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St Pancras Campus,
63 Pratt Street, London

Certifying Engineer's Report
on Basement Construction Plan

Project number: 2210155
Status: Preliminary
Revision: P1
Date: 09/06/2021

engineering a better **society**

We, as Certifying Engineer, have reviewed all information provided within the Basement Construction Plan for the proposed development at St Pancras Campus, 63 Pratt Street, London.

Subject to satisfactory responses to our comments stated below under each sub-section, we find the BCP information provided to generally satisfy the requirements of the Section 106 Agreement. As part of the process of producing this report a number of initial comments were provided and satisfactory responses were made. These have been included for reference within AKT's BCP appendix.

We have set out our further observations against each sub section with comments and requests for clarification below. Where a clause has not been included, we do not have any comments on the information provided within the Detailed Basement Construction Plan.

b(i): ensure that the design plans have been undertaken in strict accordance with the terms of this agreement incorporating proper design and review input into the detailed design phase of the development and ensuring that appropriately conservative modelling relating to the local ground conditions and local water environment and structural condition of Neighbouring Properties have been incorporated into the final design.

The Basement Design Engineer has demonstrated that conservative designs have been produced for the proposed basement and in general have used conservative modelling relating to ground conditions, groundwater levels, and neighbouring properties in the design as based on site investigation results.

b(ii) – the result of these appropriately conservative figures ensure that the development will be undertaken without any impact on the structural integrity of the Neighbouring Properties beyond Category 1 "very slight" with reference to the Burland Category of Damage.

The BCP notes that the impact should not be beyond "slight" rather than "very slight" as noted in the S106. However, this appears to be a simple typo because both the GMA for the neighbouring buildings and Canal retaining wall show movements of Category 1 "slight" and Category 0 "negligible" respectively.

It is worth noting that the impact assessment for the Neighbouring Properties has been carried out based on a series of principles, which when combined provide a worst-case scenario. In our opinion this would result in movements towards the lower end of Category 1 and is therefore appropriately conservative.

b(iii) the Basement Design Engineer having confirmed that the design plans have been undertaken in strict accordance with this agreement and includes a letter of professional certification confirming this and that the detailed measures set out in sub-clauses (i)-(vii) have been incorporated correctly and appropriately and are sufficient in order to achieve the objectives of the Detailed Basement Construction Plan.

Company capability, CV's and relevant experience are all provided within Appendix 3(b)-(iii). The Basement Design Engineer is to provide a letter as stated in the section 106 clause.

b(iv) reasonable endeavours to access and prepare a detailed structural appraisal and condition survey of all the neighbouring properties to be undertaken by an independent suitably qualified + experienced chartered surveyor (and for details to be offered if this is not undertaken in full or part)

We understand from the BCP that condition surveys of the Neighbouring Properties, including investigations, are to be carried out prior to commencing piling, however, these have not yet been undertaken. We assumed these investigations will be carried out by an independent and suitably qualified surveyor as required. The Contractor (BAM) will also carry out a visual inspection of the buildings prior to works commencing.

b(v) method statement detailing the proposed method of ensuring the safety and stability of Neighbouring Properties throughout the construction phase including temporary works sequence drawings and assumptions with appropriate monitoring control risk assessment contingency measures and any other methodologies associated with the basement and the basement temporary works.

Construction sequence and temporary works drawings have been provided by John F Hunt. The proposed temporary works generally seem well considered and are consistent with the assumed sequence of construction as part of the design by AKTII.

b(vi) detailed design drawings incorporating conservative modelling relating to the local ground conditions and local water environment and structural condition of Neighbouring Properties prepared by the Basement Design Engineer for all elements of the groundworks and basement authorised by the Planning Permission together with specifications and supporting calculations for both the temporary and permanent basement construction works.

The Basement Design Engineer has demonstrated that conservative designs have generally been produced for the basement ground bearing raft to resist the effects of heave. Similarly retaining walls are demonstrated to be designed conservatively with hydrostatic pressures based on a ground water level of 1m below ground level being used.

We have identified the following comments on the permanent works proposals and request further clarification.

- The are several warnings in the pile capping beam calculations. How have these been addressed?
- For the RC raft design a water pressure of 30kN/m2 has been adopted. This puts the water level approximately 3m above the underside of the proposed basement raft. The formation level is 17.56mOD based on the drawings, so groundwater level of approx. 20.5mOD has been used in the calculation. This does not seem appropriately conservative giving the highest recorded groundwater level during monitoring was 4.15m below ground level (20.85mOD based on a ground level of 25mOD). Please can this be clarified.

The temporary works and pile design also demonstrate conservative designs in line with the Basement Design Engineer. We have identified the following comments on the pile design and request further clarification.

- Shaft cohesion of 0.6 used in vertical load calculation rather than 0.5 as recommended in London District Surveyors Association guidance note on bored piles in London Clay. Please clarify.
- The design excavation depth is noted as 17.7mOD (SLS). The formation level is lower than this at 17.56m based on AKTII drawings. This would put the accidental over dig ULS level at 17.06m. We understand that this is being reviewed however no significant impact is expected.

b(vii) the Basement Designer to be retained at the property throughout the construction phase to inspect approve and undertaking regular monitoring of both permanent and temporary basement construction works throughout their duration and to ensure compliance with the plans and drawings as approved by the Building Control body.

The BCP notes that a Resident Engineer will be appointed to provide a daily monitoring service. However, it also notes that AKTII will visit site on a fortnightly basis. Is the Resident Engineer to be independent? Please clarify, we would question whether this level of scrutiny is necessary.

The general notes states 'all piles are to be subject to non-destructive integrity tests'. Has the piling Contractor allowed for this?

b(ix) measures to ensure ground water monitoring equipment and a displacement and vibration monitoring regime shall be installed prior to implementation and retained with monitoring continuing during the construction phase and not to terminate monitoring until the issue of the Certificate of Practical Completion (or other time agreed in writing with the Council).

A monitoring regime for the project has been specified as per AKTII drawing provided in appendix 9, including both movement and vibration monitoring. Monitoring is to be weekly from commencing four weeks prior to works starting up until completion of the ground floor slab.

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