20 Mecklenburgh Square

19876/DD

Report on Structural Inspection of Stone Stair

1 Introduction

The owners at 20 Mecklenburgh Square have recently noticed that gaps had started to open up at the base of the stone stair from ground to first floor and between some of the treads. The purpose of this inspection and report is to examine the stair, assess the cause and the severity of the problem and to recommend appropriate remedial action.

2 Description of Existing Structure

20 Mecklenburgh Square is a five storey Georgian terraced house that has been converted into flats. It has loadbearing brick external walls supporting timber floors and roof, and two internal loadbearing brick spine walls on either side of the stairwell.

The stair is a 'cantilevered' stone stair from ground floor to second floor and timber from second to third floor.

3 Observations

The ground floor is suspended timber floor which has a stone finish in the stair well area. A dividing partition has been built off this floor in the area at the bottom of the stair. The timber floor has deflected and a gap has opened up below the bottom tread of the stone stair. Minor gaps/cracks are appearing between the treads higher up.

The arrangement of joists in the landing at the bottom of the stone stair is shown on the enclosed sketch 19876/Sk1.

4 Discussion

'Cantilevered' stone stairs of the sort in 20 Mecklenburgh Square are not true cantilevers. Each tread supports the one above and much of the vertical load is transferred to the bottom tread. This tread needs to be rigidly supported to avoid the whole stair coming loose.

The timber joists and trimmers that support the base of the stair are too small to take the weight of the stair. In addition to this the partition that was added when the house was converted into flats has further overloaded these joists leading to additional deflection.

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5 Conclusions / Recommendations

The ground floor landing that supports the stone stair should be propped from below as a matter of urgency and the bottom tread of the stair should be packed tight with timber wedges to ensure that the stair is properly supported and cannot come loose.

The timber trimmers that support this area can then be strengthened by bolting a steel channel to the side of one and support angles fixed to the wall below the other. The channel will compromise headroom on the stair to the basement and further discussion with Building Control will be necessary.

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