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STRUCTURAL INSPECTION OF STEEL PORTAL FRAMED BARN AT FURNACE FARM, FURNACE LANE, NEWENT



ENGINEERING INNOVATION

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Project Summary

Visual Structural Inspection of steel portal framed barn for Class Q Planning application

Client Details

Date	December 2021
Client	Mr T. Martin
Property Address	Barn at Furnace Farm, Furnace Lane, Newent, Gloucestershire GL18 1DD
Shire Ref number (our ref)	S-21-574
Report prepared by	Richard Hartshorne – 07976 691472

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1. Introduction

- 1.1. Shire were appointed by Mr Martin to carry out a visual structural inspection of a steel portal framed barn at Furnace Farm, Furnace Lane, Newent for the purpose of submitting a Class Q Planning Application to convert the building to a dwellinghouse.
- 1.2. The barn is located on the West edge of the site adjacent to open fields.
- 1.3. The barn is a single storey steel portal framed building with a corrugated asbestos cement roof and walls which are a combination of single leaf blockwork with timber boarding and profiled steel cladding. The building is a triple span frame with a duopitch roof.
- 1.4. Any areas of the structure that were obscured or hidden from view at the time of the inspection have not been commented upon and we are therefore unable to confirm if these areas are free of defects or otherwise.
- 1.5. The visual inspection was carried out on Wednesday 15th December 2021 and the weather at the time of the inspection was overcast but dry.



Property Location



Location of Barn

2. External Inspection

- 2.1. The North gable elevation of the building contains the primary access doors to the barn. There are three sets of doors and the remainder of the elevation is a combination of steel cladding and blockwork walling. All structural elements are in good condition



- 2.2. The East elevation of the barn is of single leaf blockwork construction at low level with Yorkshire boarding over. All elements are in good condition.



- 2.3. The South gable elevation is a mixture of corrugated steel cladding and low-level blockwork walling. The elevation also contains access doors to the raised external slab. This area has an in-situ concrete retaining wall. All elements are in a satisfactory condition, with no defects noted.



- 2.4. The West elevation is of low-level single skin blockwork walling with Yorkshire boarding over. All elements are in good condition.



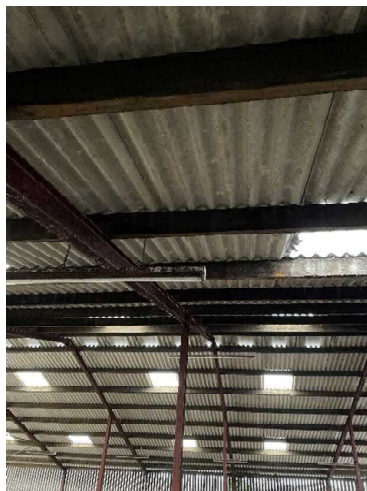
- 2.5. The roof of the building is clad in corrugated asbestos cement cladding. The cladding is in good condition structurally and can be retained in the conversion.

3. Internal Inspection

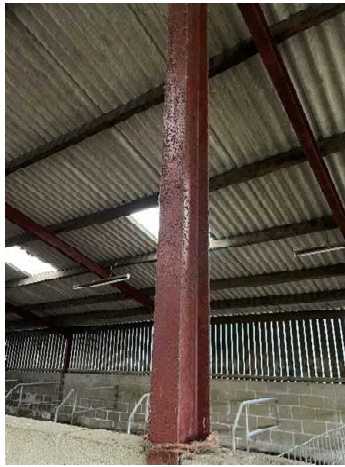
- 3.1. There is a floor slab throughout the building and off this has been built some raised milking bays and low-level dividing walls. The floor slab is in good condition and is suitable to be overlain with insulation and screed. The raised sections of slab will need to be removed.



- 3.2. The timber purlins and side rails, steel rafters and columns are all in a good structural condition and are suitable to be retained and reused in the conversion.



- 3.3. The masonry wall panels are all in an acceptable structural condition with no defects noted.
- 3.4. The primary steel frame has a light surface corrosion and will require painting as part of the conversion.



- 3.5. The bottom of some of the primary columns have corroded and have been repaired at some stage. The repairs are working satisfactorily.





4. Outline schedule of structural works to convert the building

The following outline schedule of works has been compiled to give a general overview of the work and principles required to convert the existing steel framed barn into a two-storey dwelling house as part of a Class Q Planning Application conversion.

4.1 Building Works to convert the existing building into residential accommodation will include the following: The existing roof cladding will be retained and insulated as necessary, the purlins, primary steel frame, floor slabs and blockwork walling will all be retained and re-used and will not require modification. Within the existing building footprint, a new insulated timber studwork wall lining will be constructed, and the concrete floor will be overlain with a damp proof membrane, insulation, and screed.

4.2 The proposed works will require the following

4.2.1 The floor slab will need to be cleaned suitable to receive a damp proof membrane and insulation.

4.2.2 The steel frame will require fire protection to any two storey elements.

4.2.3 The steel frame will need repainting throughout.

4.2.4 A new perimeter insulated inner wall will be constructed in timber studwork to comply with Building Regulations Parts A and L.

4.2.5 New windows and doors as required and permitted under Class Q, will require new lintols to be inserted into the external walls.

4.2.6 Install new wall and ceiling non-structural partitions to form internal rooms within the space.

4.2.7 The new first floor will be built off the existing ground floor slab.



5. Conclusions & Recommendations

- 5.1. The primary structure of the barn is suitable to be retained in the conversion to domestic living accommodation.
- 5.2. The building requires no structural changes and as noted above, in compliance with Q1(i)(i) and Q1(i)(ii), the extent of the works is only as reasonably necessary for the building to function as a dwellinghouse.

Signed



Richard Hartshorne BSc(Hons) CEng MStructE MICE