



Pursuant to Detailed Planning
In Principle Structural Repairs to Carpenter's Building

Project: St. Andrews Park, Uxbridge

Client: Stamp Design and Build

Reference: S82605-JNP-ZZ-20-RP-S-1010 P01

Date: 24th February 2020

Ref: S82605/UXB/ANB/008

Report Pursuant to Detailed Planning

In Principle Structural Repairs to Carpenter's Building

1.0 Introduction

1.1

This report was originally requested by Persimmon Homes Thames Valley for the purposes of discharging Clause 10/ii of Planning Application Ref: 585/APP/2012/2102. The original report was issued on 8th March 2013.

1.2

The building has now been sold to Stamp Design and Build.

1.3

The property was inspected by me on Feb 24th, 2020 on behalf of Stamp Design and Build.

1.4

I found that the building, despite being left for seven years, appears to be in the same state structurally. The contents of my original report are therefore still valid and appropriate.

1.5

Reference should also be made to the [jnp](#)group initial letter report of 4th October 2012 which is appended at the rear of this report.

2.0 Summary of Structural Issues

2.1

The initial inspection revealed the following significant structural problems:

- a) Both front and rear elevations are significantly out of plumb to the point where they, on their own, would become inherently unstable.
- b) The existing internal walls may be providing some buttressing action but this is difficult to quantify.
- c) Trail holes to the existing external wall foundations have revealed extremely shallow foundations comprising corbelled brickwork supported on a bed of plain clay tiles, in turn supported upon the locally occurring London Clay. (see photograph below)



2.2

In simple terms the entire building has racked over by the order of 150-175mm.

2.2.2

In order to preserve the building, it requires structurally stabilising in its current, deformed, configuration.

3.0 Structural Stabilisation proposals

3.1

The simplest way of overcoming this is to enhance the structure of the building to form a completely braced box structure.

3.2

This we consider, should be undertaken as follows:

- a) Brace the external walls and then remove the roof and internal walls.
- b) Construct new reinforced raft internal slab to support new structural internal walls.
- c) Construct new internal walls ensuring they are fully mechanically bonded to all abutting external walls and floor slab.
- d) Install new truss rafters spanning from front to rear.
- e) Under-draw all new truss rafters with stretcher bonded 9.5mm ply screw fixed to underside of the bottom cords of the trusses.
- f) Fully mechanically fix ply sheeting to all external perimeter and internal walls, generally as shown on the appended JNP drawing S82605-D-106.

4.0 Summary

4.1

The Carpenter's Building requires completely bracing in order to restrain the front and rear walls to ensure long term stability.

4.2.

The proposed methodology is simple to install and unobtrusive, enabling existing character to be preserved without unsightly parrress plates, buttressing or the like.

4.3

The internal slab raft to support the new internal walls, provides a structurally sympathetic solution relative to the very shallow external wall foundations, thus allowing whole building to "flex" in sympathy.



Signed

.....
A N Brackley BEng (Hons) CEng FICE FStructE
FCIHT

FOR AND ON BEHALF OF JNP GROUP
24th Feb 2020

Appendix A

JNP Letter Report Dated 4th October 2012

Your Ref:
Our Ref: S82605/UXB/MPD/JP.009
Chkd: MPD/PLH

4th October 2012

Ms L Barratt
Technical Co-Ordinator Persimmon Homes
Persimmon House
Vanwall Business Park
2 Vanwall Road
Maidenhead
Berkshire
SL6 4UB

Dear Ms Barratt

Re: Former Carpenter's Building, Building 27, RAF Uxbridge

As requested, we have recently carried out a visual inspection of the above building and our report on findings from this is now as follows:

Introduction

(N.B.: References to left and right hand assume that the building is being viewed from the front, easterly-facing elevation)

The building is single storey, probably dating from around the early part of the 20th century, and is reported to be Listed.

The building, which comprises a former carpenter's workshop, boiler room and offices, was vacant at the time of our inspection and the weather was dry.

The building faces in an easterly direction and the terrain of the site on which it stands slopes downwards towards the front, with steps leading down to entrance doors. To the front right hand end of the building, ground level to the adjacent access road is approximately 1 metre above internal floor level to the building, whilst to the rear, the site is level. At its left hand end, the building abuts an older brick wall, approximately 5½ metres high, which also acts as a retaining wall to support the adjacent higher level ground.

The roof to the building is double pitched with clay tile coverings, and external walls are built in solid brickwork, at least 215mm thick, thicker in places.

Internally, floors are solid concrete throughout, and internal dividing walls are a mixture of brickwork, thin clinker aggregate blockwork and lightweight timber studwork.

In some rooms, external walls and dividing walls have been dry-lined with plasterboard.

Cont'd/...

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Adjacent to the rear right hand corner of the building, to the rear of the former carpenter's workshop, the building is extended by a timber lean-to structure with a flat, felt covered roof.

The roof structure to the building is a traditional cut timber construction, and where the original ceiling has been removed in the former carpenter's workshop, this can be seen to comprise rafters spanning from front to back tied across by ceiling joists which are raised up approximately 700mm above external wallplate level.

Where the lean-to structure is, to the rear, the rafters bear onto timber beams, which are in turn supported by a central timber post.

In other parts of the building, the underside of the rafters and ceiling ties are boarded, thus concealing the roof structure above.

Also, in the rooms towards the left hand end, there are lay-in grid suspended ceilings, below the original.

Windows and door openings are timber framed, and in places, notably to the rear elevation, these appear to also serve as loadbearing elements to support the masonry and roof above.

Reference to the published geological drift map for the area indicates that the underlying subsoil is likely to be London Clay.

A number of mature trees exist within fairly close proximity of the building, including Oaks and Sycamores to the front at distances of 15-20 metres. There is also a pair of purple leaf Plums, 6-8 metres high, situated adjacent to the right hand end wall of the building, together with a smaller Laurel, all approximately 3.5 metres away. To the rear, adjacent to the lean-to, there is also a Sycamore sapling right next to the building, approximately 3-4 metres high.

Rainwater pipes serving the building are situated on the front and rear elevations and these discharge onto the ground via shoes and/or into gullies.

Foul drainage exists to the front of the building, apparently serving just a sink at present, but there are no manholes visible in the vicinity.

Observations

External

Front Elevation

- Roof slightly undulating and humped above internal dividing wall to left hand side of carpenter's workshop, slight moss growth and some tiles spalled, slipped or cracked locally in places, overall though roof coverings are generally in a reasonable condition.
- Localised spalling/crumbling to brickwork evident in places, notably below sill level, and dampness evident to wall at low level to the workshop, probably due to defective rainwater goods.
- Walls to front elevation noted to lean inwards by 40-60mm over 1,200mm to central part of building and a metal tie rod was noted to have been installed in the past at lintel level to the right hand side of the central entrance door.
- Defective joints in guttering and rainwater pipe at right hand corner missing/broken.

Right Hand Side Elevation

- Some missing/slipped tiles to roof.
- Ivy growth to wall adjacent to rear corner.
- Separation between brickwork to gas meter cupboard and main wall, upto approximately 25mm.

Cont'd/...

Rear Elevation

- Roof, as front elevation.
- Ivy growth to gable end to boiler room.
- Walls generally noted to be leaning out at top to central part of building by approximately 25-40mm over
- 1,200mm (70-75mm over 2 metres, measured with a plumb bob).

Left Hand End Elevation

- (Viewed from adjacent high level area)
- Brickwork to wall in poor condition generally with many spalled/weathered/missing bricks and crumbling mortar
- joints, wall leaning outwards by approximately 35-40mm over 1,200mm.
- Partly rotted embedded timber evident, below which brickwork has previously been patch-repaired.

Internal

Within office areas to the left hand end, no notable cracking damage was observed to walls. Floors are covered by carpets and are therefore concealed from view.

Generally, however, the leaning noted externally to walls to front and rear elevations is also mirrored internally. To the front, window and door frames appear to have been replaced previously and are vertical, whereas to the rear, frames generally remain out of plumb to match the walls.

Some dampness is evident in places at low level to the front and rear elevations and to the left hand end wall in the rear corner, where the brickwork to this is locally exposed.

Within the carpenter's workshop, the timber post supporting the roof beams was also noted to have a significant lean of approximately 75mm in 1,200mm, towards the rear, and is also split down its left hand face, full height. Some localised cracking and spalling is also visible to the concrete floor within the rear lean-to area, and there is also some dampness evident to walls to the workshop generally at low level, although the front wall appears to have been tanked below sill level previously.

Within the boiler room, spalling and crumbling to brickwork at low level is evident to the right hand side dividing wall to the adjacent carpenter's workshop, full length. There is also dampness evident to walls generally at low level.

To the room to the front of the boiler room, there is also dampness evident to walls at low level, notably to the front and dividing wall to the carpenter's workshop. There is also some cracking damage at high level to the brickwork in the front left hand corner, which appears to be historic.

Cont'd/...

Comments, Conclusions and Recommendations

Overall the building is in a reasonably satisfactory structural condition for its age.

The most significant potential structural problem affecting it would appear to be the fact that, over the central portion of the building, the walls to the front and rear elevations are noticeably leaning over towards the rear.

The cause of this movement is thought most likely to have been flexure of the timber roof structure due to the raised height of the ceiling tie, which has resulted in spread of the rafters at eaves level.

The lean noted to the timber post in the former carpenter's workshop is thought to have occurred for the same reason.

At present, the lean of the walls, particularly to the rear, is such that they are theoretically on the verge of being potentially unstable, that is that the centroid of the walls lies only just within the middle third of their base width.

Lateral movement to the walls would appear to be historic as there is no evidence of any associated fresh cracking visible as a result of this, either externally or internally. Also, window and door frames to the front elevation have previously been replaced vertically, within the original openings.

In order to previously stabilise the structure and prevent further lateral movement of the external walls, it is thought that internal dividing walls were introduced for this purpose, to act as buttressing.

However, it is noted that as part of the proposed works to convert the building into new dwellings, most of these existing internal dividing walls are due to be removed, although some new walls are also to be added in places.

Removal of these existing buttressing walls could potentially destabilise the building, and therefore the structure should be temporarily propped and braced beforehand as necessary to prevent further movement occurring to the front and rear walls. New internal dividing walls from front to rear should then be rebuilt in solid masonry, in order to reinstate buttressing. In conjunction with this, to permanently stabilise the external rear wall and to prevent it moving outwards any further, strengthening work will most likely be required, which could involve providing stiffening at wallplate level, e.g. by installation of steel restraint members, tied back across the building at intervals to the front wall, in order to mobilise the buttressing effect of the internal dividing walls.

Alternatively, the rear wall could perhaps be stabilised by adding brick buttresses of suitable size externally at various intervals, built off new foundations.

Regarding the existing timber roof structure, this should be analysed to establish its potential for continued spread and depending on the outcome of this, further strengthening works to this may then be considered necessary.

Considering the new proposals for the building, it would appear that the leaning timber post to the rear of the carpenter's workshop will be removed as part of these works, and the present opening to the lean-to infilled with a new external wall, which will no doubt require a new foundation. Also, if existing window frames are to be replaced, then where these are deemed to be load-bearing, installation of new lintels is likely to be required.

Cont'd/...

So far as other structural issues affecting the building are concerned, these are more minor and comments and recommendations in relation to these are as follows:

- Roof coverings will no doubt be overhauled or replaced and repairs carried out as necessary to external brickwork and rainwater goods as part of the proposed conversion/refurbishment works to the building.
- A specialist should be appointed to advise on remedial works considered necessary to walls internally where these are affected by damp penetration.
- A timber specialist should be appointed to inspect and report on the general condition of the roof timbers and to advise on any preservation treatment or other works considered necessary.
- Repairs should be carried out to restore the defective brickwork to the left hand end wall above the adjacent ground level, and consideration should also be given to tying this wall back into the roof structure to the building, in order to try and prevent any further outward movement. Rotted timberwork embedded in the wall should also be cut out and replaced with solid brickwork.

Also, so far as nearby trees are concerned, due to the likely presence of shrinkable clay subsoil in the area, there is the potential for roots emanating from these to cause subsidence damage to the building due to moisture extraction, thus possibly causing foundation movement.

However, there is at present no evidence that the building is currently affected by subsidence, nor does it appear to have been affected so in the past.

As a precautionary though, it is nevertheless recommended that existing trees adjacent to the right hand end and rear of the building be removed, prior to conversion works.

Existing underground drainage in the vicinity of the building should also be surveyed by CCTV and tested for water-tightness, where possible. Repairs should then be carried out as necessary to ensure that there is no leakage of water into the ground near the building that could potentially weaken the subsoil beneath foundations and thus increase the risk of future subsidence.

We trust that the above report is self explanatory and sufficient for your needs, however, should you require any further assistance or advice, then please do not hesitate to contact us.

Yours sincerely



M P Doody
BSc CEng MICE

NB. This report does not comprise a full structural nor any other form of survey of the property, but is a specialist structural report on the items listed therein. Therefore no responsibility can be accepted for any other defects which are found in the property.

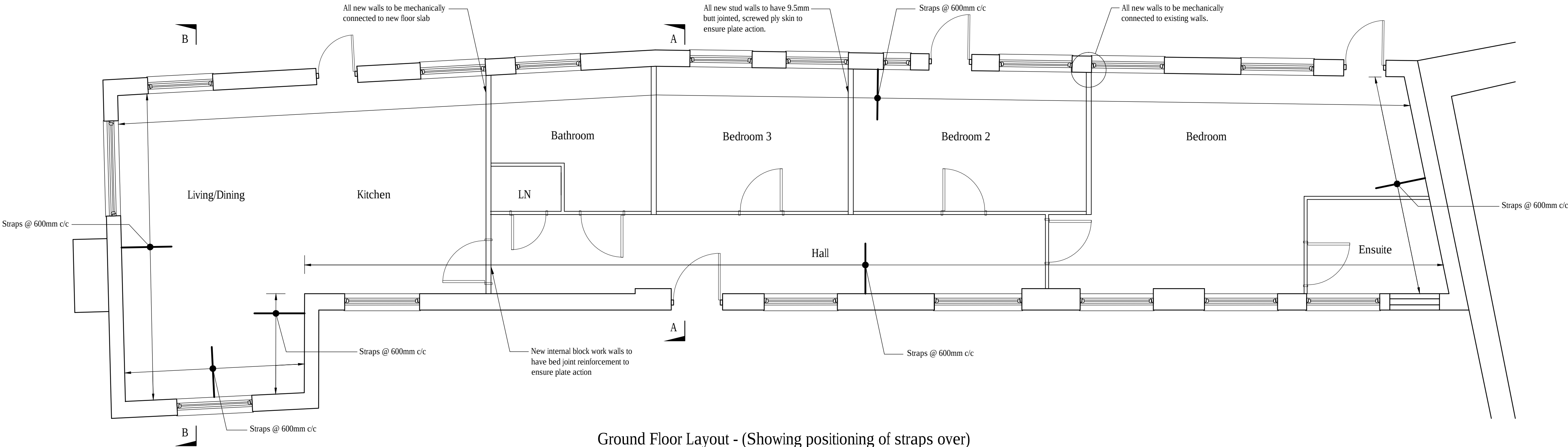
NB. This report is required by Persimmon Homes, and a copy of this report may be given to their Building Society, Insurance Company, Bank, or other financial advisors. No other person may receive a copy of this report without first obtaining our permission in writing.

NB. We have not inspected woodwork nor other parts of the structure which were covered, unexposed or otherwise inaccessible at the time of our inspection and we are therefore unable to report that any such part of the property is free from defect.

NB. The copyright at all times remains with JNP Group.

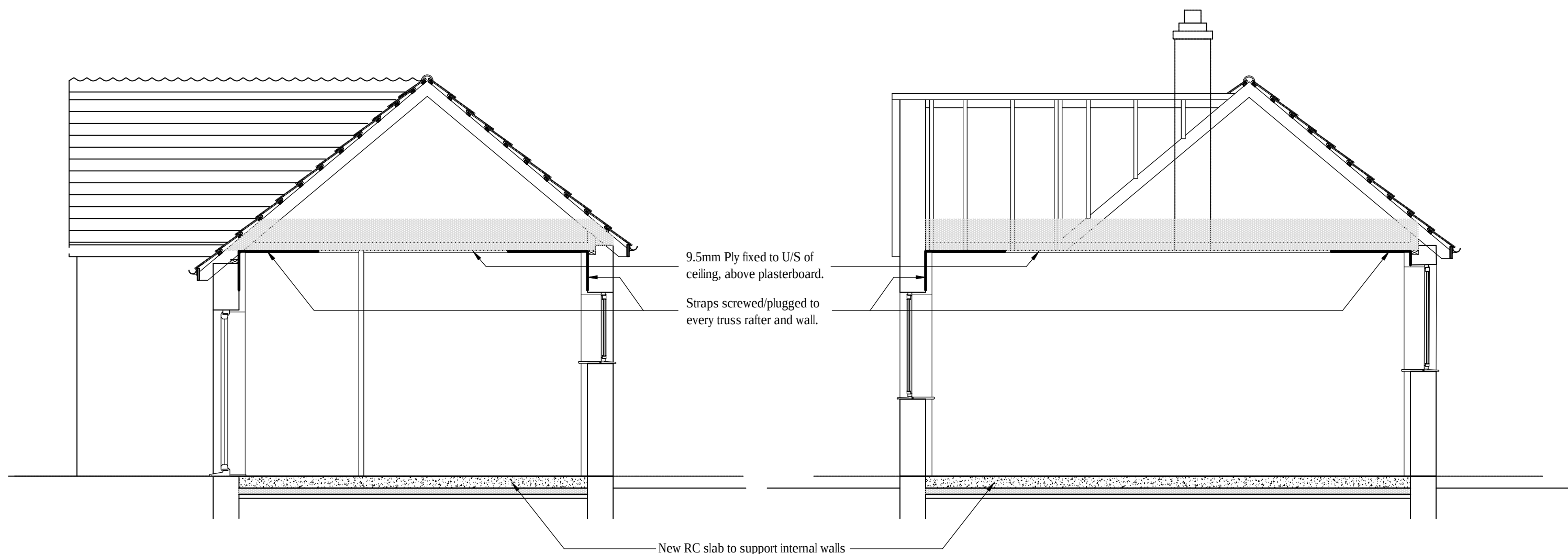
Appendix B

JNP Drawing No. S82605-D-106



Ground Floor Layout - (Showing positioning of straps over)

(Scale 1:50)

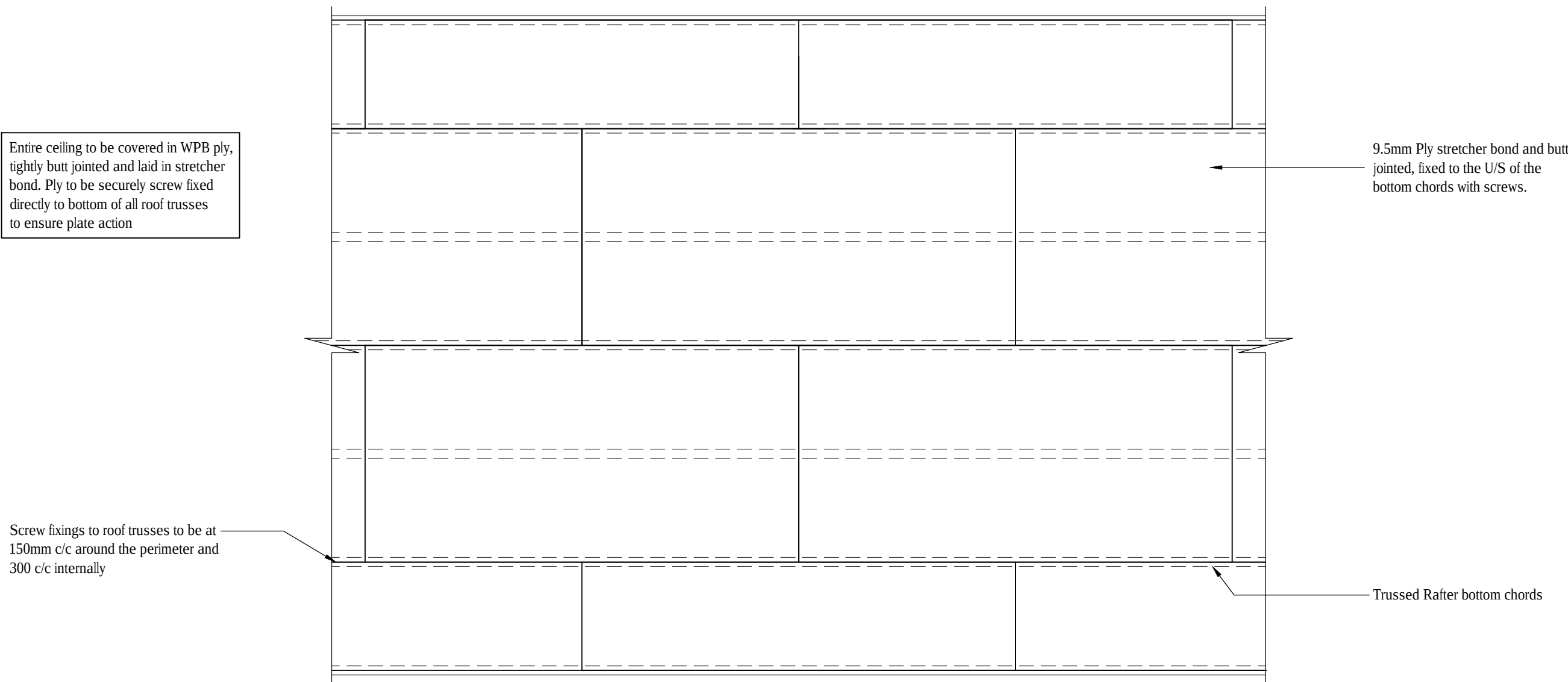


Section A-A

(Scale 1:50)

Section B-B

(Scale 1:50)



Plan showing underside of ceiling, with ply in stretcher bond fixed to roof trusses

(Scale 1:25)

Notes:-

1. All working dimensions to be checked on site.
2. Do not scale.
3. Any discrepancies between drawings of different scales, and between drawings and specification where appropriate to be notified to The Engineer for decision.
4. Copyright reserved. This drawing may only be used for The Client and location specified in the title block. It may not be copied or disclosed to any third party without the prior written consent of jnp group.
5. Prior to any work being commenced on site, The Engineer should be contacted regarding the current status or regulatory technical approval of this drawing.

Health and Safety Note:

The details on this drawing have been prepared on the assumption that a Competent Contractor will be carrying out the works. If the Contractor(s) considers that there is insufficient Health and Safety information on this drawing, this should immediately be brought to the attention of the Designer.

Rev.	Date	Amendment	By	Chk.

Status Preliminary / Unchecked



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Client	Persimmon Homes		
Job	RAF Uxbridge Phase 1A Carpenters Building		
Title	Refurbishment of Carpenters Building In Principle Structural Remedial Works		
Drawn By	BD	Date	06-03-13
Eng. Check			
Tech. Check			
Scale	As shown @ A1		

Drawing No.	Rev.
S82605-D-106	

QA Ref: QD019 Rev C

Appendix C
Supplementary Note to Report

Ref: S82605/UXB/ANB/JP/002

Application Ref: 585/APP/2012/2102

Supplementary Note to Report on Carpenter's Building

Roof Stabilisation of 8th March 2013

1.0 Introduction

1.1

This Supplementary Note arises from the response of Sarah Harper, Historic Buildings Officer at Hillingdon Borough Council in an email response to NMB Planning of the 26th April 2013.

1.2

The following paragraph is relevant:

- *The approval did not cover taking the removal of roof of the building off, which is demolition not repair. Whilst we have discussed the need for the removal of the roof previously, this was on the basis that the old one could not be saved. From the survey information provided there is no "conservation" justification for a new roof, as the problems will be caused by the new works i.e. the removal of the existing internal partitions, rather than the current condition of the building, which appears to be stable. There appears to be no discussion of why the existing roof structure cannot be retained, strengthened and strapped onto the new internal/existing external walls to provide the required bracing, which would be the preference with this Listed Building.*

2.0 JNP Group Response

2.1

In straightforward terms, the present structural arrangement of severely out of plumb walls and potentially unstable collared roof structure render the building unsuitable for conversion to domestic dwellings and thus occupation on a permanent basis.

2.2

Although on first inspection, it could be concluded that at present movement appears to have stabilised. However, the present structural arrangement of structurally inadequate collared roof, walls significantly out of plumb to the point where they would fall over if they were free-standing, does require additional works in order to permanently stabilise the structure, and thus preserve the building.

2.3

The existing internal partitions do provide some buttressing but only to the east elevation. However, new partitions can be correctly configured to provide the required level of restraint and bracing.

2.4

Re-examination of the building and in particular the section of exposed rafters indicates that the roof structure is under severe stress and that the present status quo of relative stability is unlikely in my opinion to continue into the future. The bowed rafters can quite easily be seen.

2.5

The existing roof structure cannot be adapted to properly brace and restrain the existing highly distorted and out of plumb external walls.

2.6

The present structural arrangement cannot be justified by any known method of currently acceptable structural analysis, good building practice or Building Regulation. Without stabilisation works it must therefore be considered as a potentially dangerous structure.

2.7

My report of the 8th March 2013 also makes it clear why structural remedial works are required.

2.8

The problem of instability will not be caused by removal and/or replacement of the existing internal partitions. The function of the internal partitions is unclear and structurally inadequate to ensure the long term stability of the building. Failure to implement the recommended structural stability works will in my opinion ultimately lead to the loss of the entire building due to structural collapse.

2.9

In my opinion the structural remedial works proposed in my report of the 8th March 2013, represent the most cost effective structurally efficient and visually unobtrusive method.

2.10

To facilitate introduction of a new, more structurally stable and fully triangulated roof structure, the existing roof would ideally need to be stripped. This could then be replaced with a *replica*, in situ cut roof construction, re-using the existing plain clay tiles also following an undulating and historic profile to match existing.



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