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Dear Mark

Manor Farm, Stainborough Lane, Hood Green, Barnsley S75 3HA

Following my visit to site on 25 August 2020 I have pleasure in presenting my report.

#### Background

You have asked that I make an inspection of two redundant agricultural buildings to advise on their structural integrity in connection with proposals to convert to a dwellinghouse.

#### The Buildings

The buildings form part of a group of interconnected agricultural buildings and are identified on your drawing ref 20.05/OS2. For the purpose of this report I will refer to them as Buildings A and B.

Building A runs approximately in a north-south direction, being part of a two bay barn, the eastern bay of which is to be removed. Building B runs approximately east-west across, and is connected to, the southern end of Building A.

#### Limitations of the inspection

My inspection was undertaken viewing solely from ground level and, in the absence of artificial lighting, in relatively poor lighting conditions.

#### Building description

Building A is a pre-cast concrete portal framed agricultural shed, 5 bays in length. Each bay is approximately 4.6m long with a portal frame span of 7.3m, a height to eaves of about 3.3m and to ridge about 5m.

Portal columns are 250 mm x 150 mm in cross section, connecting at the top to the haunched concrete rafter by a moment-resisting bolted joint. There is a pinned joint at the ridge with a face-fixed steel strap connecting opposing rafters. The internal legs of the frames support the portal frame rafters of the eastern adjoining shed which is to be removed.

The western and northern sides of the building are enclosed by blockwork to a height of approximately 2m with corrugated sheeting above. The roof is covered by corrugated sheeting supported on precast concrete purlins, of varying depth, spanning between the portal frames.

Building B is also a pre-cast concrete portal framed shed, of 4 bays in length east to west, generally approximately 4.6m each in length except for the western end bay of 6m length. Portal

frame span is about 9m with a height to eaves of approximately 4.8m and to ridge about 6.7m. The southern side of the shed is largely open, abutting a lean-to steel framed shed which is to be removed. East and west sides are enclosed by blockwork part-height with corrugated sheeting above. Portal columns are again 250 mm x 150 mm in cross section.

### Survey comments

#### 1. Building A

It is to be noted that the rafters of the adjoining eastern shed, which is to be demolished, are connected to the central portal legs by bolts passing through to the western bays. It will be important therefore to maintain the stability of the western portal frames when these bolts are removed in order to dismantle the eastern frames and are subsequently replaced in some form.

A visual inspection was made of the structural elements of Building A. No significant sign of defects in the pre-cast concrete was evident, albeit there was an absence of good natural light and there was a significant degree of fine debris and cobwebs etc, particularly at high level on the rafters. However, no significant cracks or rust stains were observed. Judging from the surface of the concrete elements the concrete appeared to be of reasonably good quality. Line and level of the structure appeared reasonably true.

#### 2. Building B

A visual inspection of the structural elements was made. Again, no significant defects were apparent, although naturally with the rafters being in excess of 5m above ground close inspection could not be made. However, no evidence of significant rust staining was apparent and no significant cracks were observed. Again, concrete surfaces were in places obscured by fine debris and cobwebs.

Minor defects were observed including an apparent slight inclination inwards of the south western-most corner portal frame column, of perhaps 75mm over the full height. As this end gable is infilled tightly with blockwork between the columns it might be assumed that the defect dates from the time of erection. Otherwise, line and level appeared reasonably true. Additionally, one of the pre-cast sheeting rails on the southern side is fractured. This is likely to have resulted from impact and in any event the rail is a minor structural element, to be removed when the new enclosing walls are constructed.

### Summary

It is proposed that the buildings, two agricultural barns, are subjected to change of use to a dwelling. The buildings are pre-cast reinforced concrete portal framed structures.

Care should be taken in the removal of the redundant eastern shed adjoining Building A as the connecting bolts are part of the Building A framework.

Insofar as agricultural buildings tend to be designed to slightly lower factors of safety than residential buildings, it is expected that the frameworks can be retained without the need for re-construction and will be more than adequately augmented by the introduction of the new first floor, infill panel walls and internal partitions.

The structural condition from visual inspection appears to be satisfactory such that the buildings can be used as a basis for supporting the proposed conversion.

Should you require any further advice I should be pleased to assist.

Yours sincerely

M J Yates  
Chartered Structural Engineer