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STRUCTURAL ENGINEERS REPORT

Norwood Farm Cow Barn

For Dyson Farming



3416 – Norwood Farm Cow Barn
27th September 2022

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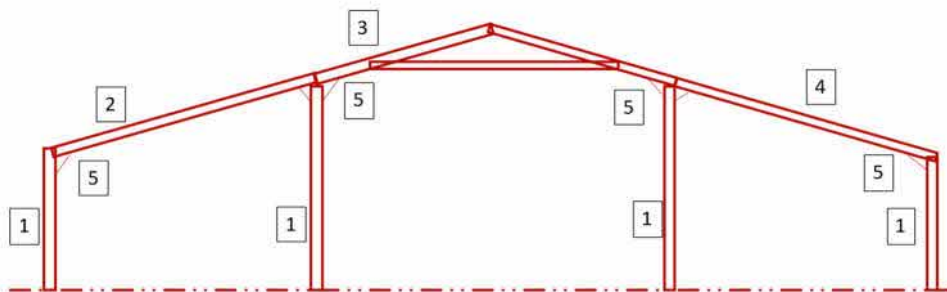
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1 INTRODUCTION

On the instructions of Nick Lowe of Llewelyn Harker Lowe, E and M West have carried out an inspection of the Cow Barn at Norwood Farm, Norton St Phillip with reference to re-using existing structure as residential properties.

2 DESCRIPTION

The building is a single storey structure consisting of a three bay portal frame with precast concrete columns and timber/steel rafters and timber purlins/plan bracing. The building is open at either end.

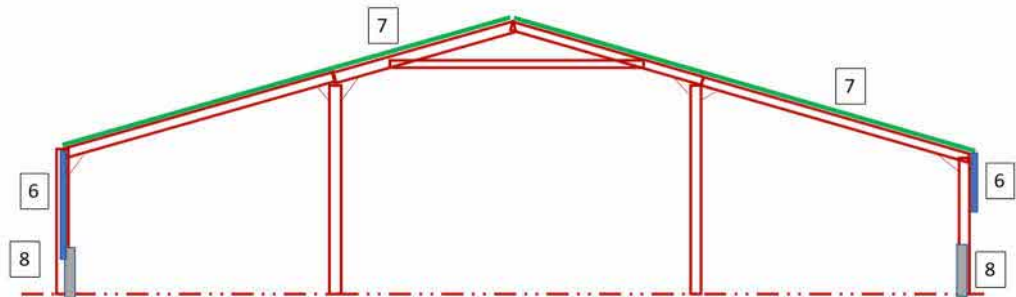


- 1 Precast Concrete Columns
- 2 Timber rafter
- 3 Timber tied truss
- 4 Steel beam
- 5 Steel Haunches





The longitudinal elevations have a low precast concrete/blockwork load at ground level and timber boarding, full height on one side and part height on the other, with cement particle boarding roofing. (This should be checked by a specialist to confirm whether any asbestos is present)



- 6 Timber boarding
- 7 Cement board roofing
- 8 Concrete/Blockwork wall





There are some internal walls at one end of the building.



3 OBSERVATIONS

The building is in generally good condition with no obvious signs of distress, excessive deflections or decay.

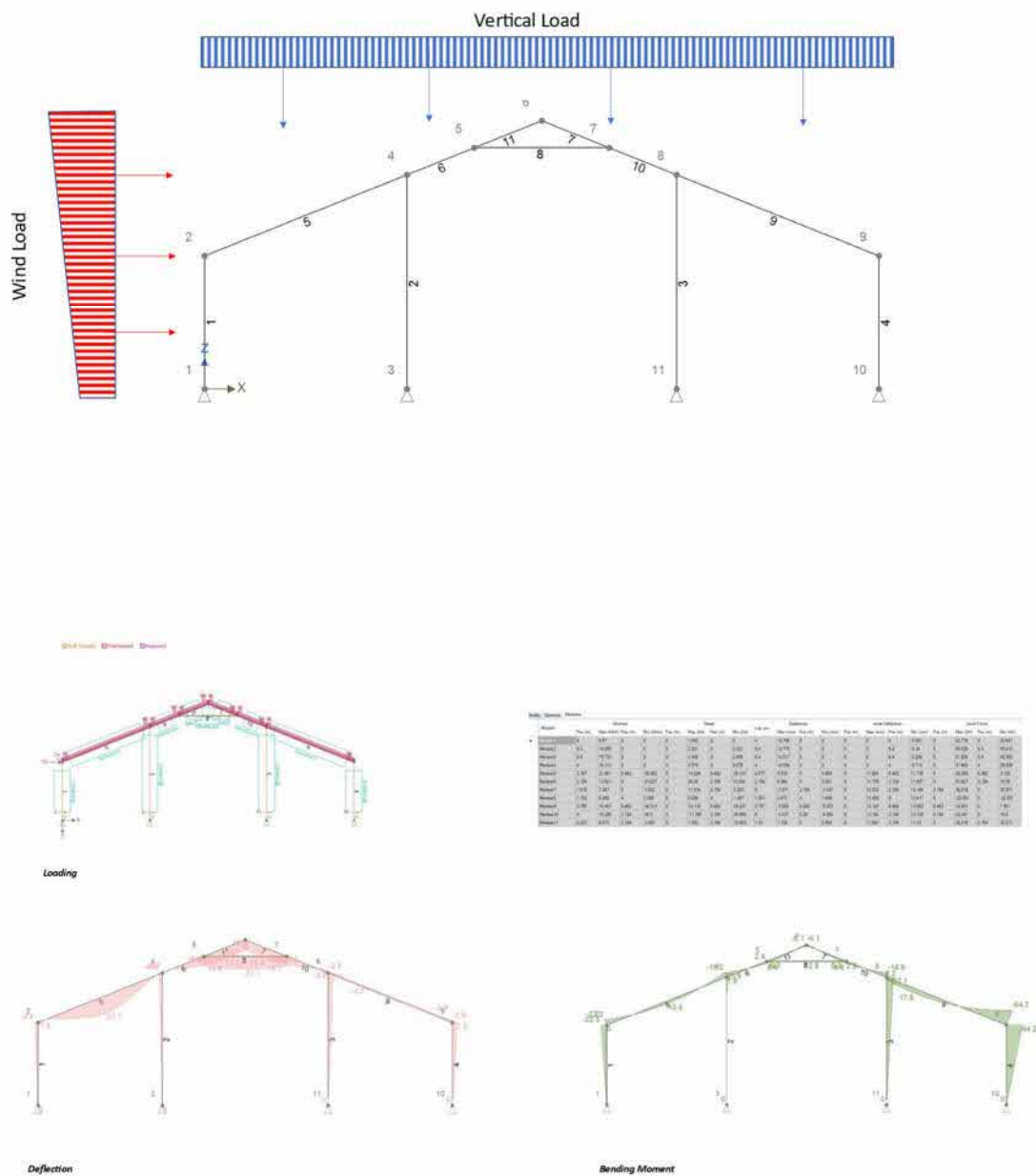
Although there is some chipping to the flanges of the precast concrete columns, there are no signs of rusting or spalling of concrete



4 ASSESSMENT

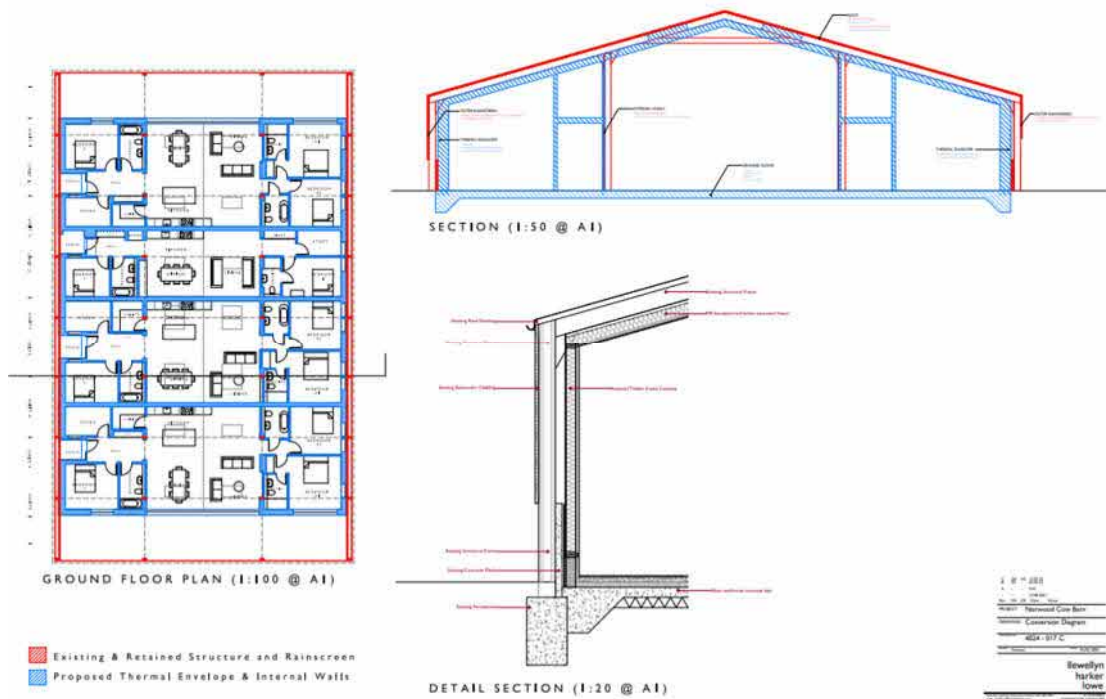
The building acts as a portal frame relying on the stiffness of the connections to the columns to the main rafters to provide lateral stability. The concrete columns have steel haunches connecting the rafters to provide the necessary stiffness. The relative stiffness of the steel rafters compared with the timber rafters/truss means that this bay is providing the majority of the lateral stability.

An initial analysis has been carried out under vertical and lateral load for comparative stiffnesses shows the greater forces in the steel rafter bay and greater deflections in the timber rafter bays. Although a full rigorous analysis will be required under the detailed design, the moments and deflections appear to be acceptable.



Under the proposed conversion of the building to residential use, the purpose of the existing frame will be to provide a sealed envelope against the elements, resisting the vertical and horizontal loads. Independent internal walls and floors will be ground bearing and self-supporting so as not to place additional load on the existing frame.

As the barn is currently partially open, the uplift on the roof from wind loads will actually reduce when the façade is fully enclosed. As present the open façades mean that the roof acts like a “wing” so the governing design case is uplift rather gravity loading.



5 SUMMARY AND CONCLUSION

The building is in generally good condition with no signs of any major defects.

In forming the new envelope to the proposed residential units, the frame will continue to carry the same, or reduced loads compared with its current loading.

Therefore, we conclude that the frame is structurally suitable for re-use as part of the proposed residential re-development.



R Reynolds for



DISCLAIMERS

1. This report does not constitute a full survey of the premises.
2. Except where specifically indicated in the report, woodwork, brickwork or other parts of the property or its services, which are covered, unexposed, or inaccessible, have not been inspected and this report does not constitute any warranty that any such parts of the property are free from defects.
3. This report is prepared for the use of the person, firm or company to whom it is addressed (and that of any other person, firm or company whose interest was disclosed to us prior to its preparation) and no responsibility is accepted by us to any other party whatsoever for the whole or any part of its contents.
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