SINCLAIRJOHNSTON

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

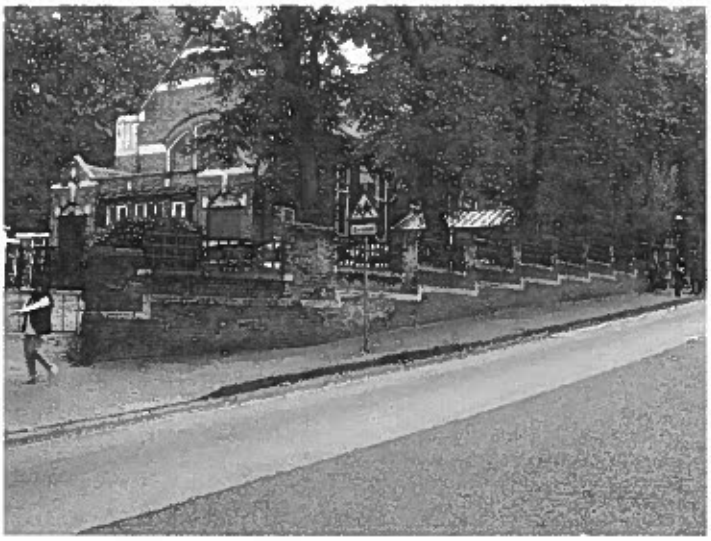
STRUCTURAL ENGINEERS REPORT

ON:

HAMPSTEAD HILL SCHOOL
POND STREET
HAMPSTEAD

FOR:

PCC OF ST. STEPHENS WITH ALL HALLOWS



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8374/DG/VME **SEPTEMBER, 2014**

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HAMPSTEAD HILL SCHOOL, POND STREET, HAMPSTEAD

1.0 INTRODUCTION

1.1 We were instructed by the PCC of St. Stephen's with All Hallows to undertake a visual structural engineering inspection and advise on the potential cause of the damage and cracking to the school entrance brick gate pillar and propose remedial works.

1.2 Our inspection was undertaken on Thursday 18thSeptember, 2014 at which time the weather was fine and dry.

1.3 This report is based on a visual inspection without the benefit of trial pits, soils investigations or other investigations and testing.

1.4 No assurance is given that elements covered up, or inaccessible are free from rot, decay, cracks or other defects.

1.5 The inspection and report is limited to the gate pillar as instructed and other walls on the boundary or within the site are not inspected, nor commented on. No assurance is therefore, given as to their structural integrity or stability.

1.6 All directions left and right are given as standing in the road facing the property.

1.7 This report is for the PCC of St. Stephens with All Hallows, and no liability whether in contact or tort is extended to any third party.

2.0 BRIEF STRUCTURAL DESCRIPTION

2.1 The main pillar is two and a half bricks deep by two bricks wide at its upper part thickening to three bricks deep by two and a half bricks wide at its base.

2.2 From the main brick pillar a wall extends around and up the hill, the initial part is running at an angle of approximately 30° to the main wall which then extends up the Hill for some significant distance. This main wall is approximately a brick and a half wide over its upper section thickening to two and a half bricks at the base. The wall retains approximately 900mm of earth. There are also trees growing up behind the wall.

2.3 The wall is of Victorian construction and it is presumed that the red stock brickwork is in a lime based mortar. The wall has clearly been repaired from time to time, in particular the original iron railings have been cut out and replaced with a timber trellis.

2.4 There is a stone string course at the change in the wall thickness which continues along the length of the wall, and the wall itself has a stone capping.

3.0 OBSERVATIONS

3.1 There is significant cracking to the pier as can be seen in the photographs. Much of this cracking is old and has been repaired in the past, but has re-occurred. However, there is more recent cracking towards the front of the pier itself. (See photograph 423).

3.2 The cause of the cracking is considered to be dominantly due to thermal or moisture movement whereby the extent of the brickwork is such that this is expanding pushing the pillar out at the end and then when the wall cools or dries out and shrinks the main element of wall is reducing in its length helped by the stone band, but the brick pillar which is of mass construction is not returning and hence a crack opens up. As this crack is infilled either naturally or by repair, then it ceases to act as a movement joint, and further movement occurs. Hence the movement becomes progressive. (See Photograph 420).

3.3 The upper seven courses of brick together with the stone capping have been displaced front to back, this is thought to be due to the main wall being aligned with the front face of the pier, and therefore, the main moving force is set towards the front causing a twisting action on the pier and hence the lateral displacement front to rear. (See Photograph 424 and 425).

3.4 The more recent cracking which is below this level is thought possibly to be due to some vehicular impact. It is noted that just above the stone band to the front of the pier there is what appears to be fresh impact damage. This could be as a result of a lorry turning around in the road and reversing into the wall. (See photograph 422). However, we cannot be certain about this.

4.0 RECOMMENDATIONS

4.1 The wall is quite massive but not of exceptional height and is reasonably plumb. Therefore, it is not liable to fall over. However, loose bricks and bits of mortar are liable to fall out.

4.2 No immediate temporary shoring is considered to be warranted.

4.3 It is advised that the pier is taken down and rebuilt utilising and saving much of the existing brick and stonework. Any fractured elements of stone should be repaired by doweling together or if unrepairable replaced on a like for like basis. Damaged bricks should be replaced with new bricks to match and blend in.

4.4 Once repaired it is likely that the movement and cracking will re-occur. This will occur over a period of time requiring regular maintenance and repair. In order to minimise the risk and extent of cracking it would be sensible to provide some "Helifix" or "Cintec" anchors in the central body of the wall drilled and anchored into the retained section of the wall by a distance of approximately 900mm. this will not necessarily stop the wall cracking, but should assist in mitigating cracks. There is a risk that the wall may simply crack in a different location. These anchors should be positioned centrally at 450mm centres vertically in the 330mm section and two number at 150mm centres horizontally and 450mm centres vertically in the lower thicker section.

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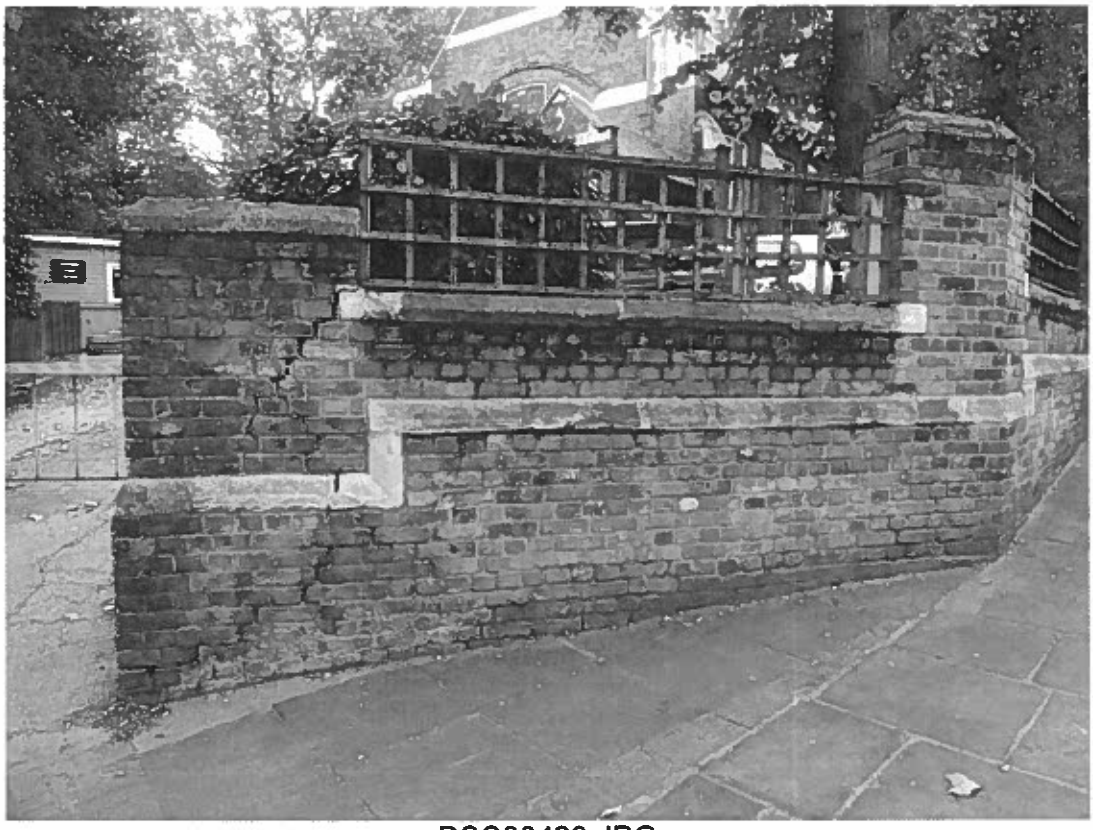
APPENDIX A

PHOTOGRAPHS



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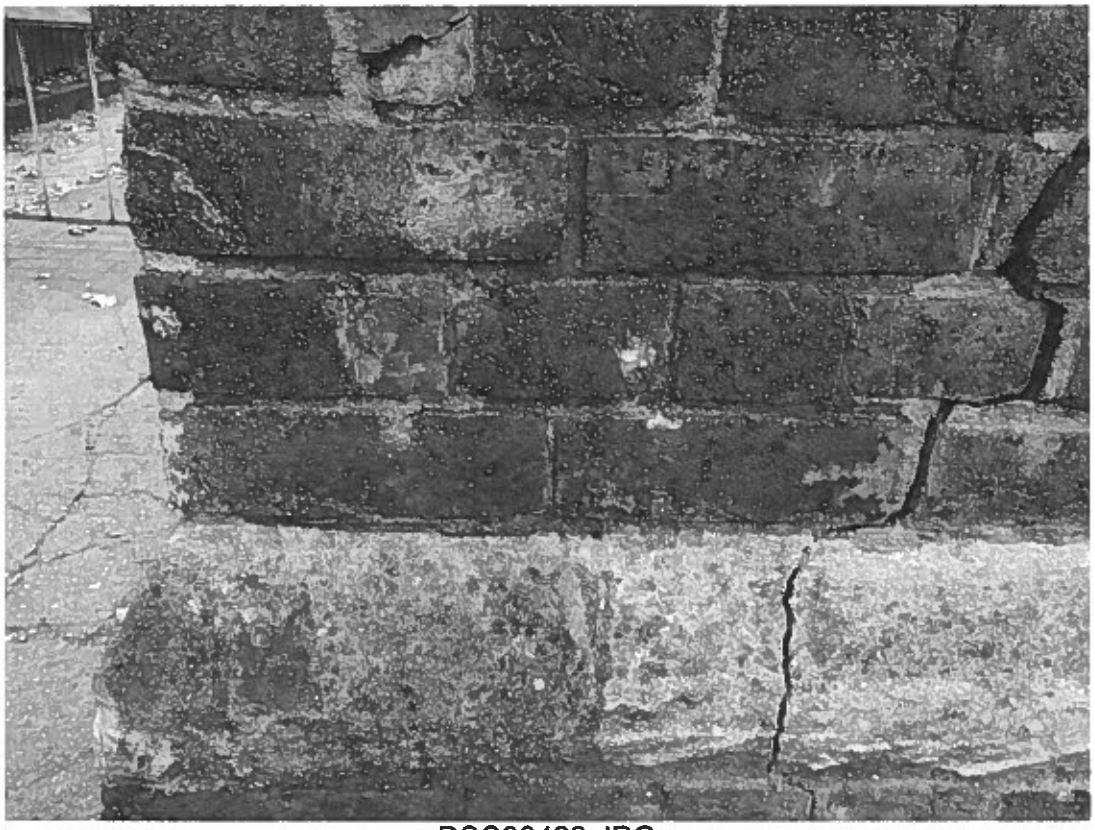

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