

BYRNELOOBY



Client Name: Mr Nick Knight

Old Stables, Medhurst Farm, Pootings Road,
Kent, TN8 6SF

Structural Survey Report

Report No. J9194 R 001

11 February 2021

Revision 02

Document Control

Document: Structural Survey Report.

Project: Old Stables, Medhurst Farm, Pootings Road, Kent, TN8 6SF

Client: Client Name: Mr Nick Knight

Report Number: J9194 R 001

File Origin: G:\Jobs\J\J9194 - Barn Conversion Structural Report\5 BL Reports\03 001 Structural Report 210111\J9194 R001.02 Structural Survey Report.docx

Document Checking:

Revision	Revision/ Review Date	Details of Issue	Authorised		
			Prepared By	Checked By	Approved By
02	11 February 2021	Issued for information	Derek Crous MSc CEng MIStructE	Richard Thiemann MA CEng MICE MIStructE MCIHT	Richard Thiemann MA CEng MICE MIStructE MCIHT
01	03 February 2021	Issued for information	Derek Crous MSc CEng MIStructE	Richard Thiemann MA CEng MICE MIStructE MCIHT	Richard Thiemann MA CEng MICE MIStructE MCIHT
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1 Introduction

ByrneLooby were asked by Mr Nick Knight to carry out a structural survey of the Old Stables building at Medhurst Farm.

It is intended to submit a planning application for the proposed conversion of this building for residential use. A structural survey report is required to accompany the application. The purpose of the report is to consider whether the existing building is capable of conversion without major re-construction.

ByrneLooby visited the property on 15th January 2021 to carry out a visual inspection. We viewed the Old Stables from all safe vantage points externally and internally. Apart from two trial pits, no intrusive investigations were carried out as most of the structure was readily visible.

The following report has been prepared in accordance with the scope of the ByrneLooby appointment with our Client, for their confidential and exclusive use. ByrneLooby accept no responsibility of any nature or kind whatsoever (whether for negligence or otherwise) to any Third Party who may consider or rely upon it.

The following report should be read in conjunction with the sketches and photographs included in the Appendices.

2 The Site and Geology

The Old Stables building is located at Medhurst Farm in the livestock field immediately North of Pootings Road, with the building set back approximately 10m from the road. (Refer to Location Plan on sketch J9194 SK100 in Appendix A).

The building is on relatively level land, although the field slopes gently down from the North West towards the South East.

The British Geological Survey Map of Great Britain indicates that the site is located in an area underlain by bedrock of The Weald Clay formation, comprising Clay and Mudstone.

Soil samples taken from the trial pit excavations comprised a soft, saturated, brown, silty Clay, which appear to be weathered upper layers of the Weald Clay. The results of two trial pit investigations are shown on sketches J9194 SK101 & SK107 and on photographs P14 & P15. As is typical for agricultural buildings of this age, the building's existing foundations comprise shallow brick corbels.

There is a single mature Oak tree (approx. 0.8m girth, 18m tall) located on the Southern site boundary approximately 10m from the building. There is also a group of mature deciduous trees located on the Eastern site boundary approximately 40m from the building.

There is a field ditch located approximately 65m North of the building which we understand collects storm water and then flows towards a stream which runs along the Eastern boundary of the site. This stream is approximately 40m from the building and flows Southwards.

The Environment Agency's Flood map for Planning indicates the site to be located in Flood Zone 1 (Low Probability) which is in a zone where there is less than 1:1000 annual probability of flooding by rivers or the sea. However, the ground around the Old Stables building was very wet and saturated, it seems with rainwater perched and puddled above the impervious Clay. Standing water level in the trial pits was only just below ground level.

3 History

We are uncertain as to the precise history of the Old Stables building, but we are informed it was constructed in the early 20th Century.

Although originally used as a stable, the building appears to now be generally unused, apart from for some storage of agricultural items.

4 Existing Building Arrangement, Structure and Fabric

The existing structural arrangement of the Old Stables building is shown on sketches J9194 SK101 to SK106 included in Appendix A, and is set out briefly below.

The building structure is of traditional timber frame construction, with an overall plan footprint of approximately 10.7m x 3.8m. It is generally a single height space with a duo-pitch roof with gable ends, with a height of approximately 1.9m at eaves and 3.8m at ridge.

The timber frame comprises four bays with end frames at the North West and South East ends, and with three internal timber cross walls. The timber end frames and cross walls are structural in that they support the roof purlins and provide a measure of stability against side sway. The building is closed on three sides except for the South West elevation which has two open bays and two bays with timber doors. There is a partial mezzanine deck in the South Eastern most bay.

Generally, the building construction comprises timber sole plates seated on brick sleeper walls. The soles plates support main timber posts located approximately at the corners of the bays, which in turn support timber eaves plates and door lintels. The external wall frames and the cross walls frames are infilled with timber panels comprising timber studs with integral diagonal bracing members.

Above the eaves plate, the roof structure comprises purlins at mid pitch spanning between the end walls and cross walls, supporting common rafters spanning up the pitches between eaves plate and ridge board. There are diagonal roof braces located in the plane of the sheeting rails. There are some intermittent collars tying between the purlins. Above the South Eastern most bay there is a basic truss structure that provides intermediate support to the purlins, and the truss's bottom boom also provides support for the joists of the mezzanine deck.

Externally the building's walls are clad with horizontal timber (ship lap) boarding nailed to the wall posts and studs. The building's roof is covered with light gauge corrugated galvanised metal sheeting supported by timber sheeting rails at edge, third height and ridge locations.

The ground floor of the building appears to comprise of ground bearing red brick paving in the North Western most bay, black brick cobbles in the adjacent bay and concrete oversite in the remaining two bays.

There is evidence in the form of remaining metal brackets that the building's roof once had eaves gutters, but these are no longer present.

5 Structural Defects

There are a number of structural defects that one would expect for an agricultural building of this type and age. The condition of the existing structure is generally good from eaves plate level and above, but much less so below, particularly towards the lower half of the walls. The main structural defects are noted and discussed further below, *and remedial recommendations are made:*

The mortar in the brick sleeper walls and brick corbelled footings is soft and extensively washed out. This is due to lack of DPC and the walls being in contact with the saturated ground. *The foundation, and sleeper walls would need to be replaced/upgraded as part of any proposed conversion works from agricultural to residential use.*

The internal ground floor surfaces are generally cold and saturated. This is due to lack of DPM and the paving being in direct contact with the saturated ground. *The ground floor would need to be replaced with a suspended or insulated floor as part of any proposed conversion works from agricultural to residential use.*

The timber sole plate generally saturated and is extensively decayed with signs of wet rot and insect attack. This is due to lack of DPC and the sole plate being in close proximity with the saturated ground. *The timber sole plate would need to be replaced as part of any proposed conversion works from agricultural to residential use.*

The main timber wall posts are generally damp near their bases and are extensively decayed with signs of wet rot and insect attack. This is due to posts being in direct contact with the damp sole plates. At the South East corner of the building the main timber post is missing. *The main timber wall posts timber would need to be repaired or replaced as part of any proposed conversion works from agricultural to residential use.*

The timber infill wall panels studs and braces are generally damp near their bases and are extensively decayed with signs of wet rot and insect attack. This is due to panels being in direct contact with the damp sole plates. *The timber wall infill panels would need to be repaired or replaced as part of any proposed conversion works from agricultural to residential use.*

The external horizontal timber ship lap wall cladding is extensively damaged and missing. This is probably due to a combination of age, nail corrosion, impact damage and wind damage. *The timber cladding would need to be fully repaired or replaced as part of any proposed conversion works from agricultural to residential use.*

6 Conversion Proposals – Structural Considerations

The conversion proposals are shown on Planning Presentation drawing A/03 included in Appendix A.

The proposals are to create a single storey one bedroomed residential unit within the volume of the existing building. The unit will contain an entrance lobby, a combined open plan living/dining/kitchen area, one double bedroom and a separate bathroom.

Landscaping improvement works are proposed in the area immediately around the building.

The proposals include a number of altered/new openings on the front and rear elevations, as follows:

Front (South West) elevation – New entrance lobby door opening and one window to living area and one window to bedroom. All previous openings to be infilled.

Rear (North East) elevation – New door and window to living area. New window to bathroom. New window to bedroom.

The end elevations remain unaltered.

Internally, new accommodation has been proposed so that two cross walls are primarily retained. One existing cross wall will be removed to create the living/dining/kitchen area.

The proposals include new external wall cladding and a new tiled roof covering.

The proposals appear to be well considered and sympathetic to the setting in this rural location. The proposals attempt to retain the agricultural character of the building and contain the new residential accommodation within the footprint existing building.

From our observations and findings, it is our opinion that the conversion proposals are all structurally feasible.

The conversion works will however need to be carefully planned and detailed to bring the building to an improved condition acceptable for residential use and to comply with current Building Regulations.

The structural alterations required will include:

Provision of new concrete strip foundations and brickwork sleeper walls. The new foundations will need to be to a depth to comply with NHBC guidelines for building near trees. Due to the close proximity of the existing Oak tree, the new foundations will need to be 2.0 to 2.5m deep. (Alternatively, a shallower stiff reinforced concrete raft foundation could be considered).

Provision of a new suspended ground floor structure, such as a concrete beam and block floor.

Removal of one existing cross wall, and strengthening of this cross wall head plate to act as a beam to support the purlins above.

Repairs/replacement of the lower sections of the external walls (see defects Section 5 above), to include creation of the proposed door and window openings. The new external walls will need to be insulated to meet current Building Regulations.

Building Regulations will require a new insulated "warm" roof covering that will increase the loads on the roof members. Strengthening of the existing purlins (with flitch plates) will be required to support the heavier roof insulation and tiles.

Consideration should be given to adding ply sheathing to the outside of the external walls and the top surface of the existing rafters to assist with overall lateral stability of the converted building.

Allowance should be made for some minor repairs to the upper structure, and some discreet strengthening of timber connections, the need for which might become apparent during the works when the frame is stripped.

Structural information provided in this report can be used to carry out a detailed appraisal of the existing structural members to support any new loads imposed by the conversion works.

A number of existing structural defects have been noted in Section 5 above, *and recommendations have been made for remedial works to be carried out during the conversion works.*

Insertions of the new foundations and a new ground floor structure, and repairs to the external walls, will require propping-up of the retained upper structure and roof during the works. This will require specially a designed temporary support scaffold, fully braced and supporting the underside of the existing eaves plates.

New building services will be required for the residential use. These should be planned and installed so as to be sympathetic to the existing structure that is to be retained. Rainwater from the roof should be positively drained away from the building. A new private foul water drainage system will be required for the kitchen and bathrooms, to be drained to a septic tank or similar.

Consideration should be given to provision of new land drains around the perimeter of the new building site prevent saturation of the ground.

7 Conclusions

This existing Old Stables building is now mainly unused except for some storage.

The conversion proposals appear to be well considered and sympathetic to the setting in this rural location. The proposals attempt to retain the agricultural character of the building and contain the new conversion within the volume of the original building.

From our observations and findings, it is our opinion that the conversion proposals are all structurally feasible.

The conversion works will however need to be carefully planned and detailed to bring the building to an improved condition acceptable for residential use and to comply with current Building Regulations.

Structural considerations to be taken into account in the design of the conversion works are set out in Section 6. Structural information provided in Section 4 of this report can be used to carry out a detailed appraisal of the existing structural members and to inform the conversion design.

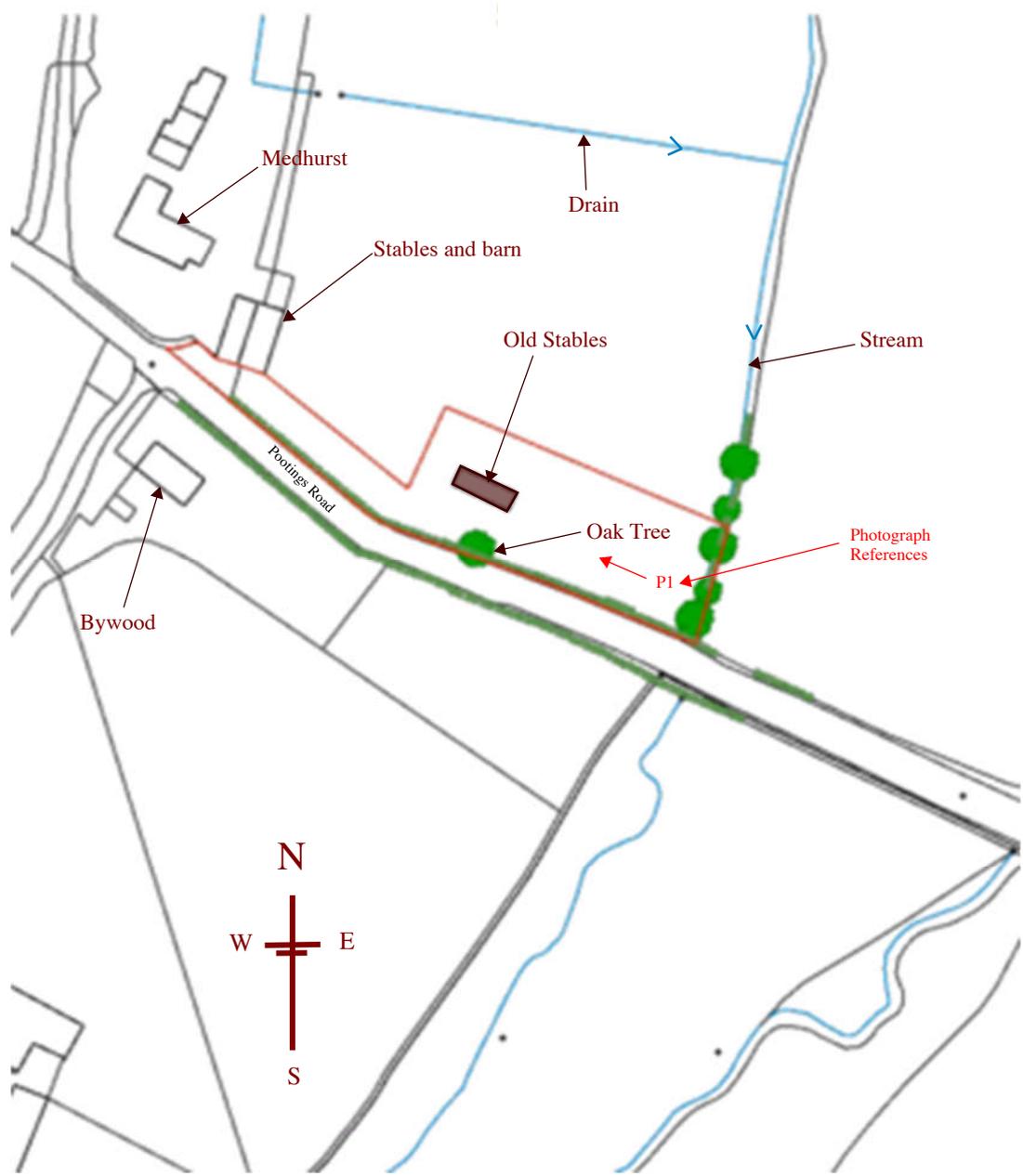
As is typical with agricultural buildings of this age and type, a certain amount of structural repair and upgrading will be necessary. Defects requiring attention are set out in Section 5.

Appendix A – List of ByrneLooby Sketches Enclosed With Report

J9194 – SK100	Location Plan
J9194 – SK101	Ground Floor Plan
J9194 – SK102	Mezzanine Plan
J9194 – SK103	Roof Plan
J9194 – SK104	South East and Part North East Elevations
J9194 – SK105	Typical Roof Cross Section
J9194 – SK106	Elevation on Roof Truss
J9194 – SK107	Trial Pits TP1 and TP2
Planning presentation drawing A/03 – Proposed Plans and Elevations	

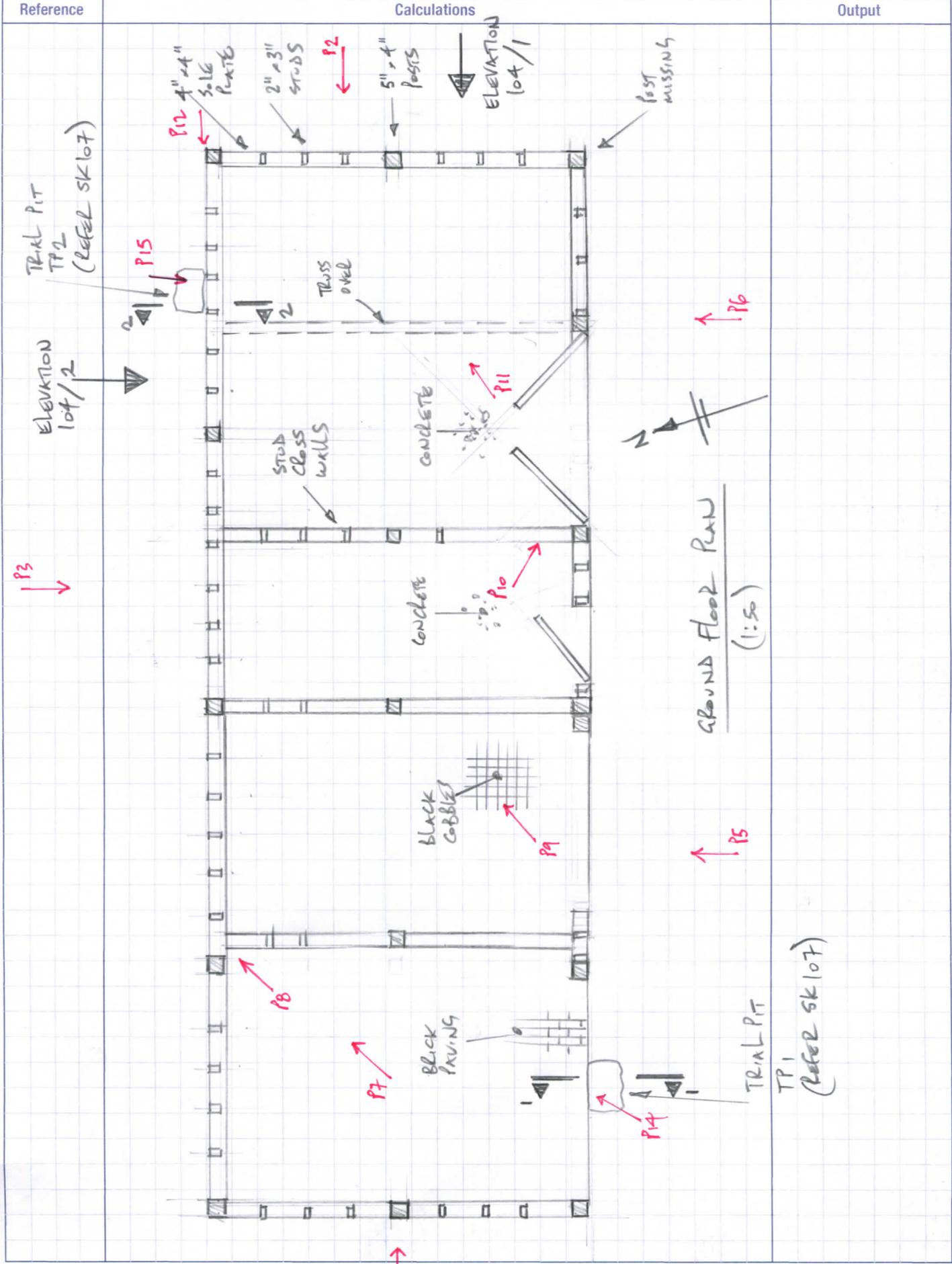
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		Pootings Road, Kent, TN8 6SF	Made By	DLC	Date	28/1/2021
Document Number	Calc Title	Old Stables	Chkd By	DCR	Date	2/2/2021
		Location Plan	Sheet No	J9194_SK100	Rev	01

References	Calculations	Output
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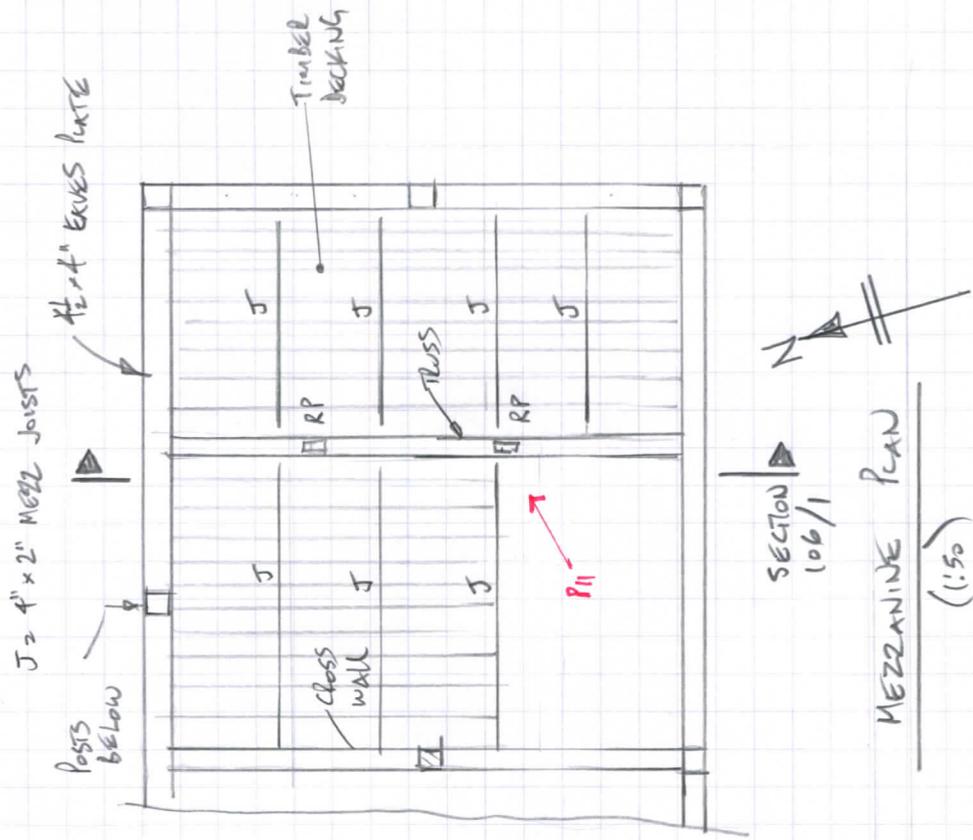
LOCATION PLAN

Project	MEDHURST FARM	Job No.	J9194
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	OLD STABLES	Chkd by	DLG
Calc. Title	GROUND FLOOR PLAN	Sheet No.	J9194_SK101
		Date	28/1/2021
		Rev	2-2-21
			01



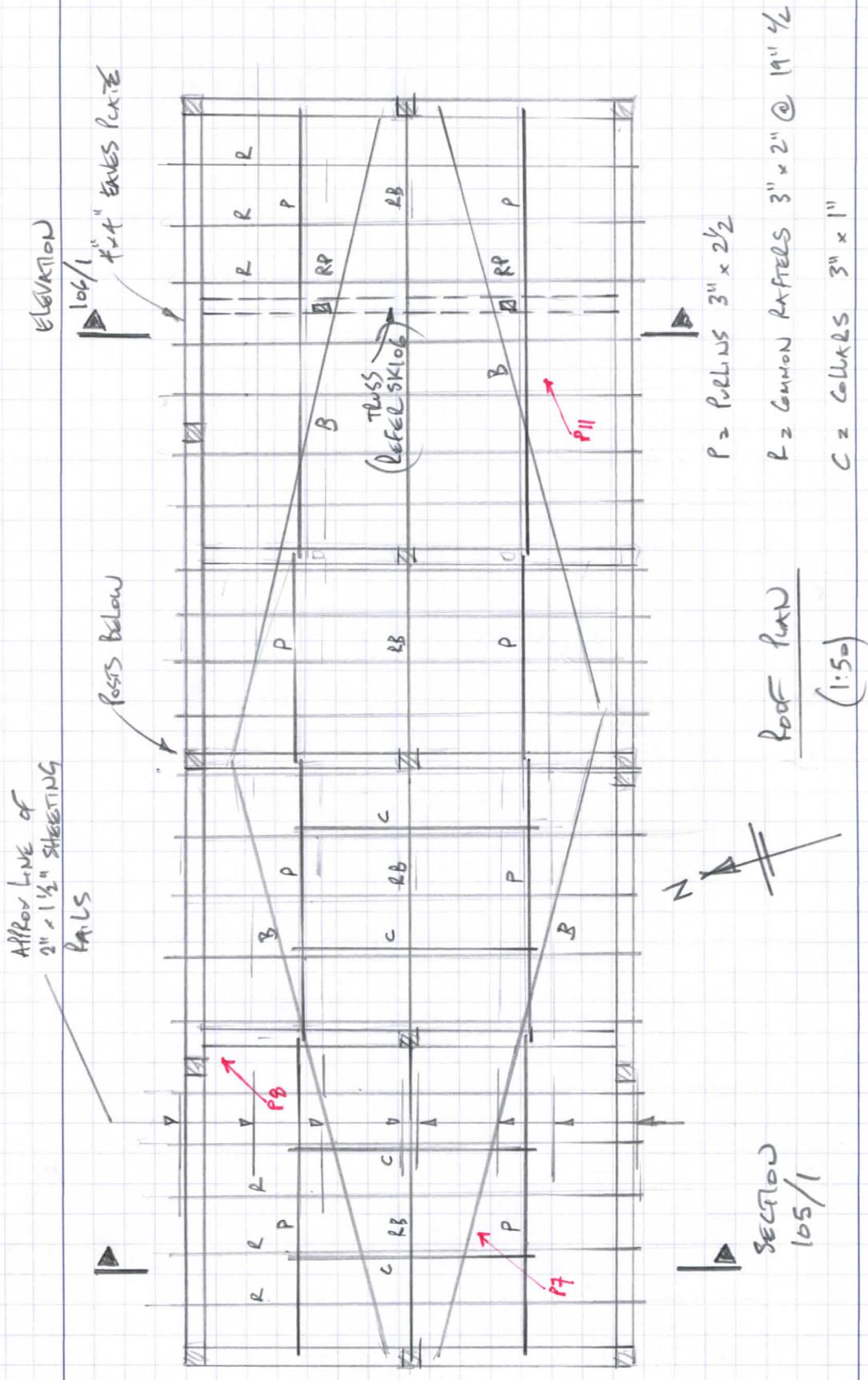
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	POUNDS ROAD, TNB 6SF	Made By	JCL
Calc. Title	OLD STABLES	Chkd by	JCL
	MEZZANINE PLAN	Sheet No.	J9194_SK102
		Date	20/1/2021
		Date	2-2-21
		Rev	01

Reference	Calculations	Output
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Project	MEDHURST FARM	Job No.	J9194
	ROOFING ROAD, TN8 6SF	Made By	OLL
	Calc. Title	Chkd by	D CR
	OLD STABLES	Sheet No.	J9194_SK103
	Roof Plan	Date	1/2/2021
		Date	2-2-21
		Rev	01

Reference	Calculations	Output
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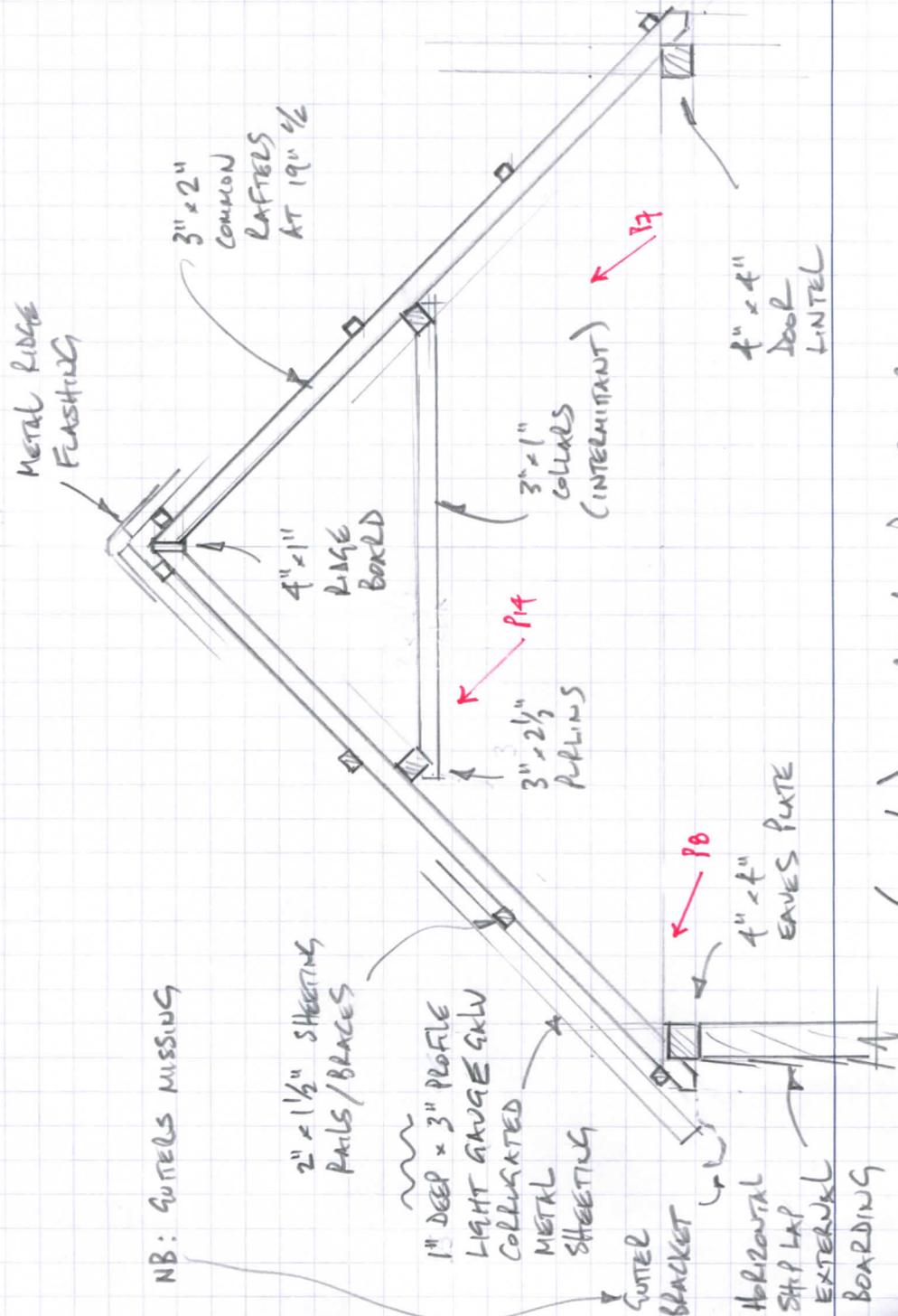


Project	MEDHURST FARM	Job No.	J9194	Date	1/2/2021
	POOTINGS ROAD, TNB 6SF	Made By	DLC		
Calc. Title	OLD STABLES	Chkd by	DCL	Date	2-2-21
	EXTERNAL ELEVATIONS	Sheet No.	J9194-SK104	Rev	01

Reference	Calculations	Output
<p>NOTE: HORIZONTAL EXTERNAL BOARD CLADDING GENERALLY MISSING AT LOWER HALF OF ELEVATION</p>		<p>(104/2) TYPICAL REAR FRAME (PART NORTH EXST ELEV DRAWN) SEE P3</p> <p>(104/1) TYPICAL END FRAME (SOUTH EAST ELEVATION DRAWN) (1:50) SEE P2</p>

Project	MEDHURST FARM	Job No.	J9194
	FOOTINGS ROAD, TNB 6SF	Made By	DLG
Calc. Title	OLD STABLES	Chkd by	D CL
	ROOF CROSS SECTION	Sheet No.	J9194 - SK105
		Date	1/2/2021
		Date	2-2-21
		Rev	01

Reference	Calculations	Output
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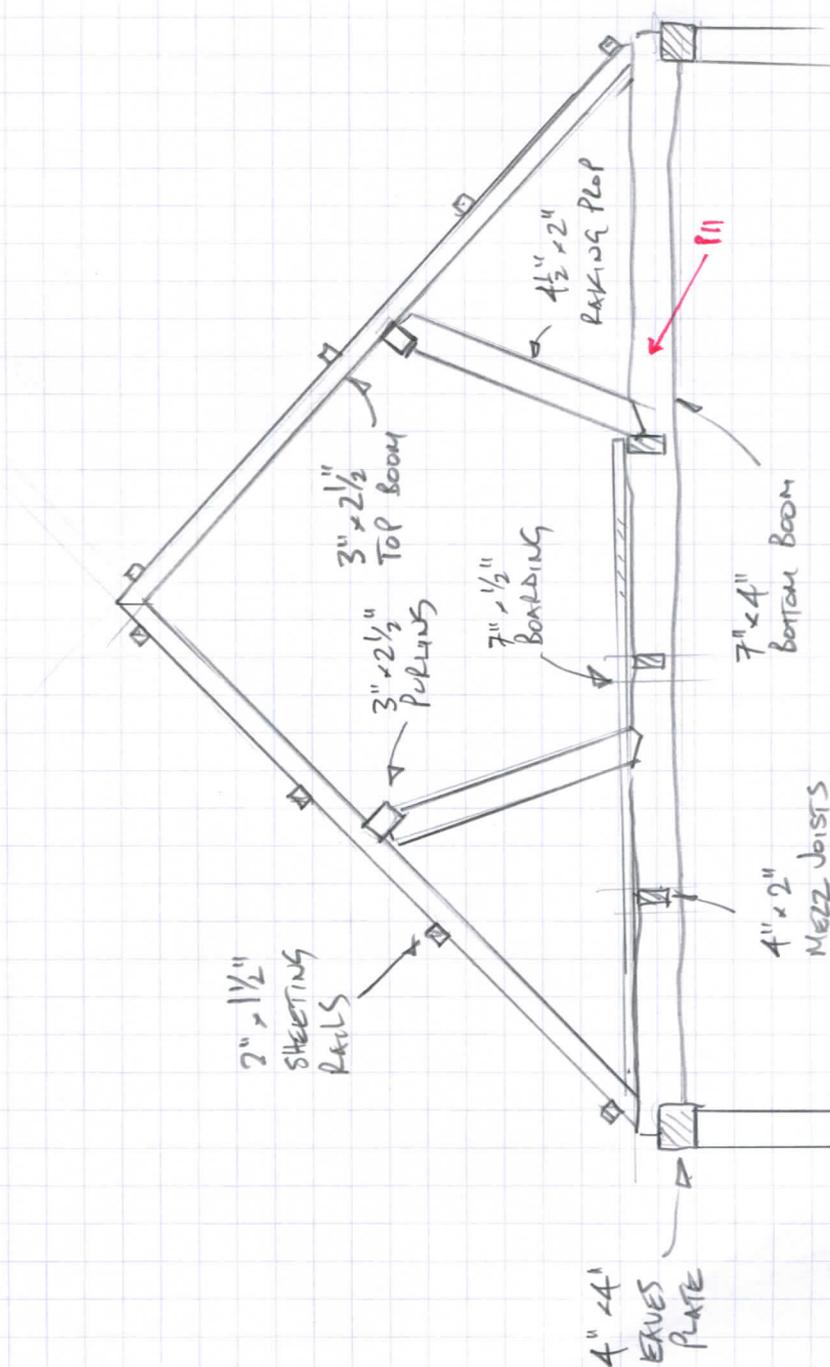
NB: GUTTERS MISSING

(105/1) Timber Roof Cross Section

(1:25)

Project	MEDHURST FARM	Job No.	J9194
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Calc. Title	OLD STABLES	Chkd by	D CR
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		Date	2-2-21
		Rev	01

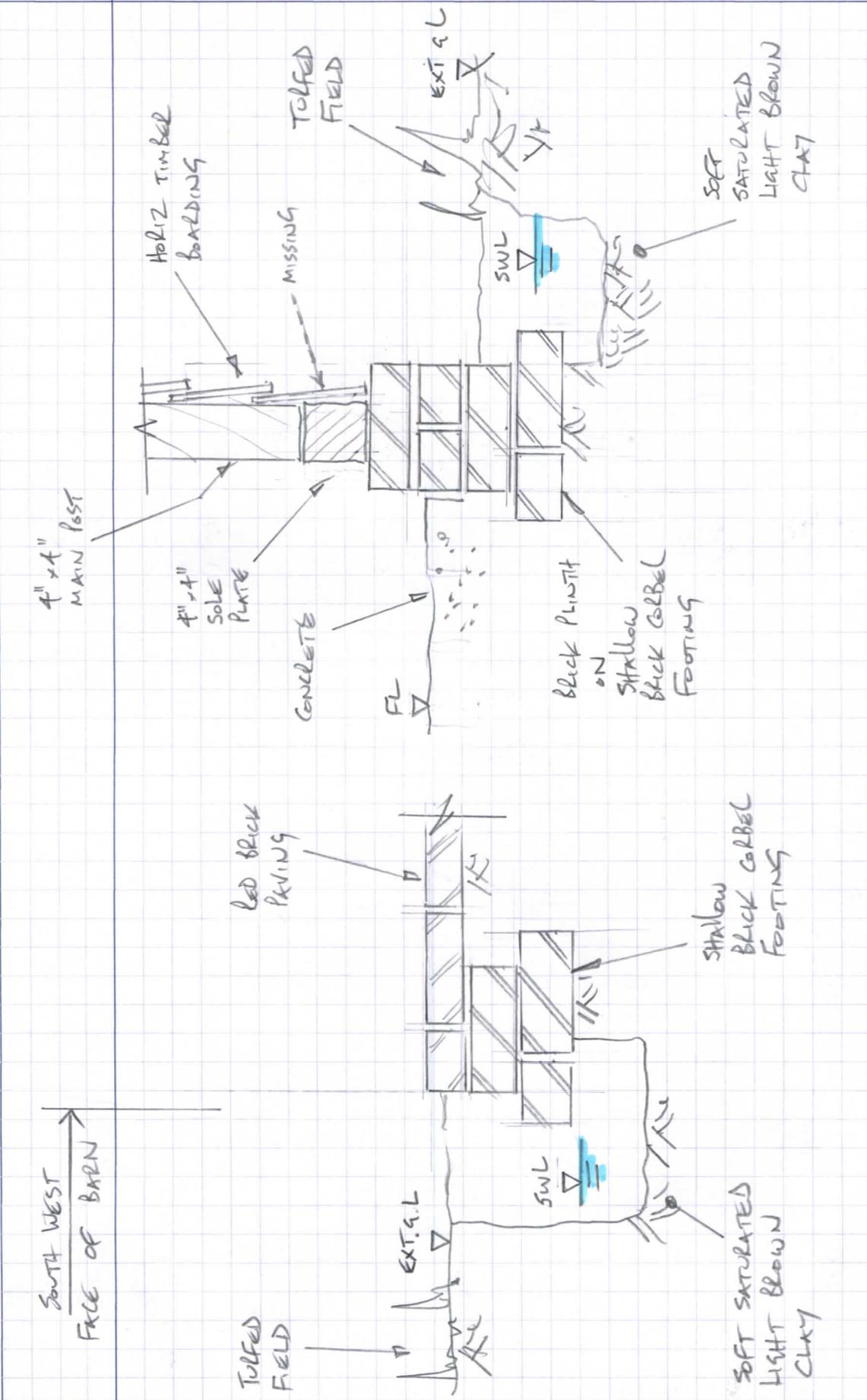
Reference	Calculations	Output
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(106/1) ELEVATION ON ROOF TRUSS
(1:25)

Project	MEDHURST FARM	Job No.	J9194
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Calc. Title	OLD STABLES	Chkd by	JCL
	TRIAL PITS	Sheet No.	J9194-SK107
		Date	20/1/2021
		Date	2-2-21
		Rev	01

Reference	Calculations	Output
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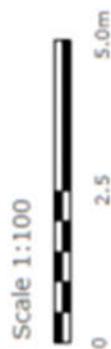
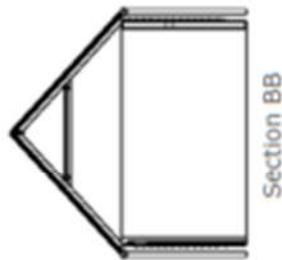
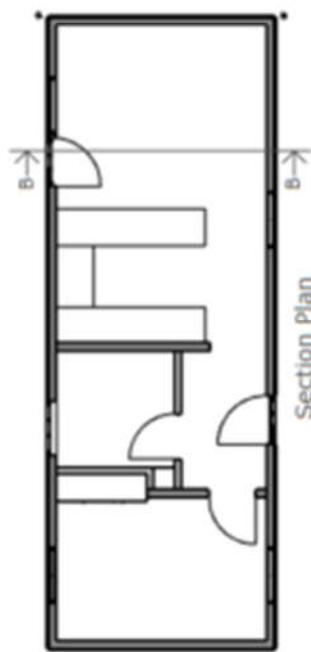
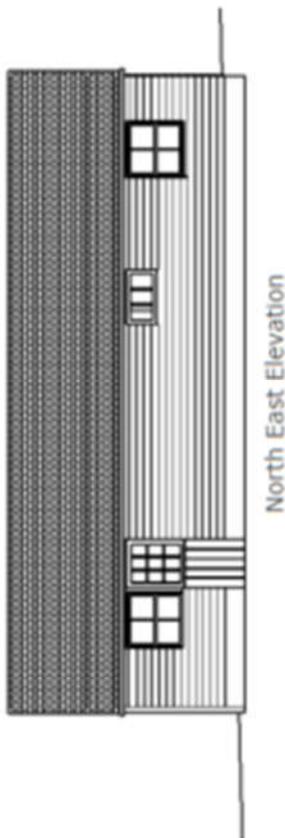
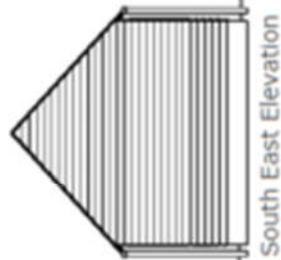
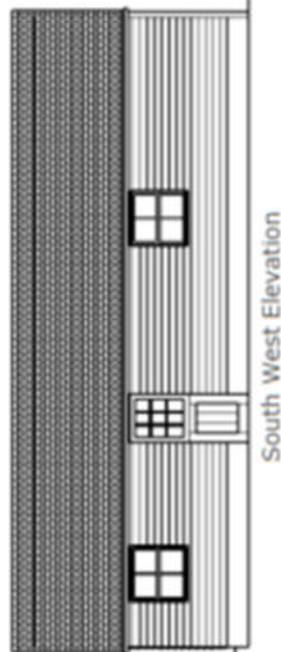
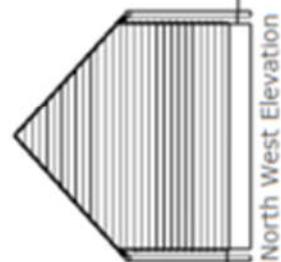


SECTION 2-2 AT TRIAL PIT 2
 (NORTH EAST SIDE)
 SEE P15

SECTION 1-1 AT TRIAL PIT 1
 (SOUTH WEST SIDE)
 SEE P14

(Scale 1:10)

PROPOSED PLANS & ELEVATIONS



Appendix B – Photographs

- P1 View of Old Stables showing location setting in the livestock field.
- P2 South East elevation.
- P3 North East elevation.
- P4 North West elevation.
- P5 South West elevation (1).
- P6 South West elevation (2).
- P7 General view of roof structure.
- P8 Eaves plate and common rafter.
- P9 Black cobble paving.
- P10 Typical cross wall construction.
- P11 View on truss and mezzanine.
- P12 Typical decay of sole plate and bottoms of main posts and infill wall panel studs.
- P13 Roof purlin, collar, common rafters, sheeting rail and corrugated metal sheeting.
- P14 Trial Pit 1
- P15 Trial Pit 2



Photograph P1

View of Old Stables showing location setting in the livestock field.



Photograph P2

South East elevation.

(Note missing horizontal board cladding, and missing post/infill studs at SE corner).



Photograph P3

North East elevation.

(Note missing horizontal board cladding, and damaged wall infill panel at NWcorner).



Photograph P4

North West elevation.

(Note missing horizontal board cladding).



Photograph P5

South West elevation (1).



Photograph P6

South West elevation (2).

(Note missing horizontal board cladding, and missing post at SE corner).



Photograph P7

General view of roof structure.



Photograph P8

Eaves plate and common rafter.

(Eaves plate and roof structure in relatively good condition).



Photograph P9

Black cobble paving.



Photograph P10

Typical cross wall construction.



Photograph P11

View on truss and mezzanine.



Photograph P12

Typical decay of sole plate and bottoms of main posts and infill wall panel studs.



Photograph P13

Roof purlin, collar, common rafters, sheeting rail and corrugated metal sheeting.



Photograph P14

Trial Pit TP1.

(Note standing water and red brick floor paving).



Photograph P15

Trial Pit TP2.

(Note standing water and decay of sole plate and bottom of wall infill panel studs/braces).