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SUGGESTED STRUCTURAL MONITORING PLAN

PROJECT REF: 17200

ADDRESS: The Studio House, 1 Hampstead Hill Gardens
London
NW3 2PH

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This document has been prepared and checked by;

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I. PRELIMINARIES

The following suggested monitoring method statement is intended as a purely indicative guidance document to establish a recommended 'base' monitoring level. All details contained with the following pages must be confirmed by a specialist monitoring contractor and are based on what BCS Consulting, as structural engineers consider advisable procedures to minimise damage caused as a result of the proposed construction activities. The monitoring specialist/principal contractor may choose to produce an alternative method of monitoring for specific activities; specifications by the contractor/specialist will supersede/overrule the indicative content of this document.

This statement should not be taken as the final monitoring specification and BCS consulting can accept no liability for any damage cause as a result of deficiencies in monitoring specifications/methods undertaken.

II. SCOPE OF WORKS

It is proposed to install a retrofit basement at the above address, using non-sequential underpinning to form perimeter basement walls linked at basement founding level with an in-situ cast RC base slab. These works have the potential to cause damage through ground movement or construction related vibrations therefore monitoring is required to attenuate this risk.

III. REQUIRED LEVEL OF MONITORING

Monitoring should be carried out during construction to aid in ensuring that any movement caused by the proposed construction is not excessive and also to act as a warning indicator to help mitigate damage.

It is advised that the final monitoring plan includes the following:

- Production of schedules of condition at the beginning (prior to commencement) and end of the works, carried out by a relevant Party Wall representative.
- Exposure of perimeter existing footings through the digging of trial pits to confirm foundation condition and that any bearing width assumptions made at design stage are appropriate.
- Regular visual inspections of walls being underpinned.
- Vertical monitoring measurements.
- Lateral monitoring measurements.

IV. METHODS OF MONITORING

- GENERAL VISUAL MONITORING OF THE PARTY WALLS
- CRACKING TO PARTY WALL MASONRY – *Attach demec pins/tell-tails to record of significant cracking.*
- SETTLEMENT MONITORING – *Automatic levelling equipment and targets.*

- LATERAL MONITORING – *Measuring of distances between external walls via targets/laser measuring to record any relative differences between wall faces.*

General notes:

1. *Number and positioning of levelling equipment will likely be required to change during construction, this should be agreed between contractor and motioning specialist as work progresses.*
2. *It should be ensured that throughout construction all required monitoring can be accomplished with ease.*
3. *Levelling equipment and targets should be protected against damage and clearly marked on site.*
4. *Any monitoring equipment damaged during site works should be reported to the monitoring specialist and replaced immediately.*
5. *All readings should be regularly distributed to the design team and should be presented in a neat and easily comprehensible manner. A summary of readings should be distributed within 2 working days following observations.*

V. PRINCIPAL CONTRATOR RESPONSIBILITES

1. The contractor must take responsibility for ensuring that all site working practices are planned to minimise settlement as far as practically possible, this should also involve ongoing review of working methods to mitigate progressive damage if settlement is recorded.
2. The contractor must also take responsibility for execution of immediate reparation works if required following settlement readings over specified trigger levels (see trigger values below).
3. Contractor should review all monitoring readings with the monitoring specialist prior to distribution to the design team and check all readings are accurate.

VI. TRIGGER VALUES

A ‘traffic light’ system should be adopted with the use of Green, Amber and Red trigger levels as follows;

GREEN *(0-4mm)* – Activities OK to proceed.

AMBER *(4-8mm)* – Increase the monitoring frequently (minimum twice weekly), review of structural scheme and start implementing contingency measures if trends indicate the Red trigger may shortly be reached. [Showing recorded values are close to maximum projected settlement (say max. 80% of predicted settlement)]

RED *(>8mm)* - Implement measures to secure site, cease movements and stop all construction works. [Showing recorded values are at, or above tolerable levels, exceeding serviceability limit states.]

Where maximum movements are recorded exceeding Amber/Red trigger values these should immediately be reported to the design team along with a description of all recent on site activities. A review of the results should be undertaken and readings re-checked to confirm their accuracy, the

design team should not assess the movement focusing solely on the affected areas but also review the site as a whole checking for non-proximate contributory factors. Appropriate repair specifications and reviews of working practices should be specified and implemented to minimise risk of progressive settlement.

NOTE: The trigger levels suggested within this document are indicative only. Final movement levels must adhere to local authority guidelines and these should be obtained before confirmation of final trigger values.

VII. TARGET LOCATIONS

Precise locations for levelling targets should be prescribed by the monitoring specialist however the following guideline is suggested;

As stated in the BRE digest 386 – *Monitoring building and ground movement by precise levelling* - a minimum of 8-12 target locations should be installed around the whole site to provide Northing, Eastings and Level measurements to an accuracy of ±0.3mm (It is recommended that targets are installed at each storey height). Consideration should also be given to the provision of monitoring locations on neighbouring structures (provisions of this type TBC by monitoring specialist and relevant party wall representative).

VIII. MONITORING FREQUENCY

- Prior to commencement of construction monitoring readings should be carried out once to establish a set of control values.
- As soon as basement construction commences monitoring should be carried out, readings should be taken following the curing of each of the first five pins poured. If levels of observed settlement are within acceptable limits following the first five pins, monitoring frequency can be reduced to taking readings following casting of every other pin.
- Post-construction- Following completion of all works monitoring should be taken twice as a minimum.

Note: Final monitoring intervals and levels of pre- & post-construction readings must be confirmed by the specialist monitoring contractor.