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58A FELLOWS ROAD, LONDON NW3

STRUCTURAL STATEMENT AND SEQUENCE OF WORK revision B

1.0 Introduction

1.1 Michael Chester & Partners have been appointed by the owners of 58A Fellows Road to provide structural advice on the design of the new basement at 58A Fellows Road, NW3 and to provide details of a sequence of construction that could be used to safely construct it.

1.2 This report should be read in conjunction with the rest of the Basement Impact Assessment which has been submitted as part of the planning application prepared by Brod Wight Architects.

2.0 Project Information

2.1 The site is located on the north side of Fellows Road, London NW3 approximately midway between Merton rise and Primrose Hill Road. The site is generally level at the front of the property running towards the rear. The ground rises from the rear of the house approximately 2.0m to the end of the garden.

2.2 The existing building is a four storey Victorian semi-detached property traditionally constructed with solid brick external walls, timber floors and roof and a mixture of timber and masonry internal walls. A site investigation has been carried out, including trial pits to look at the existing foundations and boreholes to assess the subsoils at depth. It is described in detail in the Basement Impact Assessment prepared by Gabriel Geo Consulting but confirms that the site is underlain by possible Head deposits to between approximately 2.0m and 4.0m depth over weathered London Clay. The London Clay was proven to 7.0m depth but is known to extend to some 50m depth in this area of London.

2.3 The current proposal is to construct a new single storey basement under the full footprint of the main house (excluding the small side bridging link to the neighbouring property at No.60), extending out into the garden approximately 2m from the main back wall of the house with a lightwell at the front of the house. Some alterations will also be carried out at upper ground floor level including the removal of the main wall of the house, changes to some internal walls and a new rear single storey extension. Excavations for the basement will be approximately 4.4m deep at the front of the house and up to about 6.0m at the back because of the rise in ground level.

2.4 A basement was constructed under the other half of the semi-detached property (No.56) in 2014.

3.0 Principles of the Structural Design

3.1 The superstructure loads from the retained upper floor levels of the building will be carried on a series of steel beams supported on masonry walls and/or steel columns with loads being transferred to ground via the reinforced concrete slab of the new basement structure. The cellular nature of the building provides lateral stability at the front of the property but a steel portal frame will be required in the plane of the original main rear wall where that wall is to be removed. The new rear single storey extension will also be framed in order to ensure that the structure is stiff enough for overall stability.

3.2 The basement structure is to be designed as a reinforced concrete box with the retaining walls propped by a reinforced concrete slab at ground floor in order to provide the high stiffness long term prop to the retaining walls as required by the Basement Impact Assessment to limit long term

movements in the ground beyond the bounds of the site. A proprietary void former will be used underneath the lower ground floor slab to accommodate heave movements under the more lightly loaded areas of the structure.

3.3 Calculations for the existing foundation loads are contained within appendix A at the end of this report and the proposed structure is summarised on drawing numbers 20078/01 to 05 contained in appendix C.

3.4 At rest earth pressures will be used in the design of the retaining walls with span to depth ratios for the walls modified as allowed in Eurocode EN1992. Movement in the ground as a result of deflections in the walls themselves will, therefore, be negligible. Preliminary calculations for the various walls are contained within appendix B at the end of this report.

3.5 Waterproofing of the basement will be via a Delta membrane egg crate type system running to sumps, all to future design and detail by specialists.

4.0 Sequence of Construction

4.1 The sequence of construction assumed in the design of the new basement and associated structural alterations is summarised on drawing numbers 20078/sk02 to sk11 contained in appendix C at the end of this report. In summary the principles are first to repair the structural cracks that currently exist in the building and then to provide temporary support to the building at high level ground floor in order to allow the ground floor walls to be removed to facilitate the basement construction.

4.2 The new basement will be constructed by first underpinning the main structural walls in reinforced concrete in a carefully controlled 1,3,5,2,4 sequence with working spaces fully propped as work progresses. The internal earth dumpling will then be excavated, again in a controlled sequence to ensure that the bases of the previously cast walls remain propped at all times. Props are to be introduced across the full width of the basement as soon as it is possible to install them in order to maintain the high degree of stiffness required by the Basement Impact Assessment to limit ground movements. The basement RC structure will be cast in sections using proprietary couplers or similar to ensure that it's final construction is completely monolithic.

4.3 The final design of the temporary work and sequencing will be the responsibility of the Principal Contractor and a detailed statement and calculations will be requested from them prior to any excavation work commencing on site to ensure that they have taken on board and understood what is required.

4.4 A more detailed summary of the construction sequence follows and should be read in conjunction with the drawings contained within Appendix C.

Stage 1 (drawing No. 20078/SK02)
1.1. Carry out repairs to structural cracks in existing building.
1.2. Take down section of rear right garden wall and install protective barrier.
1.3. Install permanent piles at rear of property.
1.4. Install sacrificial piles required for temporary works.
1.5. Install permanent piles at front of property.

Stage 2 (drawing No. 20078/SK02)
2.1 Construct capping beam along the tops of the permanent piles.
2.2 Install temporary prop between capping beams at rear.
2.3 Construct ground beam to support future temporary works.
2.4 Construct pile caps on tops of sacrificial piles.
2.5 Underpin front right corner of party wall.

Stage 3 (drawing No. 20078/SK03)
3.1 Construct steel frame off rear capping beam, internal sacrificial pile and party/flank wall. Install needles off frame to support main rear wall of house.

3.2 Install cross bracing to ensure stability of temporary works.
3.3 Re-support internal walls off new temporary steel frames off sacrificial piles and party/flank walls.
3.4 Construct steel frame off front capping beam, internal sacrificial pile and party/flank wall. Install needles off frame to support main front wall of house. Brace for stability.

Stage 4 (drawing No. 20078/SK04)
4.1. Demolish ground floor walls leaving building on temporary braced steel frames.
4.2. Underpin walls and construct basement floor slab as indicated in carefully controlled 1,3,5,2,4 type sequence ensuring earth faces are fully propped in both directions.

Stage 5 (drawing No. 20078/SK05)
5.1 Underpin walls and construct basement floor slab as indicated in carefully controlled 1,3,5,2,4 type sequence ensuring earth faces are fully propped in both directions.
5.2 Install prop across full width of basement at earliest opportunity in the sequence to prop apart heads of new RC walls.

Stage 6 (drawing No. 20078/SK06)
6.1 Underpin walls and construct basement floor slab as indicated in carefully controlled 1,3,5,2,4 type sequence ensuring earth faces are fully propped in both directions.
6.2 Install prop across full width of basement at earliest opportunity in the sequence to prop apart heads of new RC walls.

Stage 7 (drawing No. 20078/SK07)
7.1 Construct structural walls at lower ground floor level in excavated areas.
7.2 Cast upper ground floor level RC slab in sections to provide permanent propping action between retaining walls. The temporary props must be maintained until such time as the concrete floor slab is cured sufficiently to carry the horizontal loads.

Stage 8 (drawing No. 20078/SK08)
8.1 Excavate the remaining earth dumplings in carefully controlled sequence as described above ensuring that the earth faces are fully propped in both directions at all times. Cast underpinning and basement floor slab in sections. Construct raking shores to retain earth face at rear.
8.2 Construct remaining structural walls at basement floor level and cast remaining sections of upper ground floor level RC slab. Remove horizontal props to retaining walls when concrete has cured sufficiently to carry horizontal loads.

Stage 9 (drawing No. 20078/SK09)
9.1 Build structural walls at ground floor level, install necessary beams and re-support existing walls over.
9.2 Remove temporary works to upper floor levels once structural walls are complete.
9.3 Break out pile caps and demolish sacrificial piles that are within the footprint of the existing house. Infill holes in RC slab.
9.4 Break out rear ground beam and commence demolition of sacrificial pile at the rear.
9.5 Reduce ground level at the rear to allow installation of temporary horizontal props between rear capping beams.

Stage 10 (drawing No. 20078/SK10)
10.1 Excavate earth from within pile perimeter.
10.2 Cast RC slab and walls.

Stage 11 (drawing No. 20078/SK11)
11.1 Cast remaining slab.
11.2 Remove horizontal props once the concrete has cured sufficiently to carry the horizontal loads.

5.0 Summary and Conclusions

5.1 The subject property is a traditionally built semi-detached four storey Victorian building. It is proposed to construct a new basement below the full footprint of the existing building and extending approximately 2m in to the back garden.

5.2 The site investigation is summarised in the Basement Impact Assessment prepared by Gabriel Geo Consulting and confirms that the ground conditions are consistent with the geological records and the known history of the area, comprising typically of Made Ground consistent with foundation construction overlying Head deposits over firm to stiff Clay. The Clay was proven to a depth of 7m but is known to extend to depths of 50m or more.

5.3 No ground water was encountered during the site investigation.

5.4 A basement was constructed below the other half of the semi-detached property in 2014. The unconnected neighbouring property does not have a basement.

5.5 The above report and associated documents confirm that the new basement structure can be built safely and with due regard to the requirements of the Basement impact Assessment by Gabriel Geo Consulting.

5.6 Good workmanship is essential to limiting ground movement and a full detailed Method Statement and Temporary Works proposal will be required from the Principal Contractor before they start work on site.

Signed,

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