

Our Ref: 07673

Steve Jones
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26 Prospect Drive
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Wrexham
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7th August 2020

Dear Steve

4 – 6 Regent Street, Wrexham
Structural Inspection of Masonry Cracking

Introduction

Concerns were raised regarding cracks identified at the above property. A structural inspection of the cracking was commissioned in order to investigate the nature of the structural concerns and to inform any remedial works required. A non-intrusive visual survey was undertaken on 23rd July 2020 by Jonathan Paull, Chartered Structural Engineer for *JP Structural Design Ltd* and this letter report presents the observed defects, the high level observations and recommendations for remedial works.

Structural Form

The commercial property comprises a retail unit at ground floor and two storeys of accommodation above which is set back from the building line at ground floor. The front elevation to the 1st and 2nd storeys is set back from the street line and is supported on a series of large steel beams at ground floor level. The structure above ground floor comprises load bearing masonry walls suspended timber joists at 1st and 2nd floors and a pitched roof formed in timber supporting battens and tiles.



Fig I – view of front elevation of property

Survey Extent

The survey was specifically limited to the cracking identified to the load bearing masonry within the building. A visual survey of the brickwork was undertaken but no intrusive investigations such as trial pits or plaster removal were undertaken.

Observations

An inspection of the internal return walls at 1st and 2nd floors identified significant stepped cracking adjacent to the front elevation. The central chimney breast appeared to have settled significantly causing large structural movements and tapered cracking.

The main observations are presented in the following photos:

Survey Photographs



Fig 1: Settlement cracks to internal wall adjacent to front elevation



Fig 2: cracking extending full height to ceilings



Fig 3: tapered cracking adjacent to front elevation – significant settlement of central portion of masonry leading to severe cracking to return walls



Fig 4: Stepped cracking and vertical crack along interface with front elevation suggesting restraint to front elevation has been severed



Fig 5: Support structure at ground floor level and significant weight of masonry above.

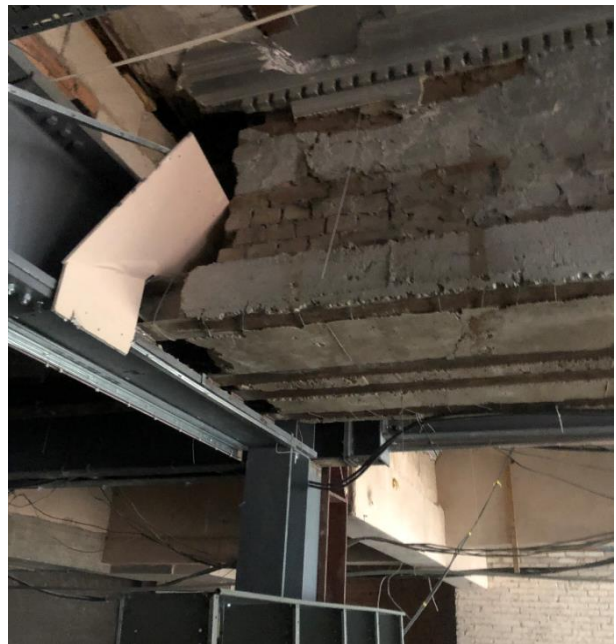


Fig 6: Chimney support at ground floor level and transfer structure to steel beams. Settlement cracking above suggests either excessive deflections in steel support structure and/or settlement of supporting columns

Summary and Recommendations

On the basis of the defects observed during the survey, it appears that the masonry structure above ground floor level has suffered from significant structural movement resulting in severe cracking that extends the full height of the property. The form and location of cracking indicates that significant settlement has occurred and suggests that the steel support structure at ground floor level is overloaded, leading to excessive deflections and/or column and foundation settlement.

The fact that the cracking is located adjacent to the front elevation and in places runs vertically up the joint between the return walls and the front elevation, calls into question the lateral stability of the front wall. The cracks have severed the restraint provided by the internal walls and will no longer be providing full restraint to the front wall.

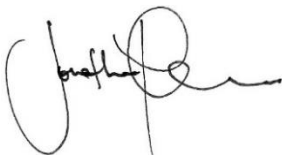
The support structure at ground floor ceiling level appears to be supporting a very large amount of weight and the fact that the chimney breast masonry has sunk suggests that the support structure is overloaded.

The front wall in its current condition cannot be considered as stable as the lateral restraint previously provided by the internal walls can no longer be relied upon. Remedial works to rectify the cracking will involve large sections of demolition and rebuild and appropriate temporary works will be required to maintain stability during the works. The fact that the settlement has occurred suggests that the support structure at ground floor is overloaded and consideration should be given to reducing the dead weight of masonry above or alternatively strengthening of the support structure and potential underpinning of the foundations. As an alternative, the heavy masonry structure above ground floor level could be demolished and replaced with a lighter weight form of construction however this and any other proposals would need to be discussed and agreed with the planning department and conservation officer.

I trust that the contents of this letter report are clear but if you wish to discuss any of the above in more detail, don't hesitate to contact me on 07968 145 576.

Yours sincerely,

for and on behalf of
JP Structural Design Ltd



Jonathan Paull MEng (Hons), CEng, MStructE
Director