

Sent by e-mail c/o Rebecca Alexander <rebecca@pchassociates.co.uk>

Chelmsford School for Girls Pool - A Summary of Structural Investigations

Dear Rebecca,

We write further to our inspection of the reported cracking and structural damage to the swimming pool building sited at Chelmsford School for Girls, and to give commentary on our investigations and findings over the summer period.

General Overview

The building and pool appear generally in their original configuration, namely concrete roof beams and columns, infilled with masonry walls panels. On initial inspection cracking was noted internally and externally in the structure housing the swimming pool. To establish which of these cracks may be of structural concern *BRE Digest 251: Assessment of damage in low-rise building* was used as guidance and allowed two distinct areas to be identified:-

1.0 North East Corner

Cracking has appeared in the masonry to the north east of the building. The cracks were found to be predominately running vertically refer to figure 1



Figure 1: Cracking to The North East Corner with Tree Stump in Distance

1.1 Investigation carried Out

- Discussion with site manager found that a tree has been removed
- The foundations are founded on a Clay stratum
- Soil investigation found that the clay has Medium to High Volumetric change, and NHBC guidance shows that the trees proximity to the foundation is within the zone of influence of the building and would likely cause the observed damage

1.2 Conclusion \ Recommendations

- It is our view that the removal of the tree and subsequent “drying out” of clay is causing the observed settlements and cracks. We recommend therefore that the ground be allowed further time to settle before carrying out repair works to masonry.
- The reader should note that the masonry is not in a good state of repair and could become unsafe, we recommend that during the ground settlement period the Client employs a management procedure which includes regular inspections of the cracking focusing on changes in cracking patterns or increase in crack size. A regular report should be submitted to the engineer and surveyor.
- Once the monitoring has demonstrated that the movement has diminished, we recommend a full condition survey from a scissor lift be carried out and further advice on suitable repairs be sought.

2.0 South West Entrance

To the southwest of the site cracking was observed in the façade and adjacent ground and appears to be progressive in settlement.



Figure 2: Internal and External Cracking

3.1 Investigation

- Trial pit investigation found footings locally sitting on sandy clay granular made ground and unlike elsewhere the wall’s foundation did not reach to natural stratum.
- Movement monitoring is currently on going and has recorded progressive movement

3.2 Recommendations \ Conclusions

Trial pits show that foundations are on a made ground stratum. As clay was not found in the limited soil investigation carried out, it is unlikely that movement is due to ground heave and that more likely the cause is a progressive destabilisation of the made ground which will ultimately result in the destabilisation of the wall causing a serious health and safety risk. **We recommend therefore that the wall be stabilised as soon as practicable** using Helifix piles down to the stable clay stratum to ensure the building remains functional this is detailed on ISL drawing 19052/01

4.0 Further Works

Though it is our view that the building can remain operational subject to the works described in paragraph three being carried out, because of the risk of cracking, we would not recommend that funds be committed to any significant refurbishment without stabilising works to the foundations being carried out. ISL drawings 19052 series make recommendations on how this might be achieved.

We trust this is satisfactory for your current needs, but should you have any further questions do not hesitate to contact us.



A J Heard BEng (Hons) CEng MICE
Inertia Structures Limited

28th August 2019