11 PRINCE ALBERT ROAD

LONDON NW1 7SR

CONDITION REPORT ON

THE NORTH,SOUTH AND WEST BOUNDARY WALLS

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Introduction

A request has been made by Harrison Varma for Kashec Limited to carry out an inspection of the North, South and West boundary walls at 11 Prince Albert Road, London NW1 7SR following identification of a number of defects in the walls which are likely to affect their structural stability. A visual inspection was carried out on the 10/9/18. Our findings are given below

South Boundary wall

The South boundary wall abuts the public footpath on Prince Albert Road and follows the plan curvature of the footpath and adjacent carriageway. It is 12.94m in length and 1.7m in height and has a pier at the east end adjacent to the gate post supporting the main entrance gates (Photo 1). The west end of the wall is not connected to the wall of the adjacent property. The wall is 9 inches (228.6mm) thick and is constructed in English bond. Located at the rear of the wall and in very close proximity are three mature trees protected by preservation orders. It is believed that the wall was constructed when the house was built.

Cracking and visual surface

There are two full height vertical cracks situated at approx. 5.2m (Photo 2) and 8.4m (Photo 3) distance from the pier at the east end of the wall. The cracks extend for the full depth of the wall. The larger of the cracks is in excess of 7.0mm in width at its worst point. A horizontal crack adjacent to the west end of the wall continues for approximately 3.0m. The wall has an inward lean which varies over the length of the wall and is 68mm out of plumb at the point of worst lean. Measurements have been taken along the length of the wall to record the horizontal displacements at the top of the wall (see drawing K1914-500-0). Temporary propping has been erected to the inner face of the wall for a distance of approximately 9.0m from the west end to beyond the large vertical crack and point of maximum inward lean (Photo 4) to prevent the wall from falling down. The pier adjacent to the main entrance has a horizontal crack running for the full width and depth of the pier (photo 5) the pier is currently being supported by the large timber gate post.

Foundations would appear to be non-existent**.**

The front boundary wall of the adjoining property (Number 10) also shows evidence of cracking (Photos 6 – 8) although to a much lesser degree, this has occurred after the recent long hot dry spell.

Structural stability

The South boundary wall has a maximum out of plumb of 68mm. Without foundations the kern for the wall is 38mm. The eccentricity from the wind moment plus eccentricity moment from the wall being out of plumb is greater than the length of the kern therefore the wall is unstable.

Calculations have shown that a freestanding wall 1.7m in height and having a thickness of 9 inches (228mm) will satisfy the latest design code requirements for stability and wind loading when supported by adequate foundations.

West Boundary wall

The west boundary wall runs from North to South along the edge of the property boundary and forms a party wall with next door. The wall varies in height over its length and steps to follow the contour of the existing ground level. There is a large tree located adjacent to the wall in the corner adjoining with the front boundary wall. The wall is not tied into the front boundary wall. Various shrubs and vegetation are present adjacent to the wall in the garden of number 12. The wall is 9 inches (228.6mm) thick and is constructed in English bond. Adjacent to the first stepped section there is a lintel spanning approximately 3.6m supporting the wall and is located close to the current ground level. Roots and other vegetation can be seen protruding from the soil underneath the lintel. It is understood that parts of this wall are supported on foundations and that the wall is buried for some considerable distance below ground level.

Horizontal cracking can be observed at approximately mid height. The crack runs from close to the large tree at the southern end of the wall to the southern end of the concrete lintel. At this point the crack meets a vertical crack located at the end of the lintel bearing point. A further vertical crack is apparent at the other end of the lintel bearing (Photos 11 and 12) these are probably due to the local hard points caused by the lintel support points.

Structural stability

Although not showing signs of imminent failure it is possible to move the wall by inserting a lever in between the horizontal crack this would suggest that it is only the self-weight of the wall holding the top portion in place.

North Boundary wall

The north boundary wall runs from east to west and forms the northern boundary to the property. A large ivy tree at the rear of the wall overhangs into number 11.

The wall is leaning inwards into number 11 the maximum out of plumb is 130mm at approximate midpoint along the wall. There are three piers in the length of the wall. From the evidence of a trial hole the foundations appear to be 100mm thick and extend for ½ brick either side of the wall. (photo 13)

Structural stability

The wall is showing signs of distress and currently has temporary propping installed along its length. With a maximum out of plumb of 130mm the centre of gravity of the wall falls outside of the kern and the wall is therefore unstable.

Conclusions

The mature trees and vegetation are very close to the walls, extensive damage has been caused by tree roots displacing the bottom of the walls at foundations (if any). Also the subsoil consists of London clay having a high plasticity index which means that the subsoil is subject to constant contraction and swelling dependant on the amount of moisture present. In high plasticity clays, which have very low permeability, winter rainfall cannot fully replenish the moisture removed by large trees during the summer, so a zone of permanently desiccated soil develops under the tree. This zone increases in depth and lateral extent as the tree grows. Consequently after a prolonged dry spell such as for this summer the ground has shrunk allowing the wall to settle. The subsequent very wet spell reversed the process causing the ground to swell which forced the walls upwards again .This shrinkage/swelling cycle occurs every year and if walls are not supported by good foundations they will crack due to the ground movement. The same movement is evident to the wall in the adjoining property which only became apparent at the end of this year's very long dry spell.

Recommendations

South Boundary wall

Because of its dangerous condition the south boundary wall poses a serious health and safety risk to the public. It is imperative that it is demolished and is rebuilt on new foundations. The presence of the trees and tree roots would make it difficult to employ a conventional raft or trench foundation for the wall. An alternative is to use small diameter hand driven steel screw piles at discrete centres supporting a compact ground beam. The torsion generated from any wind moments can be taken by outrigger piles and ground beams located at the main pile centres.

West boundary wall

Demolish the wall completely from the southern end up to the vertical crack local to the concrete lintel. Rebuild the wall with new foundations similar to the south wall and repair the vertical crack to the wall on the northern side of the concrete lintel.

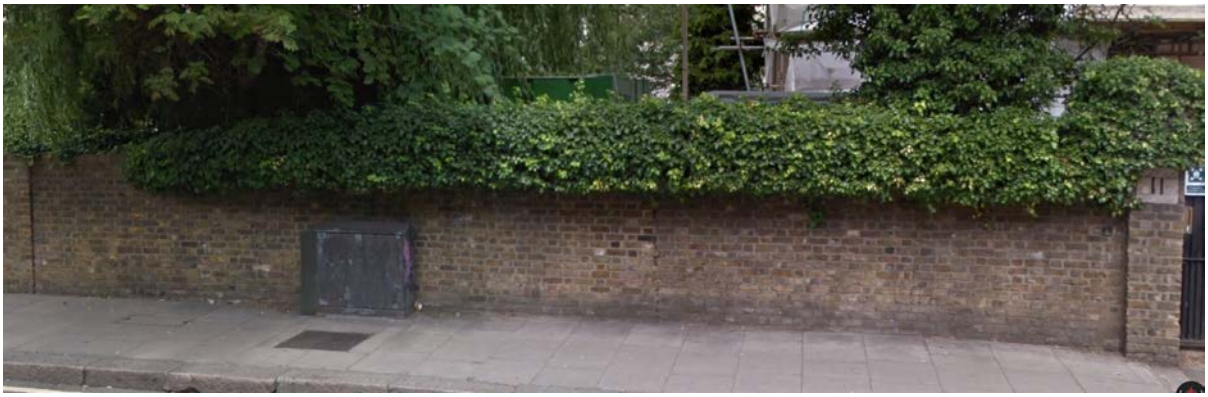
New foundations similar to those for the north wall will be required within the zone of the tree unless it is established that the west wall has much deeper foundations supporting the wall in the zone of influence of the tree.

Trial holes should be dug to ascertain the presence of any foundations before carrying out any remedial work.

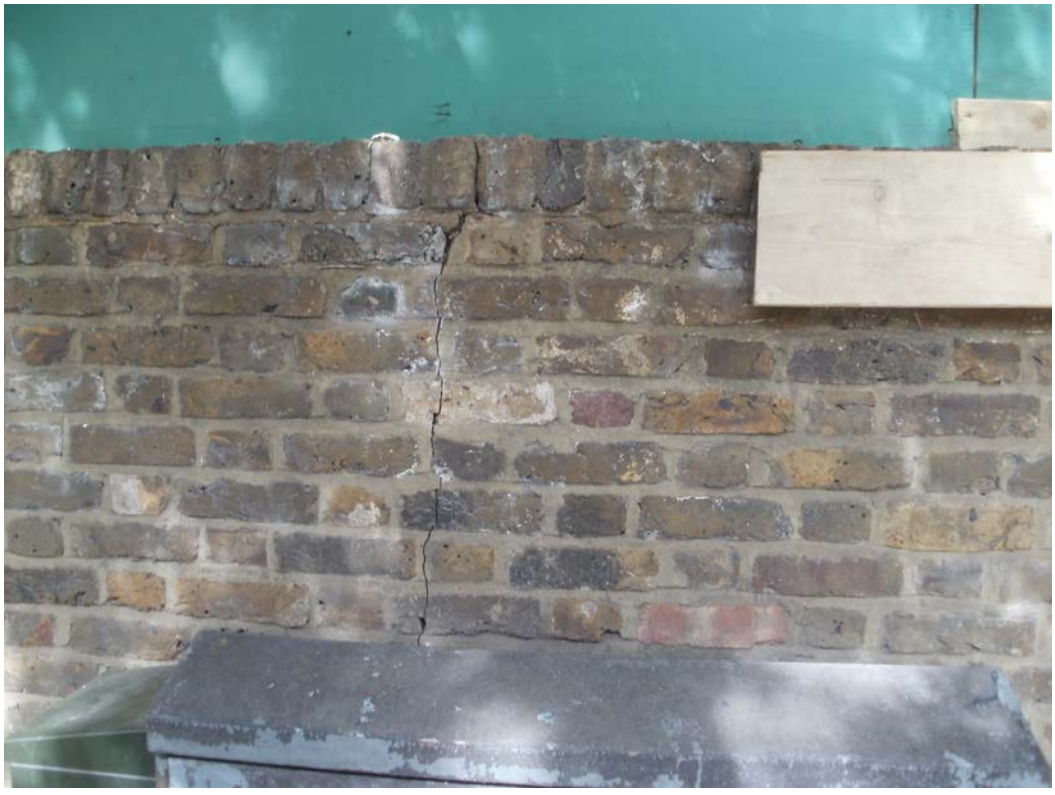
North Boundary wall

Because of its dangerous condition the north boundary wall poses a serious health and safety risk to the occupants of number 11. It is imperative that it is demolished and is rebuilt on new foundations. The foundations should consist of small diameter hand driven steel screw piles at discrete centres supporting a compact ground beam. The torsion generated from any wind moments can be taken by outrigger piles and ground beams located at the main pile centres similar to the method proposed for the south wall.

PHOTOGRAPHS



. PHOTO 1



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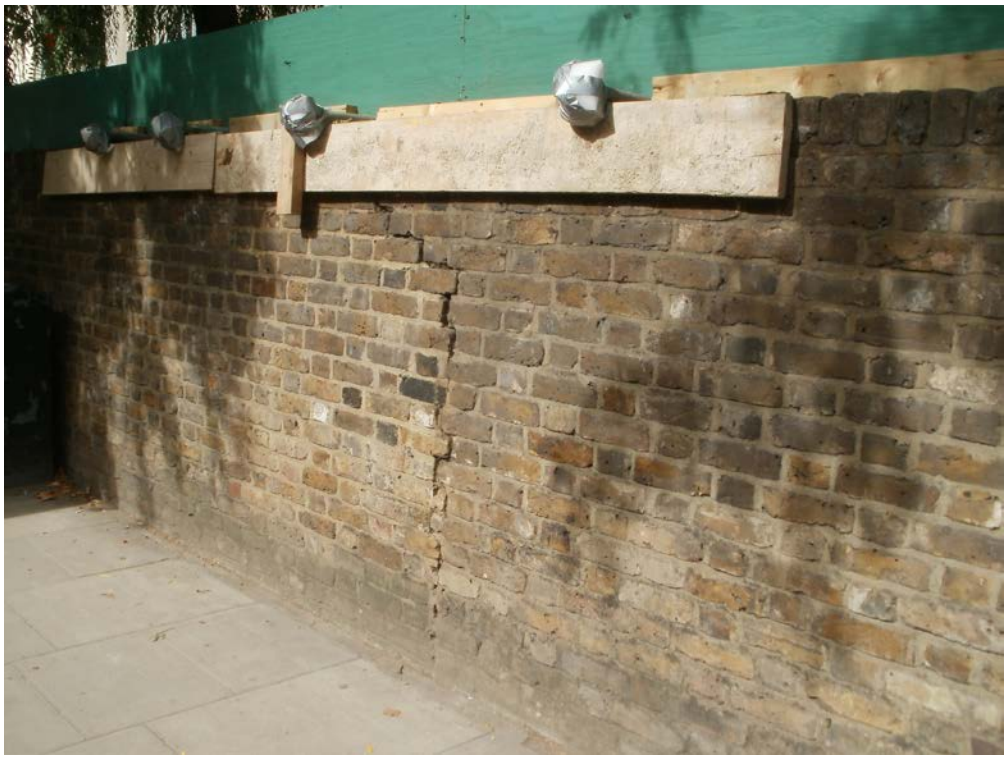

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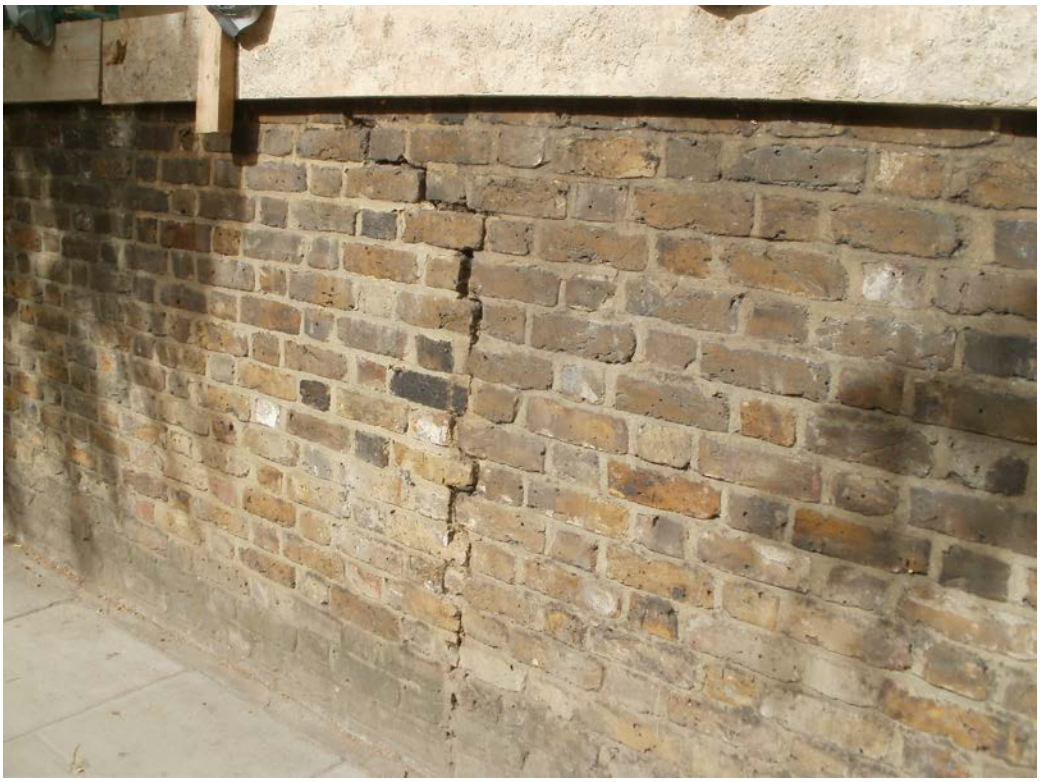

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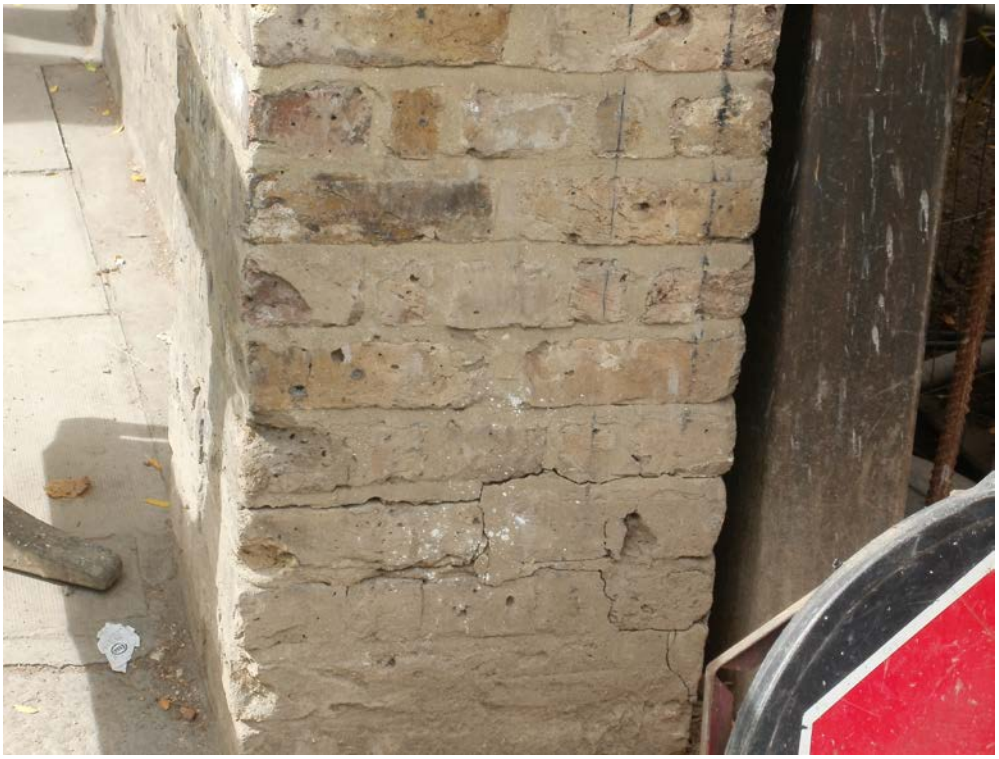

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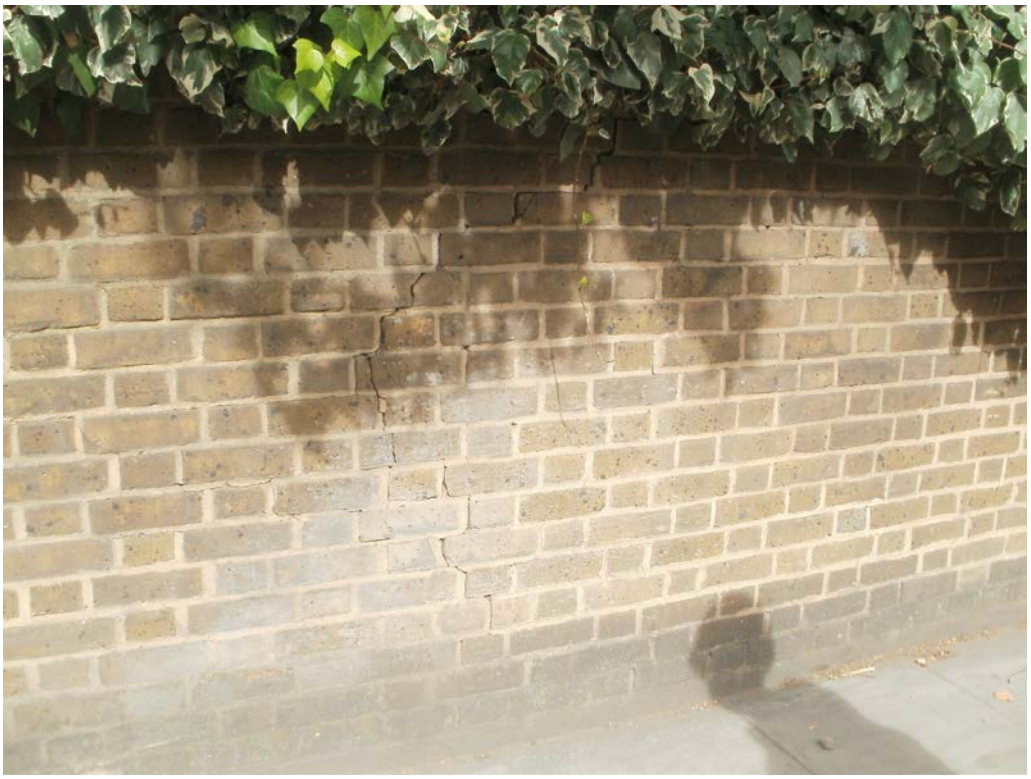

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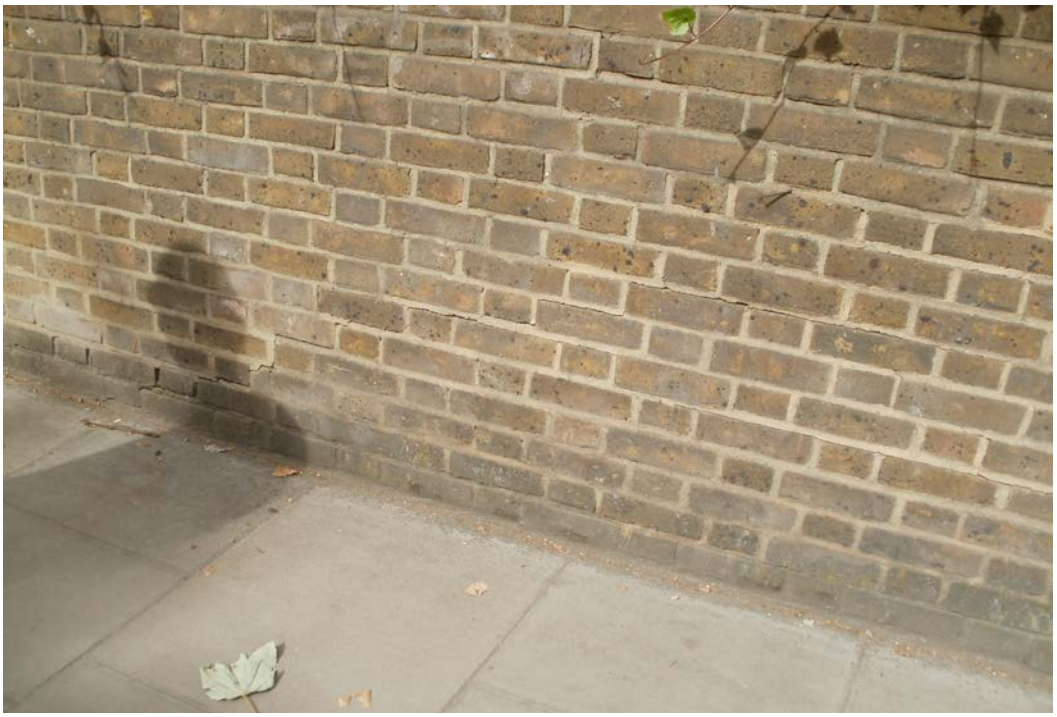

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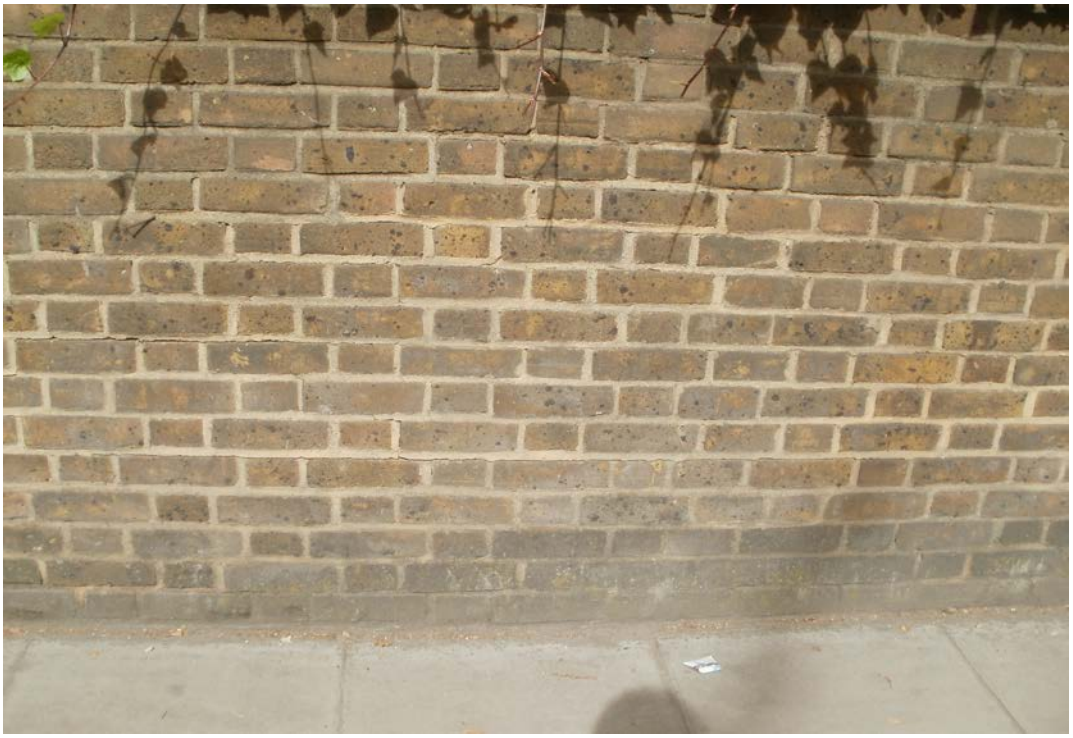

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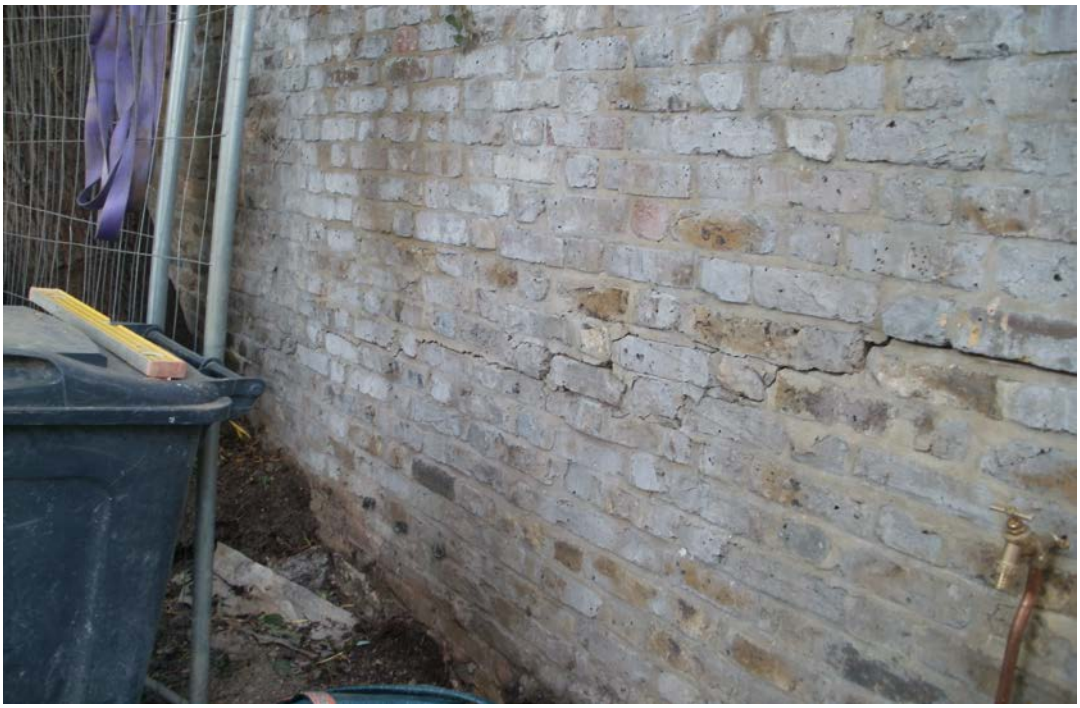

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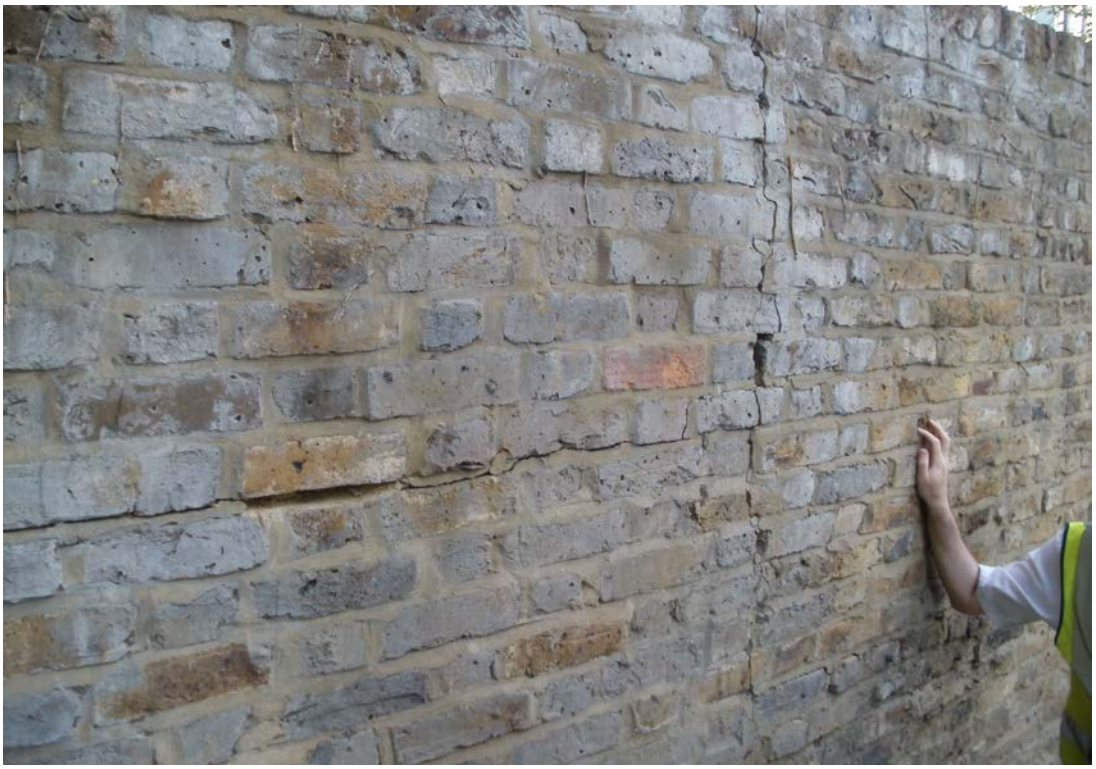

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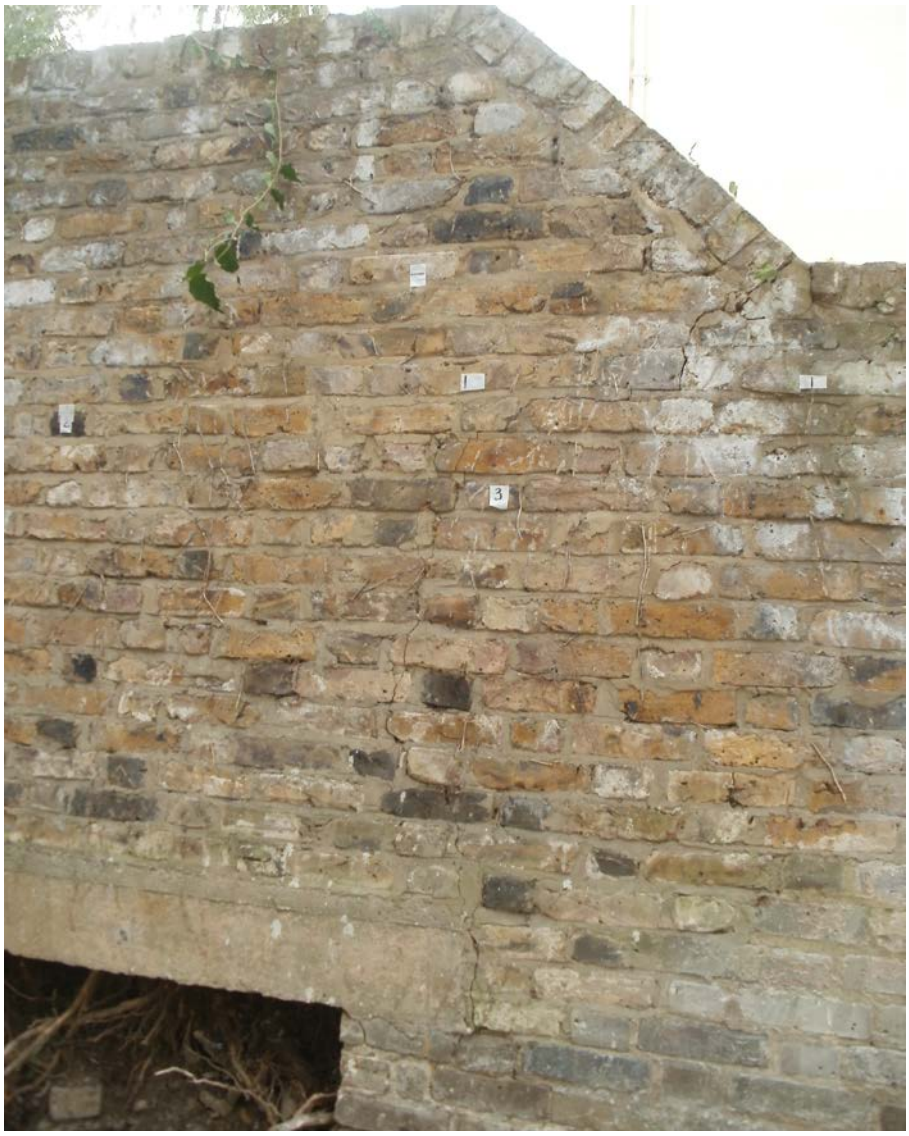

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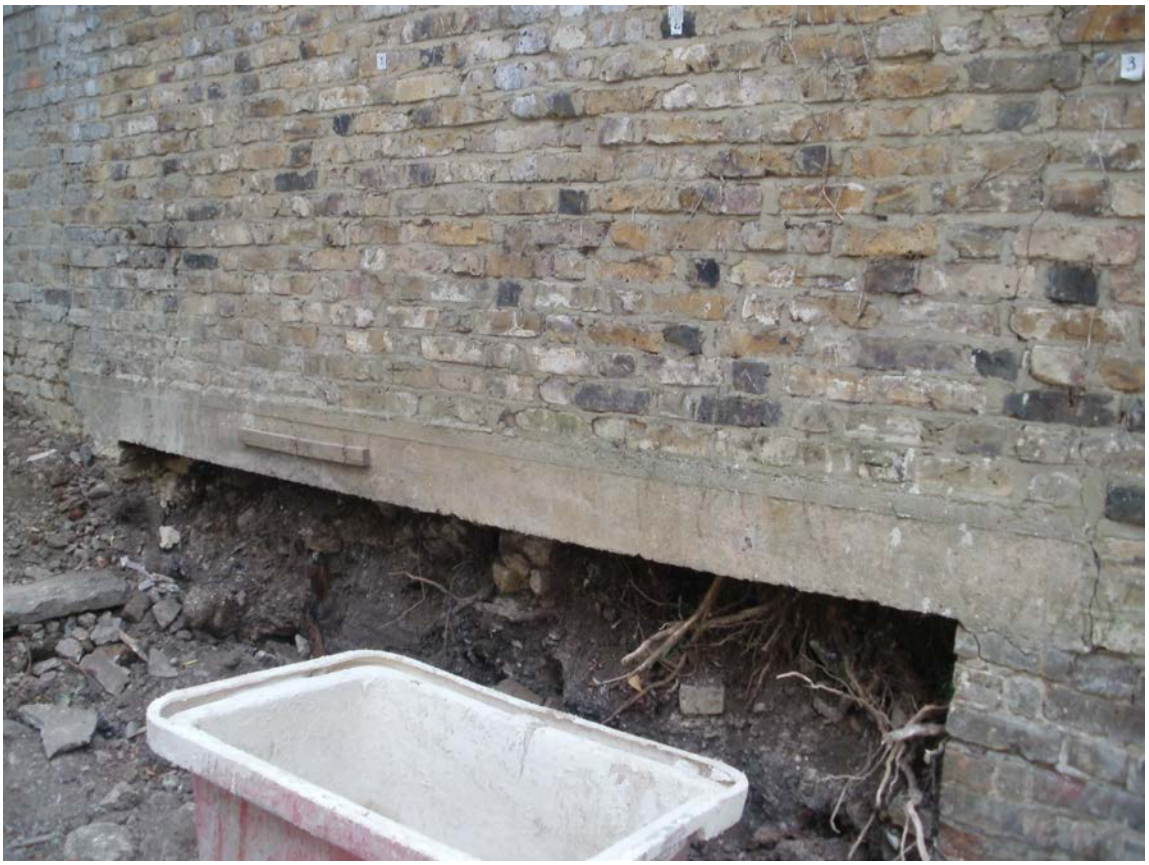

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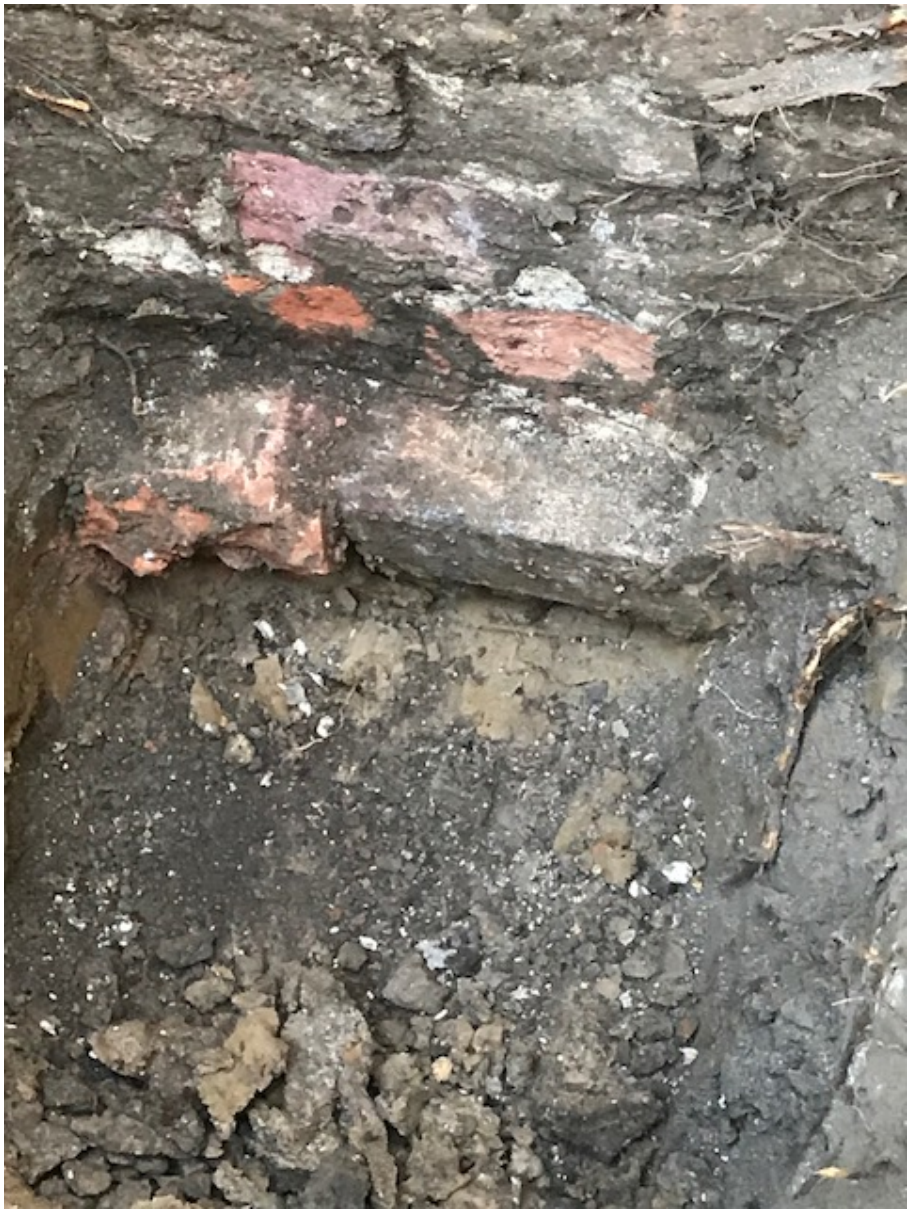

PHOTO 13