carried out and we have not inspected any parts of the structure which are covered, unexposed or inaccessible.

4.0 FINDINGS

From the above investigations, the following was observed.

4.1 EXISTING BUILDING

- The roof is formed from cement fibre corrugated sheets which are supported by precast concrete purlins.
- These purlins span between precast concrete portal frames which are positioned at equal centres along the length of the building.
- A close inspection of the precast concrete columns revealed evidence of minor spalling damage in several locations.
- In all cases the spalling was limited to small localised areas of the columns and exposed reinforcement was only found in one location.
- No evidence of spalling was found to either the portal rafters or purlins.

- Within the building envelope was a steel framed mezzanine structure.
- This comprises of 203x133x25 UB floor beams and 152x152x23 UC columns. Localised excavations revealed the presence of mass concrete foundations supporting each of the columns.
- Preliminary calculations have been carried out, which determine that the steel framed mezzanine would be suitable to support residential imposed loadings.
- A concrete ground bearing floor slab was found to extend over the full footprint of the building.

- No evidence of structural distress was found in the building. Columns were not found to be out of plumb and the structure is performing to an adequate standard for its current use.

- No evidence of water ingress was found in the roof of the building, suggesting that the roof cladding is performing adequately.

4.2 PROPOSED CHANGE OF USE FROM STORAGE BUILDING TO RESIDENTIAL DWELLING

- In order to change the building from its' present use as an agricultural machine storage building to a residential dwelling, it is proposed to carry out the following works.
- Construct timber framed walls to all sides of building which will be connected to the existing precast concrete columns.
- These will serve to both insulate and clad the structure with the additional benefit of providing both longitudinal and transverse stability to the overall building.
- It is proposed to reclad the roof with an insulated roofing system, details of which are not currently available.
- In addition to the above, some minor structural repairs will be required to the building.
- The small localised areas of concrete columns which show signs of spalling, will need to be repaired.
- It is proposed to use an epoxy resin system to carry out repairs. This will bond to the concrete columns and will prevent any further deterioration of either the concrete or reinforcement.

5.0 CONCLUSIONS AND RECOMMENDATIONS

From the above findings, we are of the considered opinion that:-

- The existing building is performing well, after many years of useful service.
- There is no evidence of significant distress within the structure of the building and only minor, localised repairs are required to the concrete frame.
- In order to change the building use from agricultural machine storage use to a residential dwelling it is proposed to both insulate and clad the structure. This will be entirely a cosmetic exercise requiring no modifications to the existing structural frames, nor will it result in an increase in the external dimensions of the building
- As part of the recladding works, some new windows and doors will be introduced into the building elevations. These will be positioned to avoid modifying the structural frame of the building in any way.
- Major structural elements of the building will be retained in their existing form.