
Structural Report



on

Groudle Glen Wheelhouse
Groudle Glen
Onchan
Isle of Man

COPY

prepared for

Department of Environment, Food & Agriculture
Thie Slieau Whallian
Foxdale
St Johns
Isle of Man

by

Curtins Consulting Ltd

25th October 2013

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1.0 Introduction

At the request of [REDACTED] acting on behalf of The Department of Environment, Food & Agriculture, Curtins Consulting Limited undertook an inspection of Groudle Glen Wheelhouse, Groudle Glen, Isle of Man, to report on the structural condition of the wheelhouse.

Curtins' inspection, undertaken on 15th October 2013, was based on a visual assessment of the wheelhouse with no removal of finishes to expose concealed elements of the structure or excavation of trial pits to determine foundation arrangements and sub soils or the presence of any contaminated ground.

This report has been prepared for the Department of Environment, Food & Agriculture and their immediate advisors and must not be reproduced in whole or in part relied upon by any third party without the express prior written authority of Curtins Consulting Limited.

2.0 Observations

2.1 General

The Groudle Glen Wheelhouse was we believe, constructed around 1895 to provide lighting power to the Glen and to pump water up to the Groudle Hotel.

The Wheelhouse measures approximately 3.05m square and is of two storey construction, raised above the river on the valley side.

A waterwheel is located adjacent the Wheelhouse.

The Wheelhouse substructure construction appears to comprise two primary steel beams built off a stone pier and the valley sides, supporting two secondary steel beams.

The Wheelhouse superstructure comprises rendered timber stud external walls and low level single skin brick walls, built off four steel beams, with suspended timber joist ground and first floor and duo pitch timber rafter cedar shingle roof.

The timber ground floor extends externally at the front of the Wheelhouse.

The waterwheel is supported on an axle resting on two stone piers.

2.2 Roof – External

The Cedar shingle roof finishes appeared reasonably regular throughout with moss and vegetation covering parts of the roof surface, refer photographs 1, 2, 3 & 4.

2.3 External Walls – External

The render and timber wall faces appeared overall reasonably plumb and straight, except for a slight outward lean to the north east corner of the Wheelhouse.

A large hole in the render was noted on the north facing wall at ground floor level.

Extensive corrosion of the steel beam below the east facing external wall was apparent at the bearing on the stone pier, refer photograph 7 and below the cantilever external deck refer photograph 8.

Undermining to the base of the east side of the stone pier was apparent.

2.4 Waterwheel – External

Extensive timber decay was noted to the timber spokes and hub together with corrosion of the spindle refer photographs 5 & 6.

The axle mounting on the stone piers was not secure.

2.0 Observations

Undermining to the stone pier supporting the water wheel spindle was apparent on the east side of the pier.

2.5 Sub Floor – Internal.

The subfloor area was viewed by torchlight from the external timber cladding.

The steel beam below the east facing external wall exhibited widespread delamination refer photograph 9.

The timber joists below the external deck exhibited extensive decay, refer photograph 10.

Stone and timber had collapsed into the sub floor area below the wheel house.

2.6 Ground Floor – Internal.

The external deck exhibited distortion.

The ground floor boards and joists have in part collapsed.

The steel beam visible below the external walls exhibited significant corrosion, refer photograph 12.

The brick face appeared reasonably straight and plumb and the timber studs reasonably regular refer photograph 13.

2.7 First Floor – Internal.

The timber board finishes appear reasonably level.

The timber studs appeared reasonably regular with some charring noted refer photograph 11.

2.8 Roof – Internal.

No obvious distress to the roof timbers was apparent except for some charred timbers refer photograph 15.

3.0 Conclusion

The Wheelhouse is structurally in an unsafe condition.

The Wheelhouse is founded on steel beams, which exhibit extensive corrosion, with one beam close to a state of collapse.

The ground floor joists have decayed and in part collapsed and the cantilever joists to the external ground floor deck are also in a state of collapse.

The timber external walls, first floor joists and timber roof of the Wheelhouse do not exhibit any significant adverse structural movement or distress, except for a slight out of plumb north east corner, charring of timber and isolated timber decay.

The waterwheel is in a dilapidated condition with extensive timber decay and the axle is not secure.

The stone substructure walls supporting the Wheelhouse steel beams and waterwheel appear to exhibit slight undermining.

Due to the location of the Wheelhouse on the steeply sloping valley sides and substructure below water level, replacement of the corroded steel beams will be a very difficult operation, effectively requiring underpinning of the Wheelhouse.

Ground level rises steeply above the Wheelhouse, in particular on the west side ground level rises approximately 3.5m above the ground floor level to the wheelhouse.

The steeply sloping ground of the valley are subject to on-going weathering/erosion and land slip.

The future stability of the adjoining ground cannot be guaranteed, and potential landslip affecting the Wheelhouse could arise in the future.

The Wheelhouse is not a water and damp resistant building and its timber structure is subject to high levels of moisture and is susceptible to on-going timber decay.

4.0 Recommendations

Based on our visual inspection of the Wheelhouse in its present condition, we recommend the following structural works.

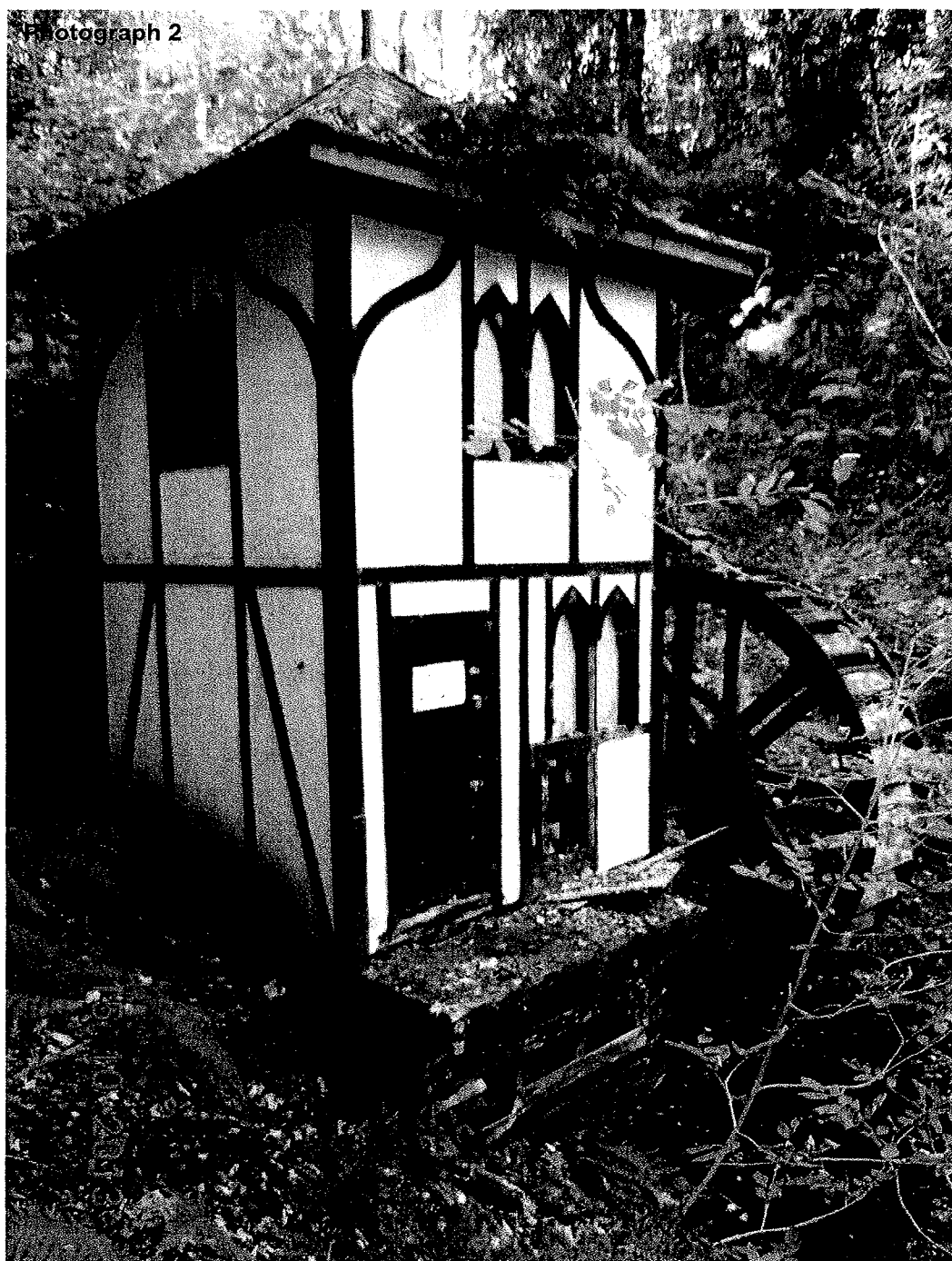
- Prevent persons accessing the Wheelhouse including the ground floor external deck, until repair works have made the structure safe.
- Undertake a feasibility assessment in conjunction with a suitably experienced building contractor with regard to underpinning the wheelhouse, replacing the steel beams and beam foundations.
- If the above assessment is feasible, undertake the above work.
- If the above assessment is not feasible, the Wheelhouse will need to be dismantled and rebuilt with new steel beams and foundation.
- All decayed and charred timber to be replaced, the external render and windows made good.
- The waterwheel will need to be removed and decayed timber replaced and the wheel set back in position with new axle support.
- As part of the future maintenance of the Wheelhouse, periodic inspection to identify any further timber decay will be required with replacement of timber as necessary.
- Due to the steeply sloping ground adjacent the Wheelhouse periodic inspection will be required to identify any landslip with remedial work implemented to stabilise the ground as necessary.

The above recommendations assume the owners of the Wheelhouse wish to retain the building.

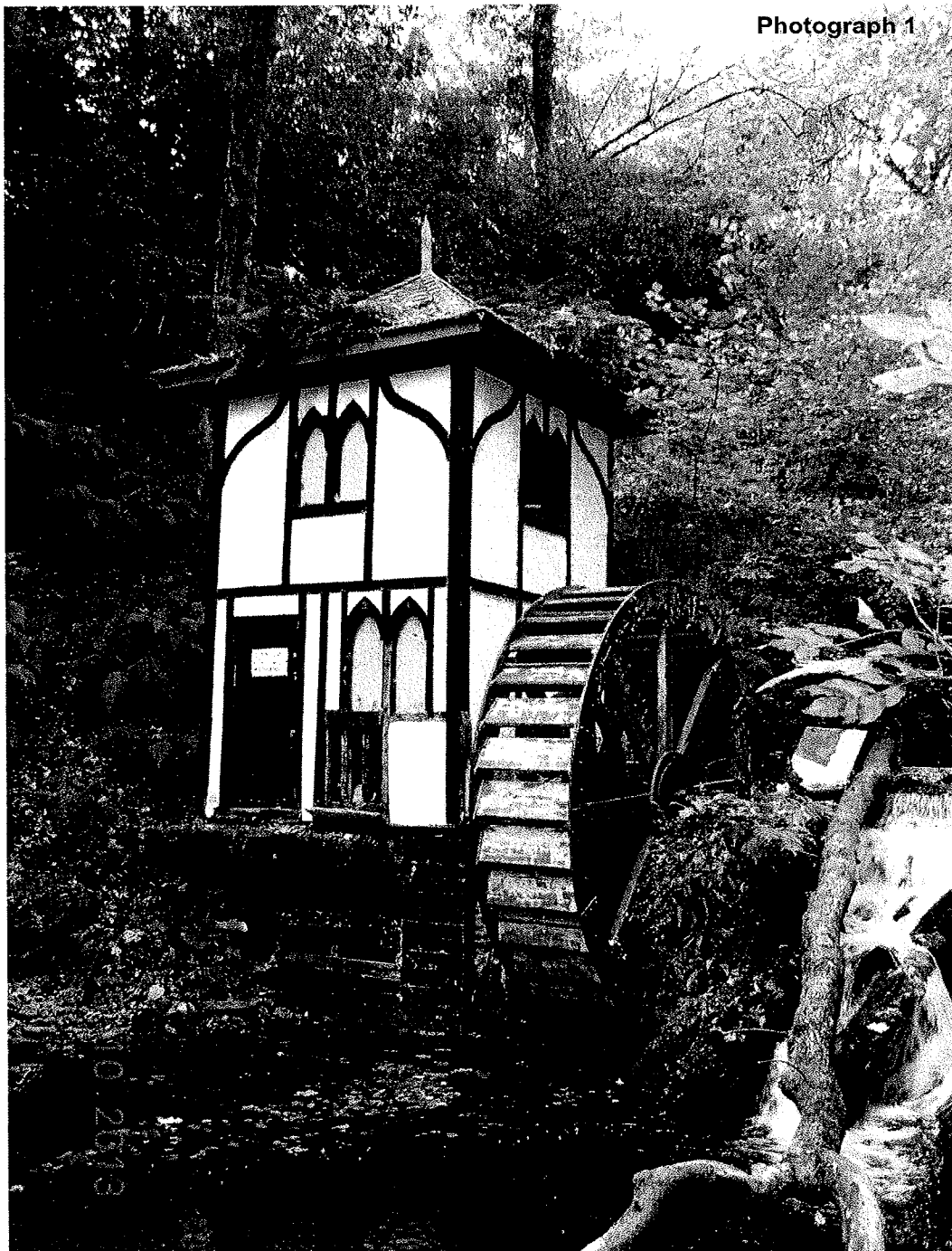
5.0 Photographs



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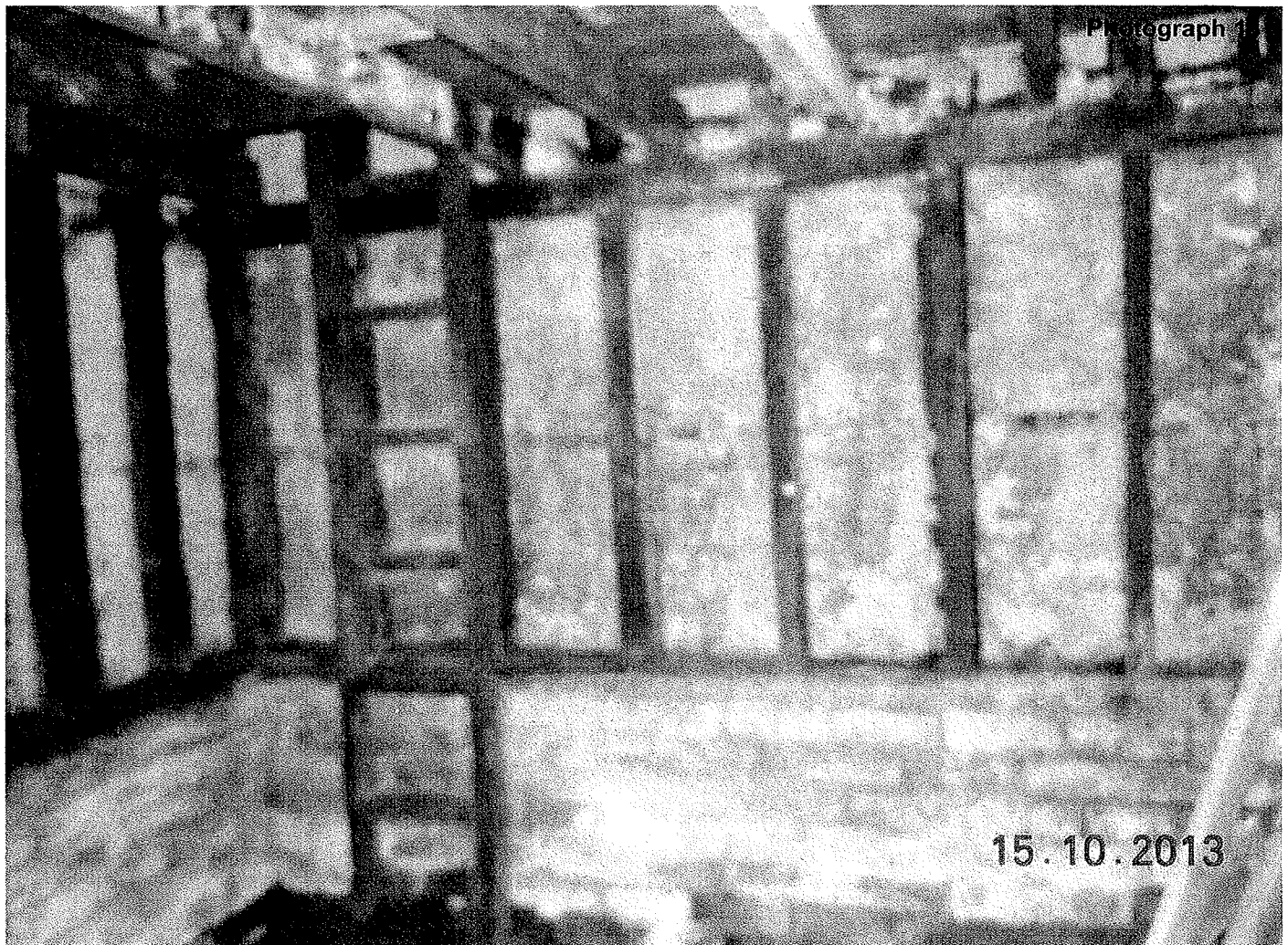


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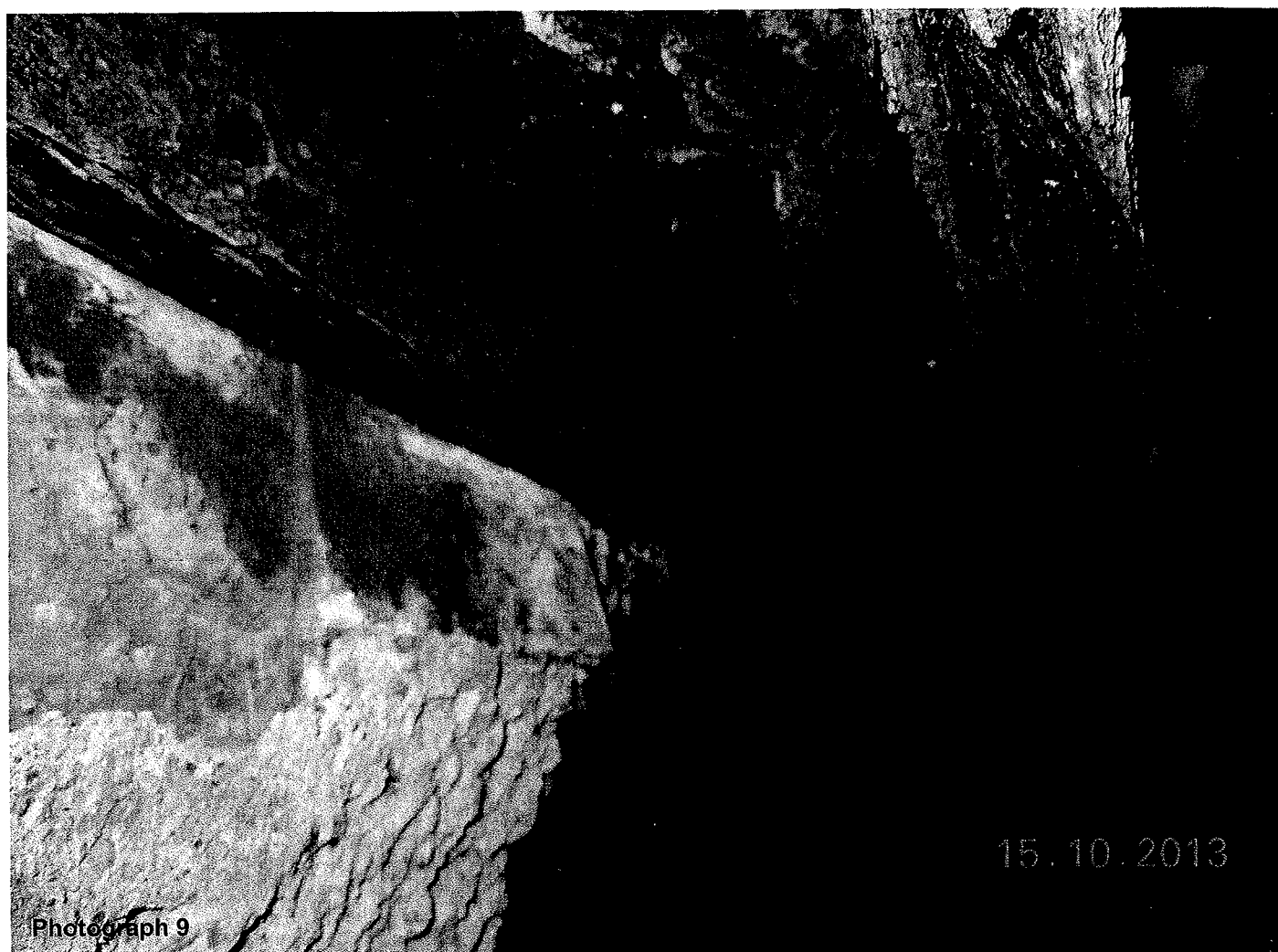


Photograph 12

5.0 Photographs



5.0 Photographs



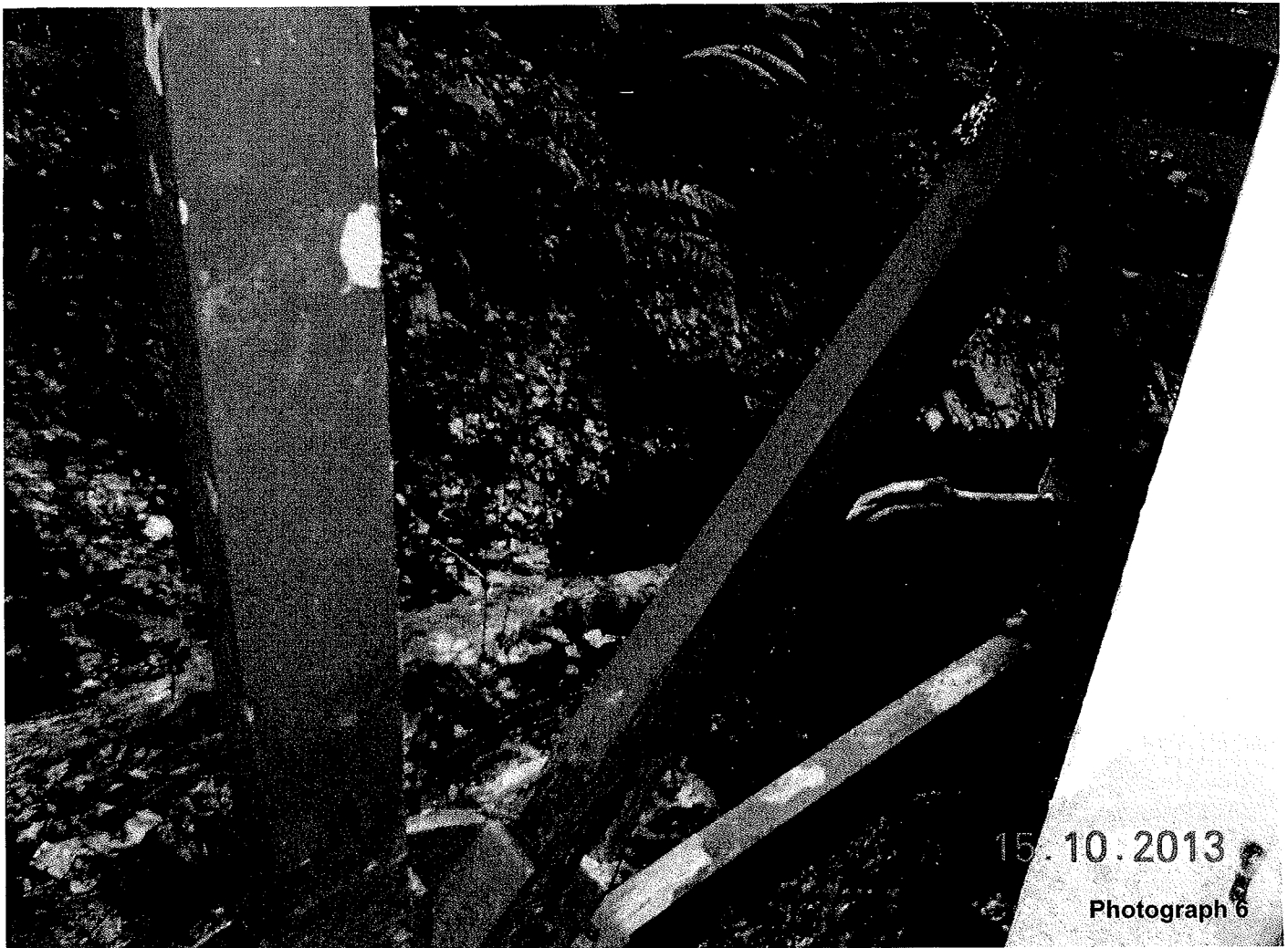
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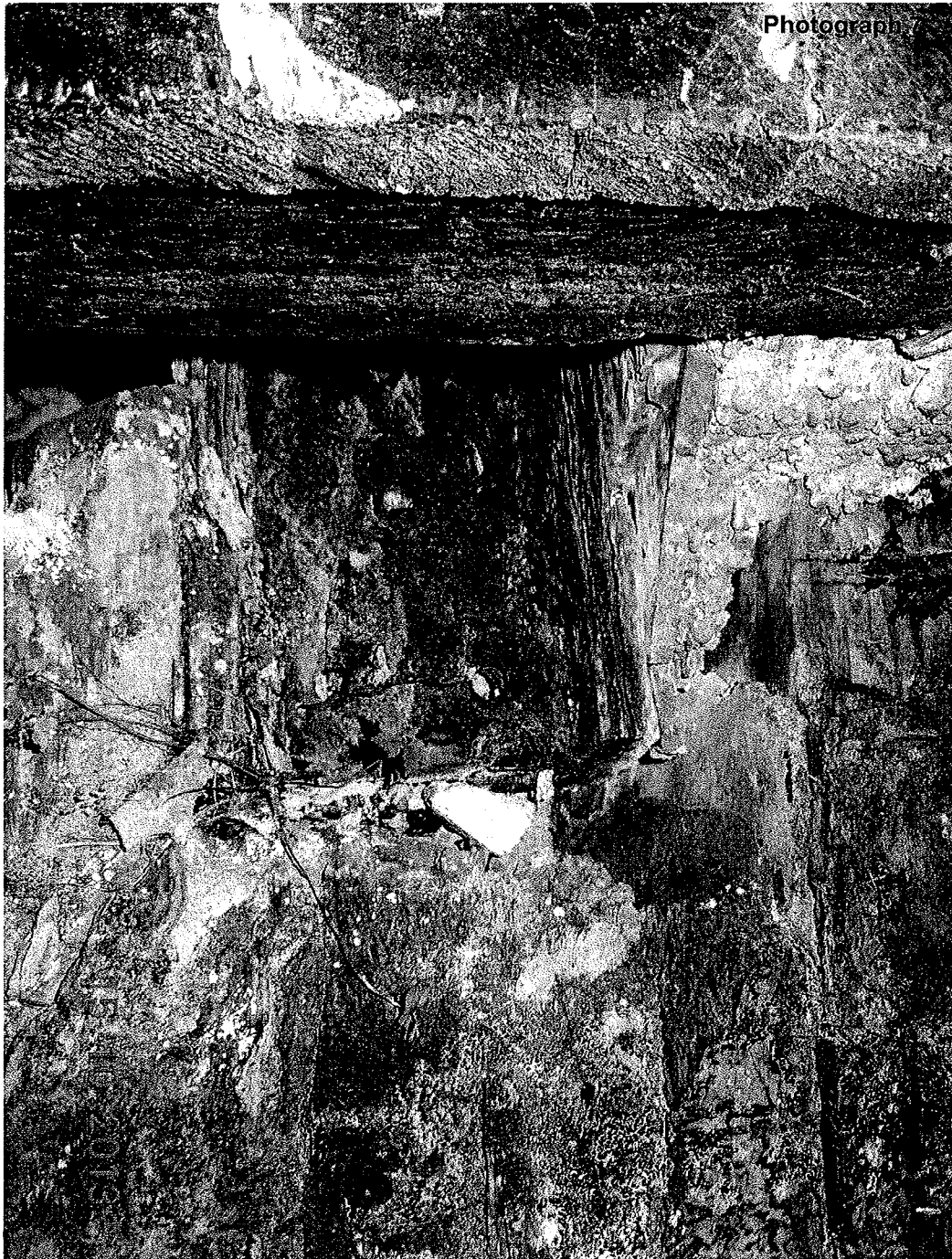
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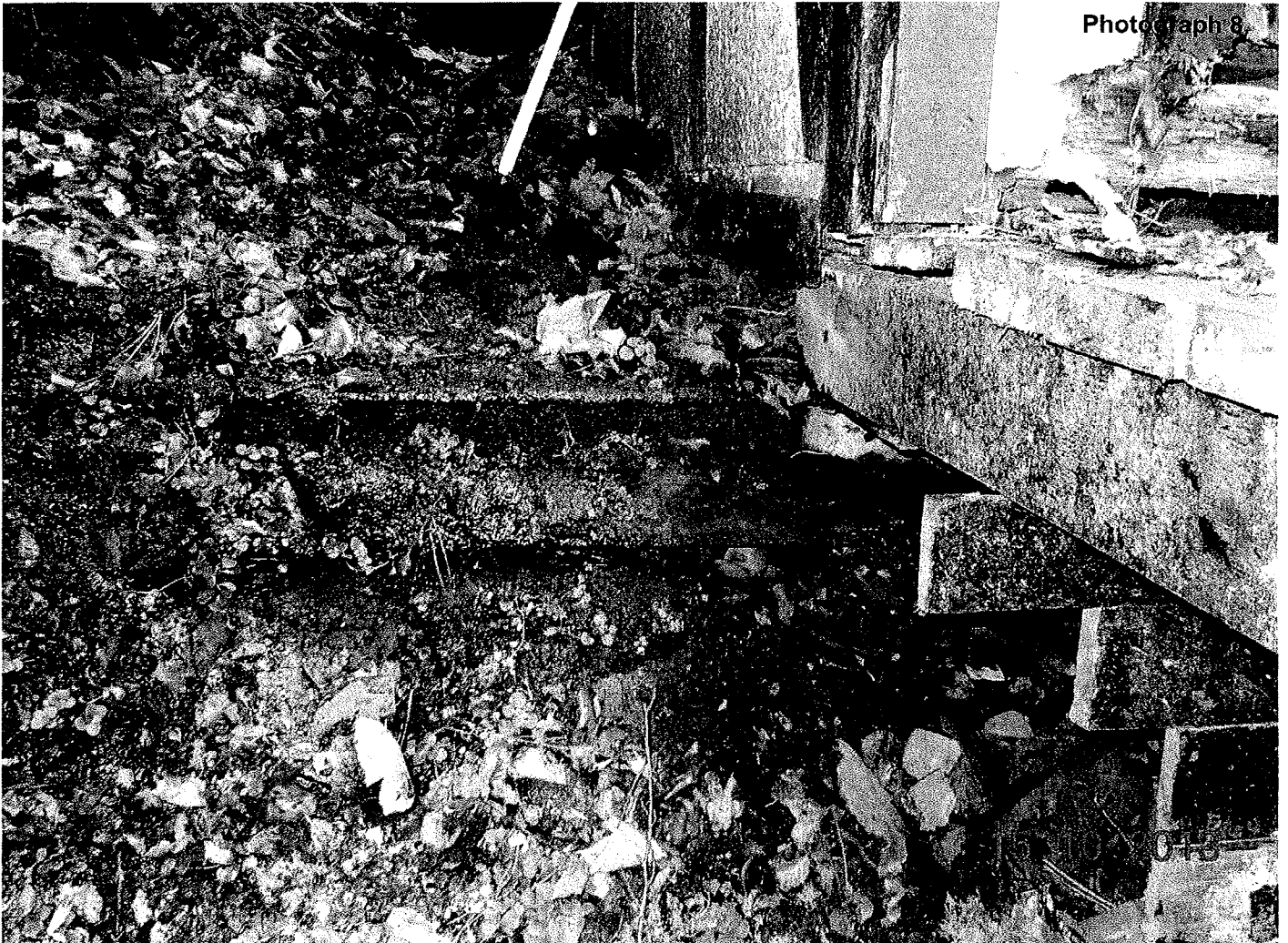
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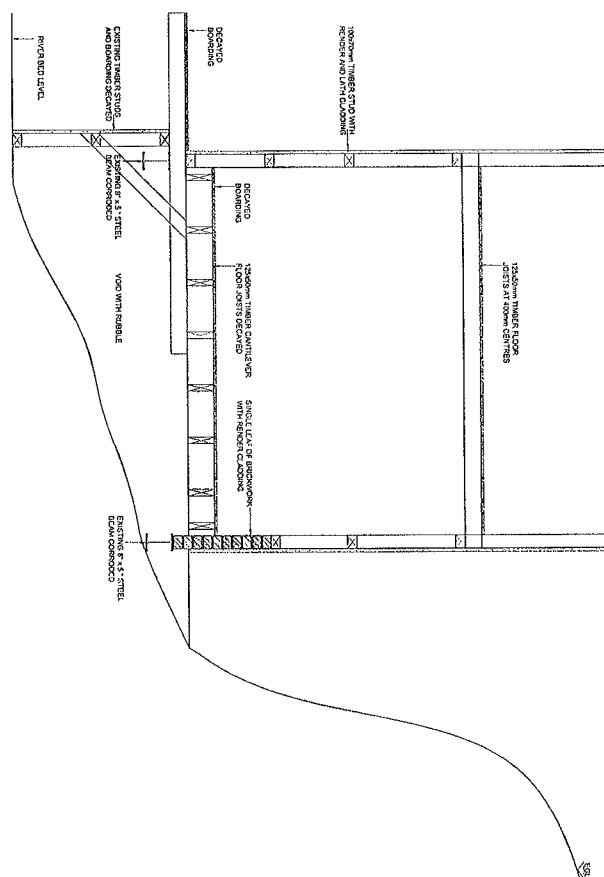
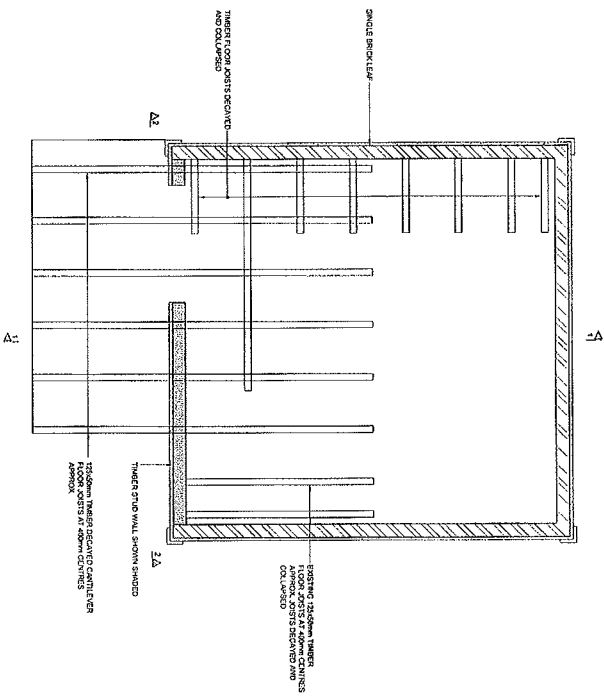
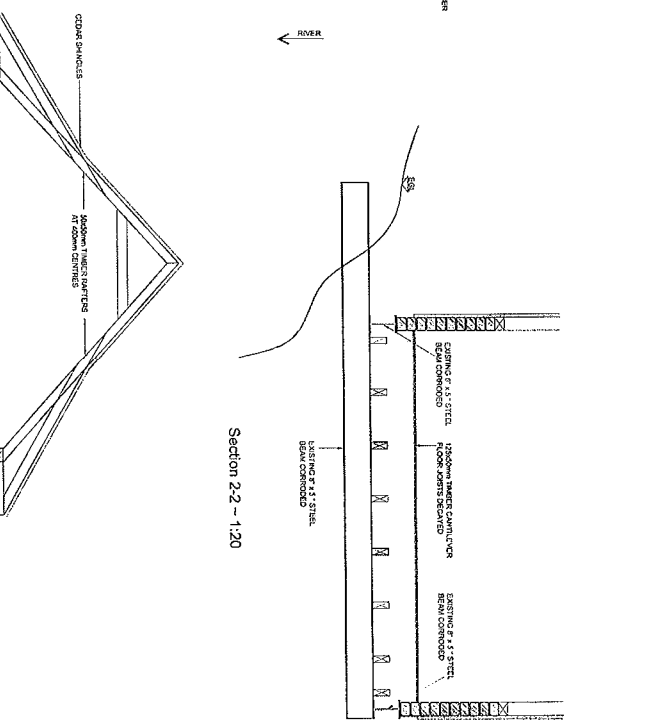
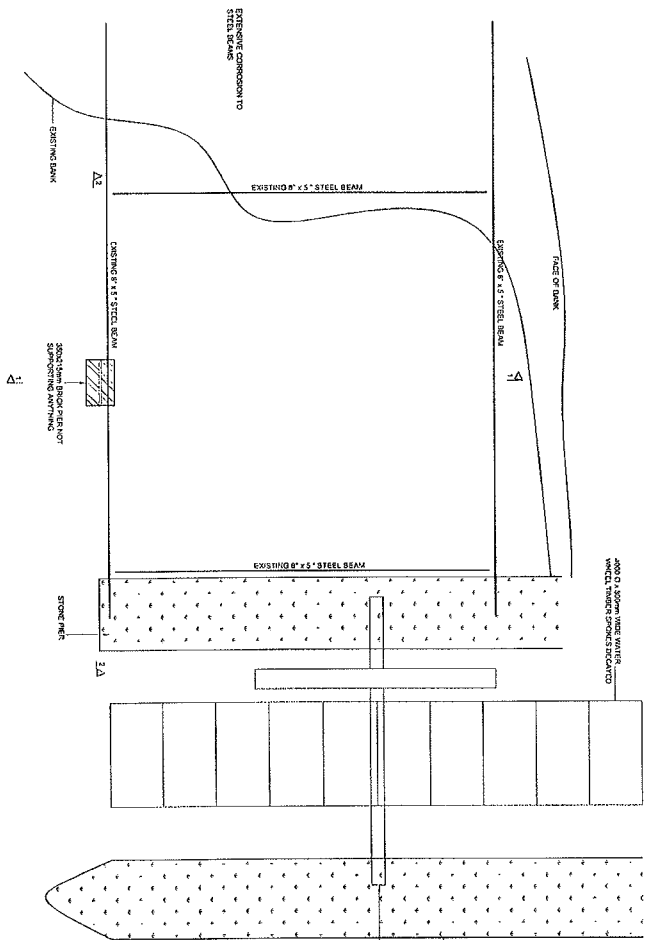


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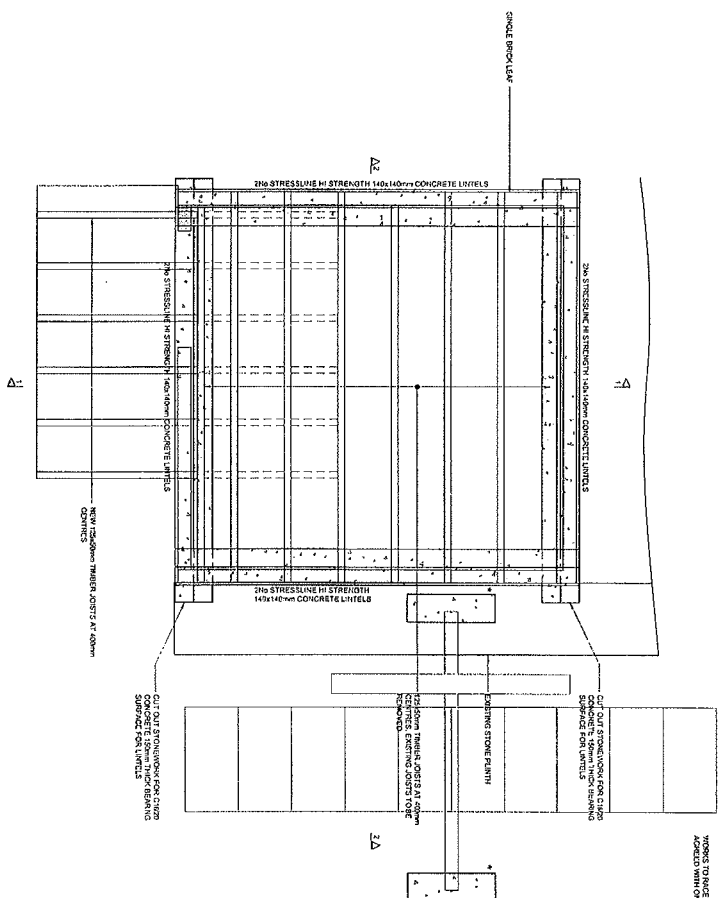


Existing Ground Floor Plan ~ 1:20

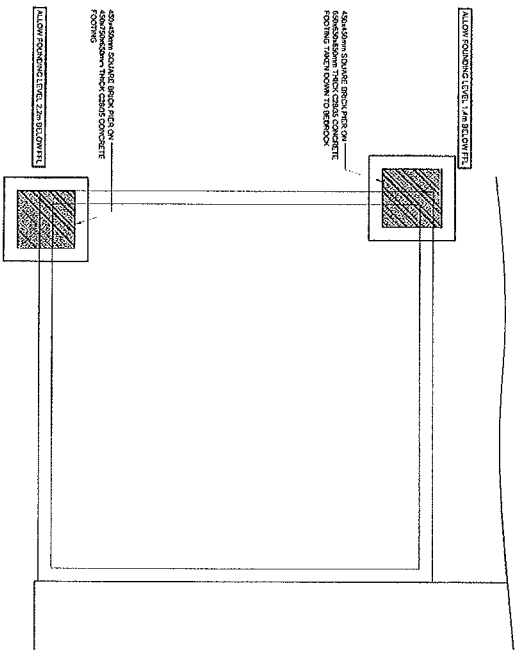
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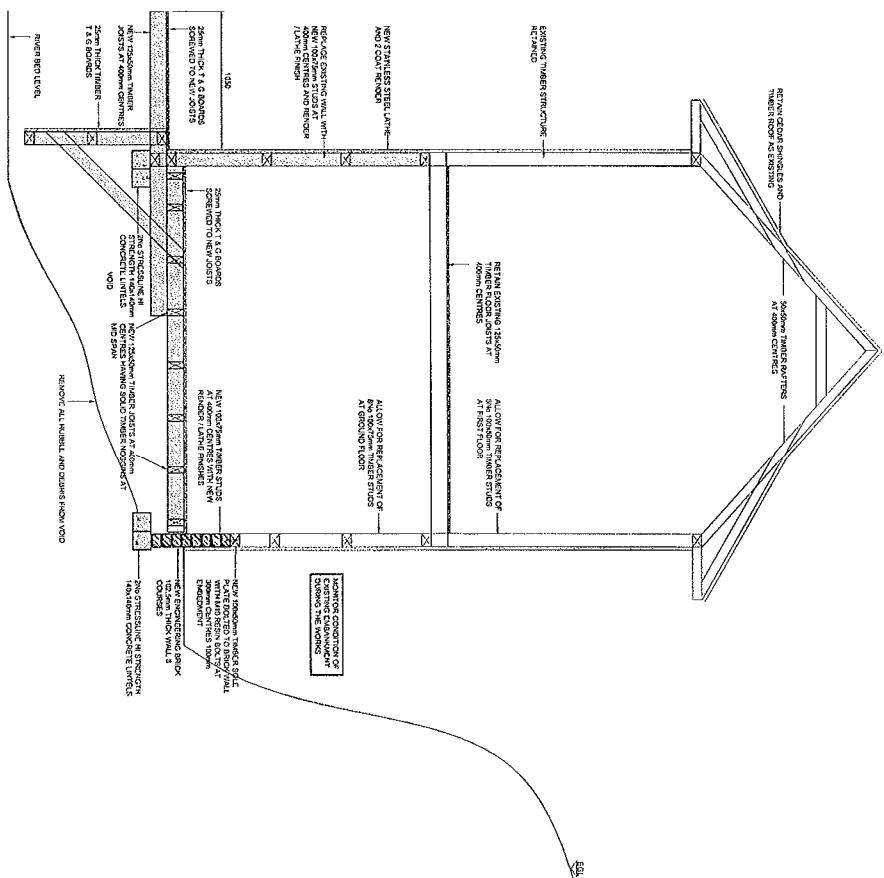




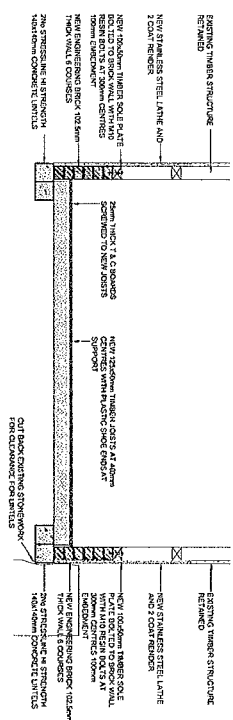
Substructure / Ground Floor Plan ~ 1:20



Foundation Plan ~ 1:20



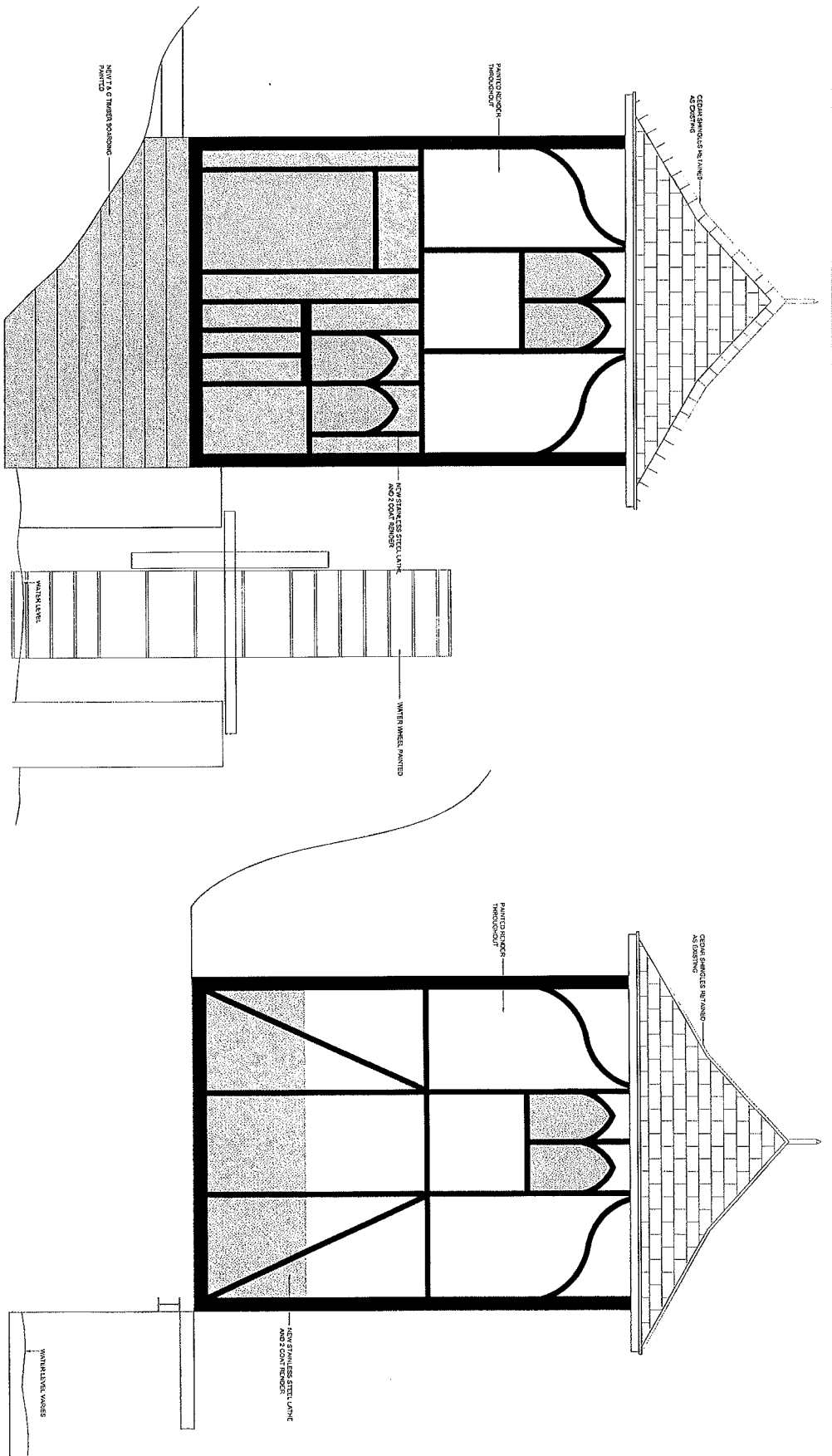
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 <p> Division of Veterinary Medicine 1600 Clarendon Blvd., Suite 500 Arlington, VA 22202-4302 www.dhs.gov </p> <p> Department of Health and Human Services Division of Veterinary Medicine </p>	<p>Project:</p> <p>GROUNDLE</p>	<p>Drug Title:</p> <p>PERM</p>	<p>Score:</p> <p>1.20</p>	<p>Drug Name:</p>
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STANDARD SYMBOLS

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