Alan Moxhay

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Mitchell Design & Construct Ltd.
Romy House
159 – 167 Kings Road
Brentwood
Essex CM14 4EG

Att. Mr Julian Mitchell 29th July 2010

Dear Julian

Proposed Depot & Processing Building – Parker Steel, Portslade-by-Sea, Sussex

We have discussed the various options available for piling the above development and I explained my ideas and proposals and, as requested, I now confirm these ideas for circulation to your Client and/or Local supervisory authorities.

The main document at my disposal is the soils report prepared in October 2007 by Bureau Veritas ref. 1004519. This report comprises of 9 No. boreholes and 13 No. cone penetrometer tests which describe a layered condition with varying thicknesses of made ground overlying marine gravel with Woolwich and Reading bed material below. Weak gravely chalk was encountered around 22 m below platform. This quickly improved in density with depth. Groundwater was generally recorded within the upper marine gravel. In all cases the made ground was reported as being dry. I also have the advantage of recently designing and installing a Vibro Compaction scheme for Travis Perkins on land almost directly opposite the Parker site and can confirm the similarity of soils profile.

The report also tested samples taken within the made ground for contamination and although a variety of pollutants were detected, levels of concentration was, in each case, described as insignificant.

Following the redesign of foundations required to support the Client's proposed building, a simple and cost-efficient scheme requiring the installation of piles having a working capacity of less than 500 kN was submitted. For piles of this relatively low capacity, the choice of system and pile type becomes quite straightforward. Precast concrete piles driven in single lengths into the upper marine gravel have much to offer as they are quick to install, produce no spoil for on-site management and off-site disposal and are simple to prepare for the following foundation base construction being available in single lengths. I did consider the alternative of bored cfa piles as they are relatively quick to install and virtually vibration-free, but even with a low working capacity of 500 kN each, cfa piles would still need to be long – around 15 m which would take them into the Woolwich and Reading material. My preference would be to drive and set preformed piles into the upper gravels at around 10 – 12 m long. This would avoid any spoil removal and, with the use of a 'silent' driving hammer, create very low levels of noise and vibration.

In order to confirm the validity of all these designs and assumptions I have suggested the implementation of a preliminary pile load test one or two sacrificial piles which would installed and tested prior to the commencement of the Main Contract works. At this time pile lengths , driving resistances, capacities, noise and vibration can all be monitored.

I am also aware of theories which are sometimes expressed about the use of preformed piles in respect of their ability to act as conduits for vertical migration of contaminants. By stopping precast piles in the upper marine gravels which are themselves, dry, I don't consider that the status quo, relating to the migration of fines or of contamination-laden groundwater will be affected. In fact, by introducing a large number of displacement piles it is more likely that the ground will be significantly stiffened and therefore, reduce or slow-down the risk of pollution migration than would be the case if bored replacement piles were used.

I hope these notes will be sufficient for your immediate use but please don't hesitate to contact me again If I can assist further.

Kind regards

Alan Moxhay