AFP CONSULTING ENGINEERS LTD
STRUCTURAL AND CIVIL ENGINEERING CONSULTANTS
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Email: bury@afpconsult.co.uk

Our ref: CE22/4225/NAW/RB

4 July 2022

Mr R Smart
Burnt House Farm
Stoke by Clare
CO10 8HU

Dear Mr Smart

Burnt House Farm

We refer to our recent further visit to inspect opening up to the house following our discussion and letter report of 4th July 2022.

This Engineer's report only deals with the above mentioned and our liability in respect of this report is limited to you as our Client. There is no intention to confer any third party rights as described in the Contracts (Right of Third Parties) Act 1999. Please also note that we have not inspected the condition of timber or any parts of the property which are covered or unexposed and cannot therefore report that such parts of the property are free from defect.

This inspection is solely related to the investigations of the damage in the area of the ground floor living room. The opening up of the ground floor timber frame has exposed the members up to window mid height. The original intention was to limit the work to windowsill level, but there were concerns that members were damaged above that level, particularly on the side elevation.

The attached photographs 1-6 show the extent of the opening up carried out. Whilst some of the original timber framing members and studs are original, many are replacement members, including a large section of the soleplate to the rear wall. We indicate on the attached drawing extracts the locations of original members and where the original members have been replaced. It is thought that the lath and plaster removed is not original and provided following the various historic repairs and interventions with sawn softwood members. Inspection of the external render shows that much of it has been replaced with a cement render on metal lathing, which has also started to rust as a consequence of the humid conditions and trapped moisture within the wall construction.

You are aware from our initial report our concerns about the condition of the soleplate. This further investigation highlights significant decay in each of the sections exposed, with the exception of the side wall where it has been partly replaced. The majority of positions inspected revealed decay in excess of 50% of the original section. The bottom of each of the timber studs have also decayed and this decay continues up the external timber face where it is in contact with the cementitious render on metal lathing, (see photographs 7 to 11).

The original timber corner post is of larger section (c.180 x 150) that is thought to be damaged to the outside face where it is in contact with the cement render. This has previously been cut at the base when earlier soleplate works have been carried out. The soleplate under the corner has completely decayed. Inspection of the top of the corner post shows no significant connection between the post and the first floor beams (see photographs 12 to 14).

Inspection of the rear window suggests that the current windows have been introduced at a later date with various timber studs used under the sill (see photograph 11).

Inspection of the plinth wall directly under the soleplate shows that no damp proof course (DPC) was introduced when the soleplate was introduced, although the studs appear to be original members (see photograph 15).

Inspection of the wall to the left hand side of the rear entrance door shows the soleplate to be totally decayed and the lower section of the stud (to the side of the door frame) to be damaged for the lower 4-500mm. The external render to this section of wall is lath and render (see photograph 16). The floor bricks were locally lifted in this location. They are around 50mm thick, and sand bedded onto earth.

A trial hole was opened to the external corner. This showed the brick foundation to be slightly corbelled at the base and bearing around 550mm below external ground level that is similar to internal floor level in the living room (see photographs 17 and 18).

Discussion

The conditions described above confirm that significant deterioration and damage has occurred to the soleplate and the base levels of the timber studs and frame. In some locations the decay is substantial. Inspection of the external render shows that significant sections of the external walls to the living room comprise cement render on metal lathing that has trapped moisture and begun to damage the covered external face of the vertical timbers. Whilst some of the timbers are original, many of them are replacements of varying section and quality. The studwork under the two windowsills are modern insertions, although some original sections are thought to have been reused.

The timber decay has occurred because of the lack of a DPC and rerendering the external elevations on metal lathing using a cement render.

Inspection of the foundation and the walls generally suggests that the foundation is adequate, and that underpinning or other improvements are not required except rebuilding 1 or 2 courses when a new soleplate and DPC is introduced. The type of DPC used is to be agreed.

The soleplate section originally used is around 150mm square. The original studs are in the order of 150/170 x 100 deep.

It is recommended that the soleplate to be replaced in oak, incorporating a DPC (assumed to be slate) to separate it from the plinth masonry at, or slightly higher than the existing level. Ideally the external ground levels would be slightly lower.

We have discussed the full replacement (ground to 1st floor) studs where non-original sections have been inserted. These would match the original studs in size. The use of mid-height splices in these non-original members will be difficult and not straightforward and that is why full height replacements are suggested.

It would be usual to cut the bottom section of damaged timber studs and splice in new base sections. In this project the height would be 1.0 – 1.5m, but subject to a more detailed inspection when the render is removed. You have asked if the timber frame might be exposed when the repairs are carried out. That is something that the local authority conservation officer will advise on when considering the overall extent of work you wish to undertake. If this is permitted because there are only 3, perhaps 4 original members in addition to the corner post and each of these will require some level of replacement by splicing base sections in. The corner post will remain and be repaired.

We suggest that the soleplate and the new/repaired studs are connected using mortice and tenon, or other agreed housing joints. The soleplate will require a DPC positioned under it (and possibly set 1 to 2 courses below the soleplate). The external plinth arrangement will require careful detailing of the render to ensure that water does not penetrate into or onto the soleplate.

The section and extent of soleplate to the left hand side of the external door (viewed from inside) will require the work to be executed from outside to avoid damage in the pantry area.

The corner post and post at the wall separating the living room from the study are poorly connected at the top to the first floor beams. These will require fabricated metal straps installed to improve the connections. This is a detail that will require confirmation during the works.

We have discussed the floor construction and unless you specifically want to improve this to have a full limecrete floor we suggest maintaining the existing construction.

You have referred to the external render and the advice from your surveyor recommending replacement because much of it is cementitious. We don't disagree with this comment and understand that you will enter into dialogue with the conservation officer to agree a phased replacement of it.

We trust that this report provides you with sufficient information to discuss continuing with the repair works with the conservation officer.

If you have any questions in the meantime, please contact us.

Yours sincerely

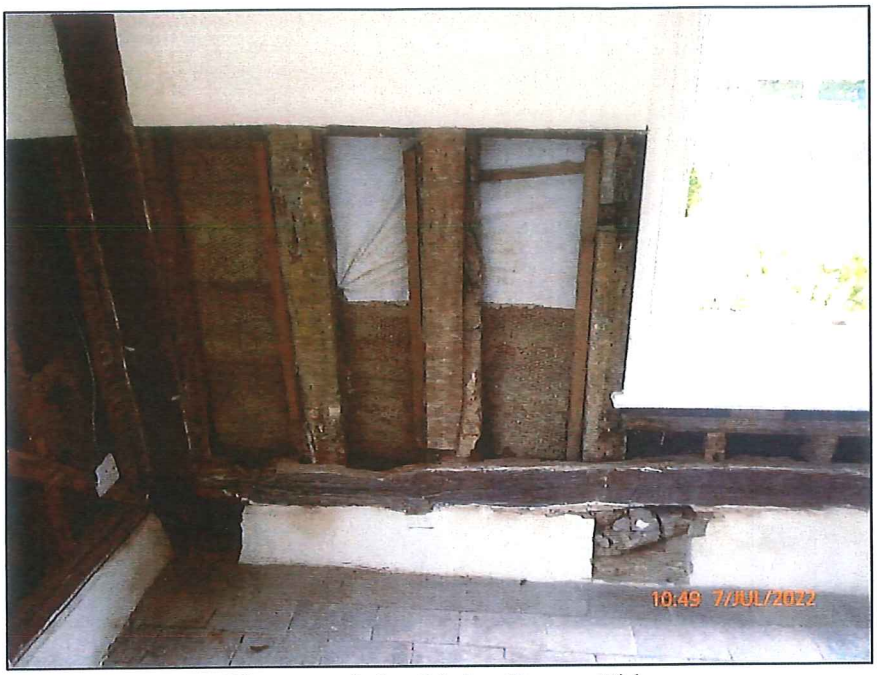
N A Wilson

Nigel Wilson **BSc CEng, MICE, MIStructE**
For and on behalf of AFP Consulting Engineers Ltd

PHOTOGRAPH SHEET
Burnt House Farm – Living Room

Photograph 1 – Living Room, Rear

Photograph 2 – Living Room, Rear



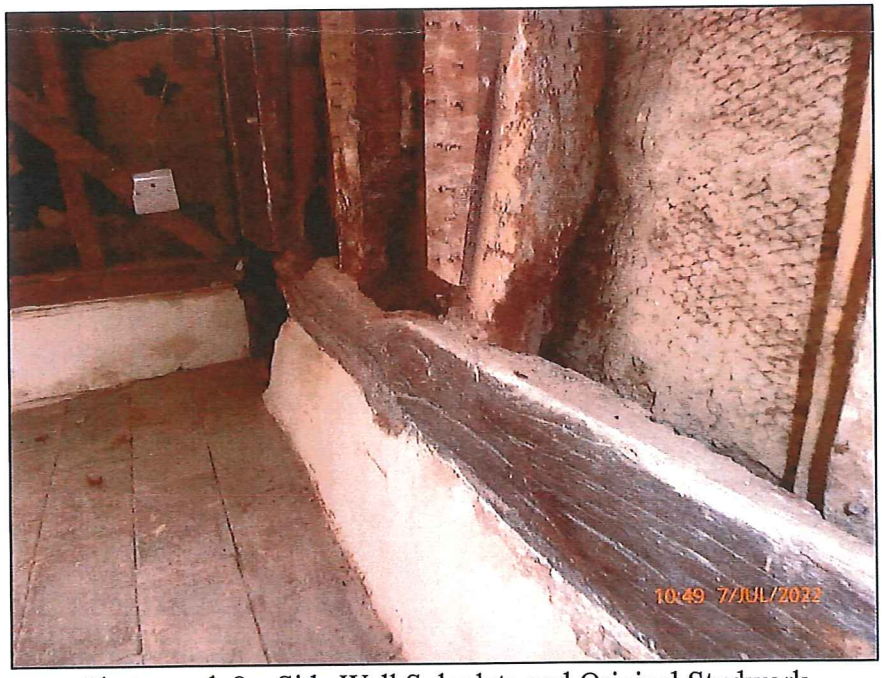
Photograph 3 – Living Room, Side

Photograph 4 – Living Room, Side Window

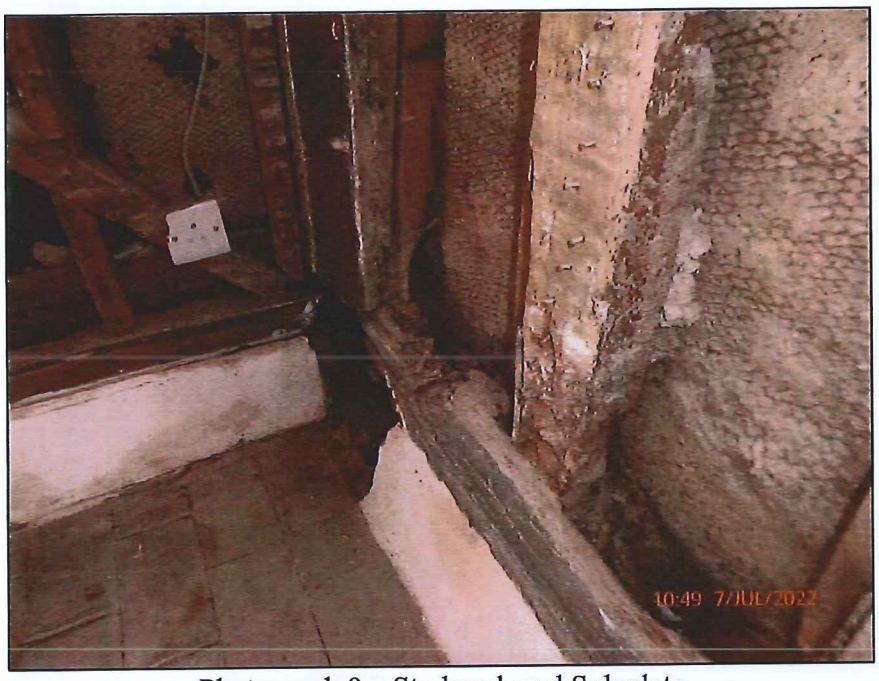
Photograph 5 – Living Room Side, Further Opening Up

Photograph 6 – Living Room, To Left Hand Side of Door

Photograph 7 – Corner/Side Wall Soleplate



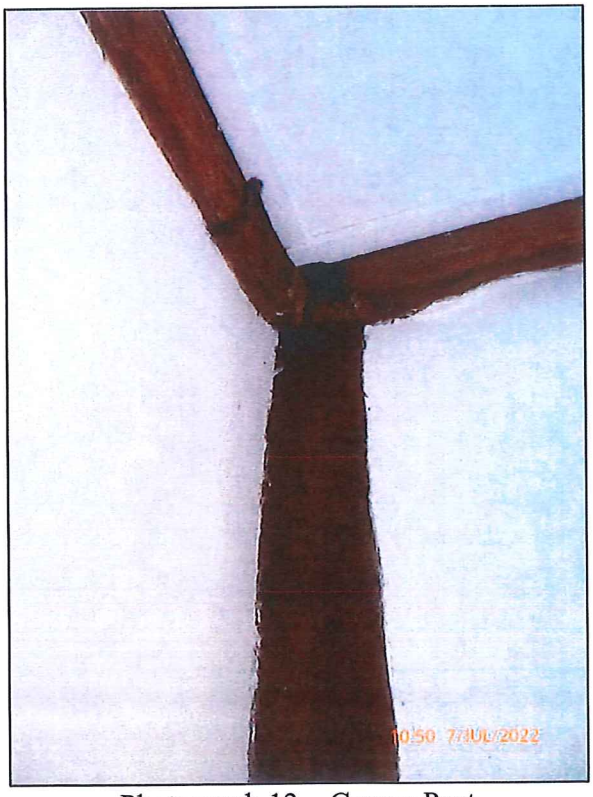
Photograph 8 – Side Wall Soleplate and Original Studwork



Photograph 9 – Studwork and Soleplate

Photograph 10 – Corner Rear Wall

Photograph 11 – Rear Wall

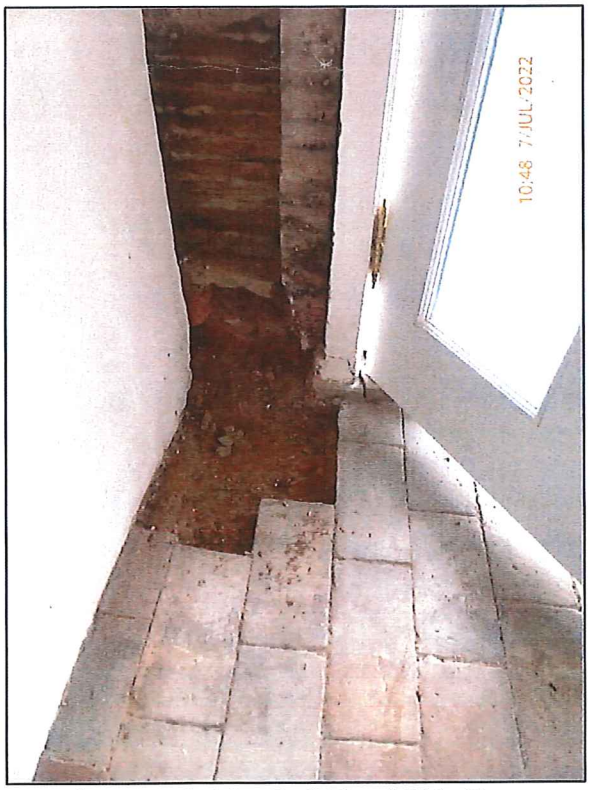


Photograph 12 – Corner Post

Photograph 13 – Corner Post at 1st Floor

Photograph 14 – Corner Post at 1st Floor

Photograph 15 – Side Wall Replacement Soleplate



Photograph 16 – Left Hand Side Door

Photograph 17 – External Trial Hole

Photograph 18 – External Trial Hole

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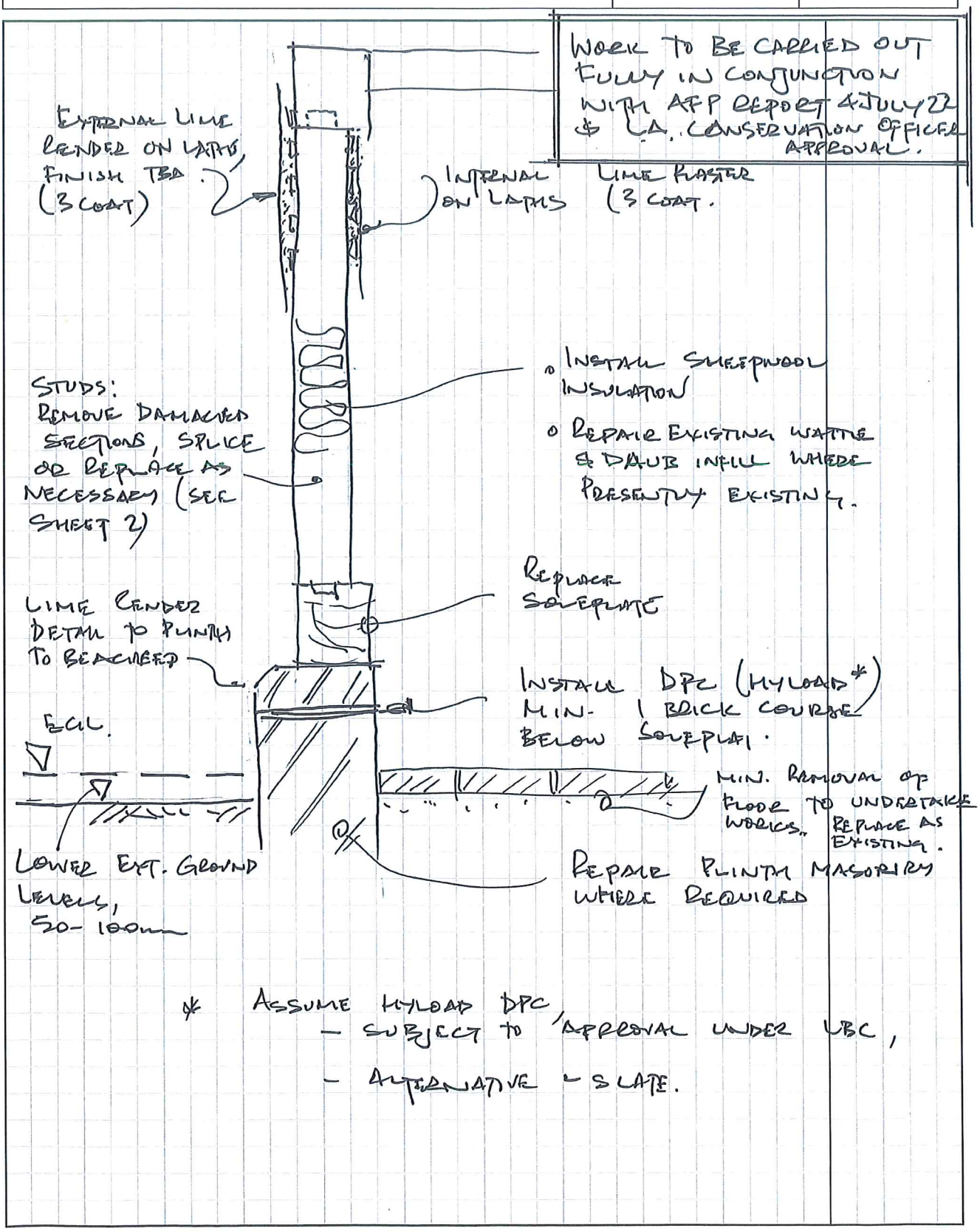
Project: BURNT HOUSE FARM	Job No. CE22/4225	Sheet No. SK1.
Section: WALL DETAIL – REPAIRS.	Prepared:	Date:
	Checked:	Date:



* ASSUME HYLOAD DPC
– SUBJECT TO APPROVAL UNDER UBC,
– ALTERNATIVE – SLATE.

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Project: BURNT HOUSE FARM	Job No. CE22/4225	Sheet No. SK 2.
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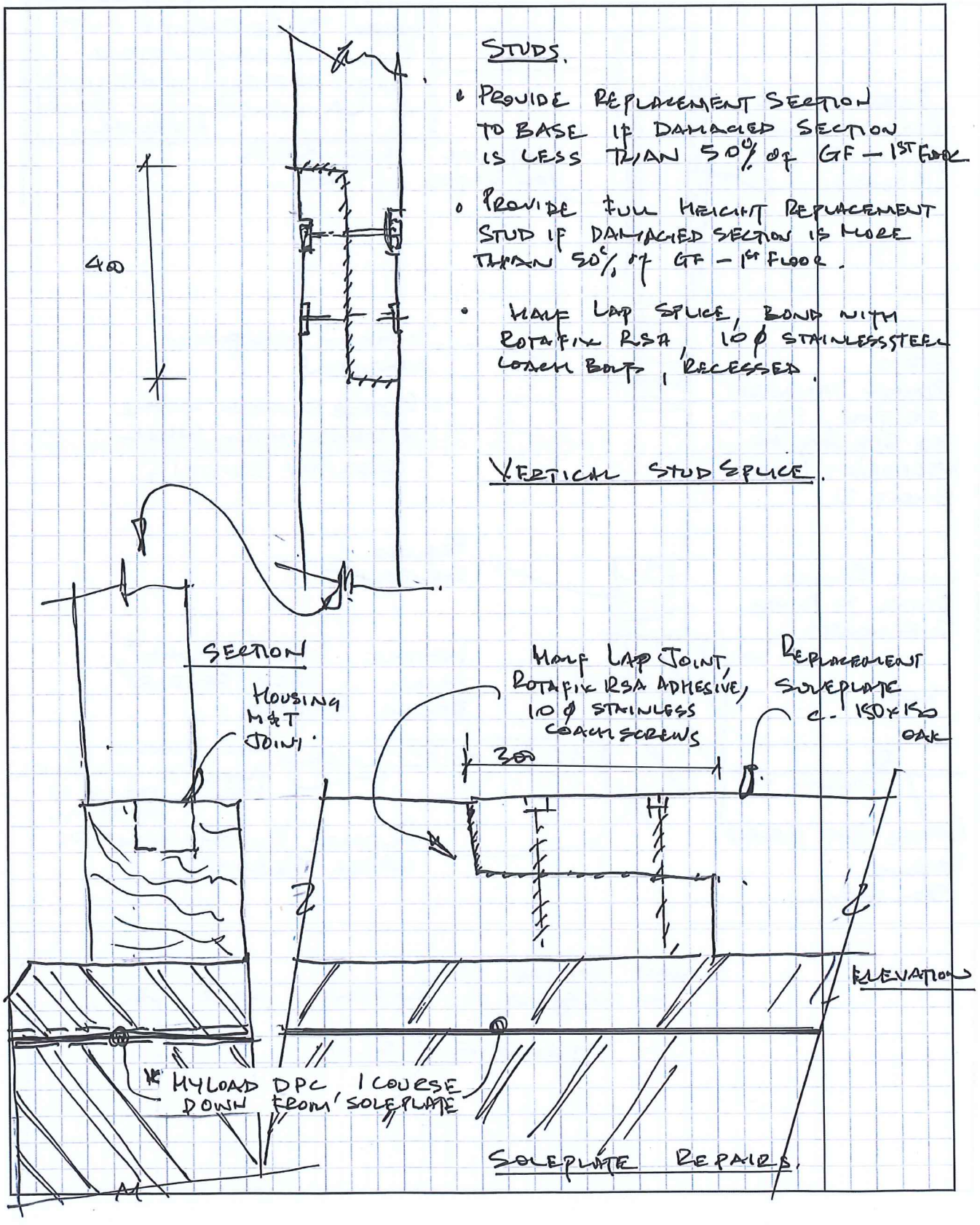
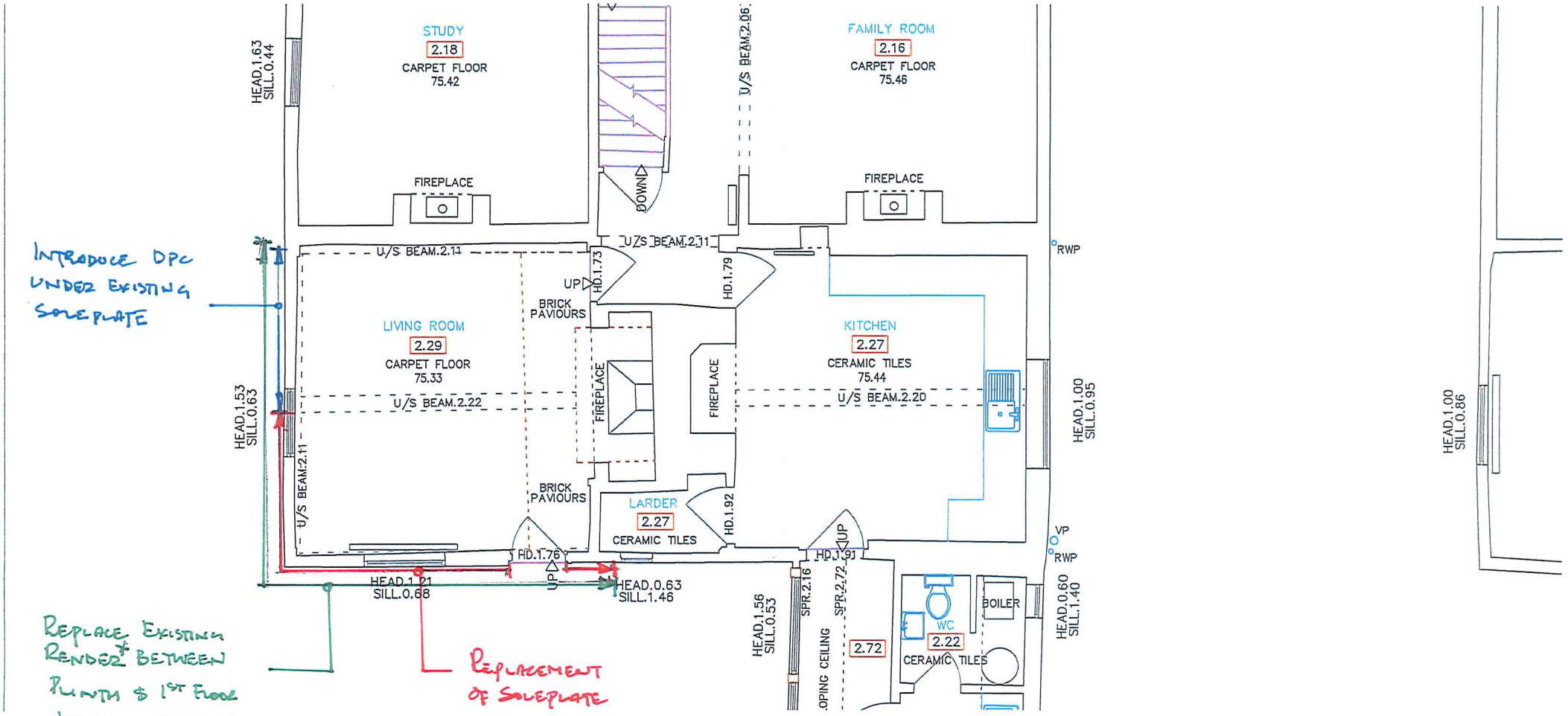
	Checked:	Date:





* THIS SECTION TO BE 1ST STAGE OF OVERALL PROGRAMME OF RERENDERING RECOMMENDED BY SURVEYOR.

Rev. A – August 22

NEW DPC UNDER.

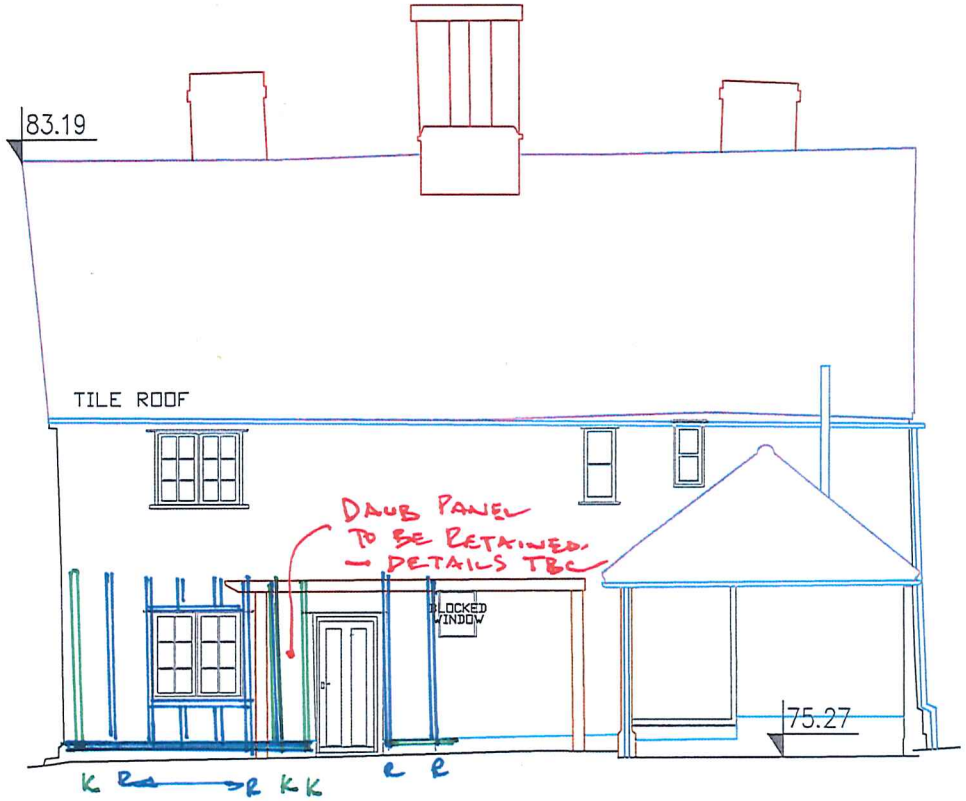
ELEVATION 2

K= ORIGINAL TIMBER FRAME MEMBER, KEEP & REPAIR.

R= PREVIOUSLY REPAIRED/ REPLACED MEMBER, REMOVE & REPLACE WITH NEW. OR SPLICE REPLACEMENT LOWER SECTION.

Rev A

Rev A - August 22.

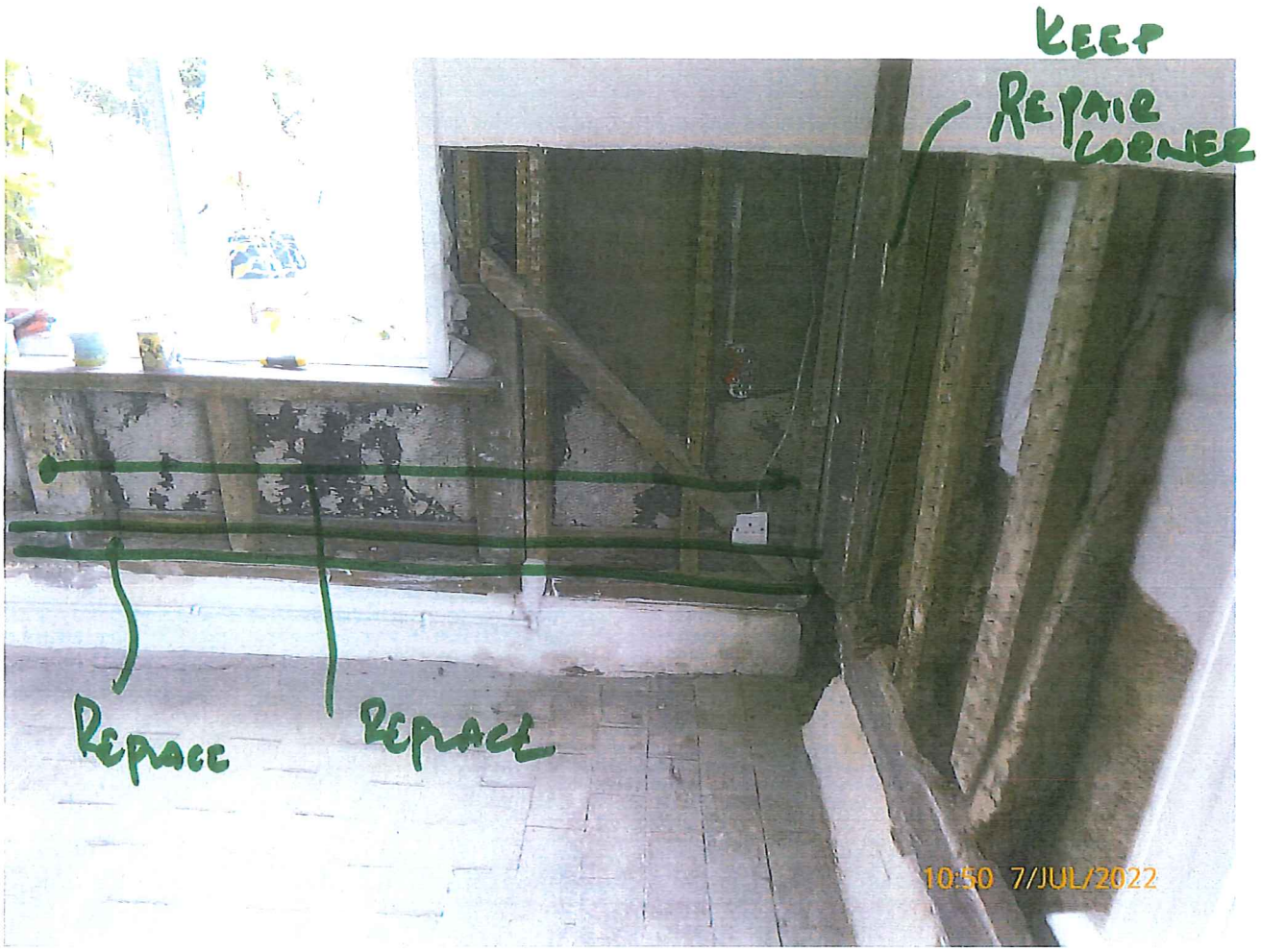


ELEVATION 1

K = ORIGINAL TIMBER FRAME MEMBER, KEEP & REPAIR.

R = PREVIOUSLY REPAIRED/REPLACED MEMBER, REMOVE & REPLACE WITH NEW.
OR/ SPLICE REPLACEMENT LOWER SECTION → Rev A

REPUIS


KEEP
REPAIR CORNER
REPLACE
REPLACE
10:50 7/JUL/2022


KEEP
KEEP
REPLACE
REPLACE
10:50 7/JUL/2022


CORNER
KEEP
REPLACE
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