

Ref: 3115

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REPORT ON MOVEMENT AND CRACKING AT
35 PRIMROSE GARDENS, LONDON, NW3 4UL

INTRODUCTION:

At the request of Jonathan Kennedy, a visual structural examination was carried out to check and report on movement and cracking at the property.

For the purpose of this report the front of the building faces east

DESCRIPTION:

The property is a conventional late Victorian/Edwardian five storey (including roof accommodation) terraced house of exposed loadbearing brickwork.

The timber joist floors are assumed to span front to back and bear onto an original central loadbearing wall that extends all the way up inside the house. This internal wall is timber stud.

At lower ground floor this internal wall is of solid brick construction, however, a central portion of this wall has been removed leaving a 3.6m wide opening in the centre. The original front to back wall at the front near the bottom of the stairs had also previously been removed. I understand that these alterations were carried out some 40 years ago.

Access was available only to the lower ground and ground floor accommodation.

INVESTIGATION OF CRACKING:

At both lower ground floor and ground floor, minor cracking and movement was evident in the central loadbearing wall, particularly around the door openings. The pattern of cracking and movement would indicate that the wall has dropped towards the north side. I understand that this cracking has occurred in the last 2 or 3 years.

At lower ground floor some opening up works had been carried out to inspect the means of support to the opening. This was found to be a 203 203 71 UC steel beam supported by a 152 152 23 UC steel column at each end.

It could not be seen what the steel columns are sitting on but it is likely to be either a pair of mass concrete pad foundations or another steel beam providing a spreader base onto the original footing.

It was noted that there is a 10m high mature Bay tree growing in the back garden, 2.3m from the rear elevation alongside the north boundary.

It was also noted that drainage runs under the house from back to front. A gulley in the paving alongside the rear elevation collects rain and foul water. Another manhole is located in the light well to the front.

DIAGNOSIS:

In the first instance the load applied to the steel frame was calculated and the steelwork checked for strength. It was found that both the steel beam and the supporting posts were more than adequate to support this applied load.

Furthermore, if this was installed 40 years ago, any initial movement and deflection that can take place will have occurred at this time.

According to the British Geological Society geological maps, the area is London Clay which is known to be shrinkable clay soil which swells and shrinks with varying degrees of ground moisture. The extent of ground moisture will vary between the summer and winter seasons, causing some swelling and shrinking of the soil. Trees can artificially dry the soil by extracting moisture through their roots, causing the ground to shrink considerably more than normal, in a localised area around it. It is this localised shrinkage within the vicinity of large trees that causes differential ground movement and consequential movement and cracking within nearby buildings.

The National House Building Council (NHBC) have produced guidelines that allow the approximate depth that tree roots have caused shrinkage of soil to be calculated, given the soil type, tree size and type, and the distance from the tree.

Calculations in accordance with these NHBC Guidelines indicate that the mature bay tree will be having an adverse effect on the ground to a depth of 1.1m at the nearest steel column supporting the steel beam.

The depth of existing footings are not known, but a property of this age the depth without an underfloor void is likely to be of the order of 450mm – 600mm. Therefore the bay tree is likely to be having an adverse effect on the nearest steel column causing soil shrinkage to take place and consequential movement and cracking.

As well as the tree, the drainage that runs under the house should also be checked for any cracks, displaced joints or damage that will cause leaks. Water leaking from a drain can locally soften the soil and also wash away fine material, causing localised settlement of the soil and any building structures upon it.

REMEDIAL WORKS:

In the first instance the mature bay tree in the back garden should be cut down and the stump dug out or killed off. This will allow the soil to rehydrate and reach a state of equilibrium. Whilst this process is taking place some further slight movement and cracking may occur until it has settled down.

The underground drainage below the house should be checked by CCTV survey and any defects rectified. Cracked and damaged underground pipes can be repaired by inserting a resin liner tube that will set into place creating a permanent repair without having to dig the pipe up.

Once the remedial works have taking place, there remains the possibility that minor cracking may occur in the future due to normal seasonal building movement taking place and manifesting itself in areas where previous movement has occurred.

CONCLUSION:

Minor internal movement is taking place to the internal loadbearing wall at lower ground and ground floor levels. This would appear to be caused by the nearby mature bay tree at the back and also possibly localised leaking from the underground drain locally affecting the soil. The tree should be removed and the drainage checked by CCTV survey and repairs carried out to any defects.

The steelwork supporting the opening at lower ground floor has been checked and found to be adequate.

GENERAL:

We have not inspected woodwork or other parts of the structure which are covered unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect. The scope of the inspection and this report is solely for the purpose of investigating the issue as given in the introduction above, and no other aspect of the building has been investigated or will be reported upon. Any other issues will be subject to separate investigation.

Report by:

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