CONSTANT

20066/RP1/JD

Wednesday, 19 August 2020

117 Canfield Gardens, NW6

Structural Method Statement

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It should be read in conjunction with all other Consultants reports and specifications and CSD drawings.

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1 Executive Summary

The following is a preliminary report to outline the structural design & methodology for proposed alterations to 117 Canfield Gardens, NW6 3DY.

The report demonstrates that, using commonplace construction techniques and good workmanship practices, the design proposals which are in compliance with Camden Council planning policy can be completed on site without issue.

2 Proposed Structure

2.1 General Performance Criteria

2.1.1 Design Life

A minimum design life of 50 years will be provided on all concrete, steel and timber elements of the primary structure (design working life category 4)

2.1.2 Tolerances

Building tolerances shall be in accordance with the relevant National Specifications, good practise guides and BS 5606 Accuracy in Buildings.

2.2 Proposed Structure

2.2.1 Sub-structure

The proposed basement level, ground level and retaining wall structure will be cast in-situ reinforced concrete. Retaining walls and their toe thickenings on the North, East & West side of the basement will be cast in 1m long sections in a hit and miss sequence. It will be possible to batter back so that the South basement wall can be cast as a single element.

Further to earth pressures and surcharge loadings, the new basement will be designed to accommodate hydrostatic loads that allow for the event that the ground water level rises to the existing ground level or a burst pipe causes a temporary additional surcharge. This worst-case scenario is also used to assess a buoyant uplift pressure for which the basement structure is designed.

In the permanent condition, the proposed suspended RC slab at ground floor level will transfer lateral loads to cross walls and therefore provide lateral support to the top of retaining walls. Despite this all retaining walls will be designed as pure cantilevers. A reinforced concrete thickening is designed around the full perimeter of the basement. This is to ensure that, where the walls are acting as pure cantilevers, the reinforced concrete slab has sufficient stiffness to distribute the bearing pressure evenly but also serves the dual purpose of providing temporary lateral support at the base of the retaining walls during construction.

An allowable bearing pressure of 115 kN/m^2 as set out in the basement impact assessment provided by H Fraser Consulting will be adhered to in all locations.

2.2.2 Basement watertightness

Design of the basement will be in accordance with BS8102 to performance grade 3 (Habitable). Performance level based on Table 2 of BS 8102[16] to be “Dry environment. No water penetration. Additional ventilation, dehumidification or air conditioning appropriate to intended use.”

Typically, where the basement is to be a habitable space, achieving the required grade of performance will be ensured through adoption of a type C drained cavity system, for which a sump and drain pump will be installed within the basement slab. In addition to this, waterbars will be installed at all joints throughout the retaining wall construction.

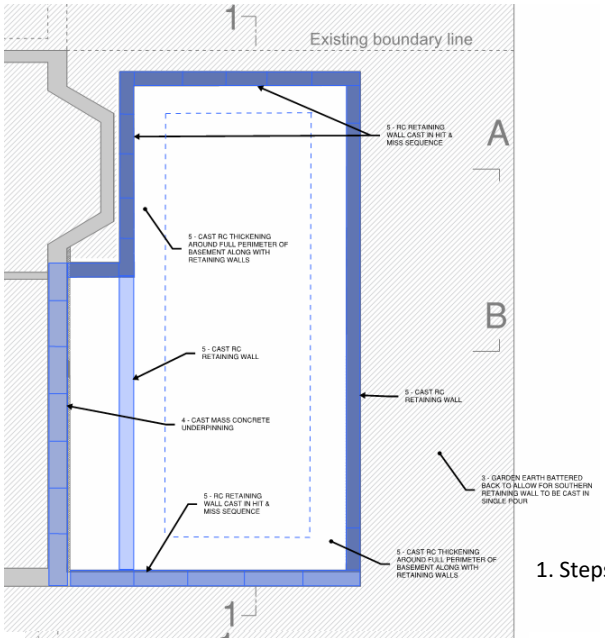
3 Anticipated Construction Sequence

3.1 Construction Sequence

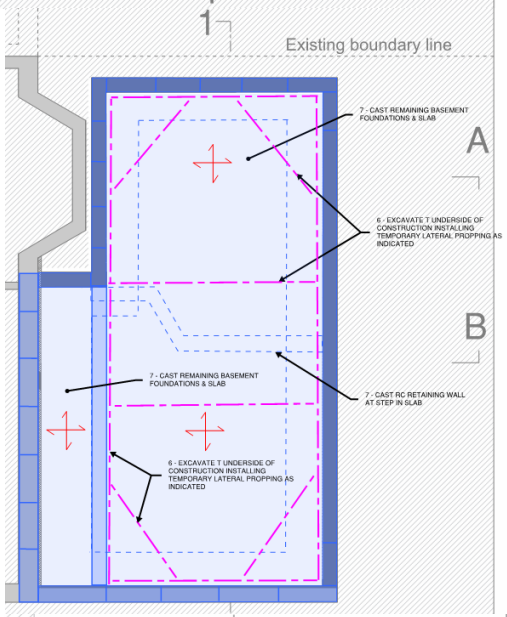
The permanent design along with suitable temporary works will be designed so as to allow the basement to be excavated and the basement and ground floor slabs cast in the most efficient and safe manner, ensuring the structural integrity of the existing buildings on and local to the site are never compromised.

The following is a structural method statement, outlining the proposed method for constructing the structure of the new basement and single storey extension on top. Final construction method statement to be completed by main contractor following completion of the detailed design.

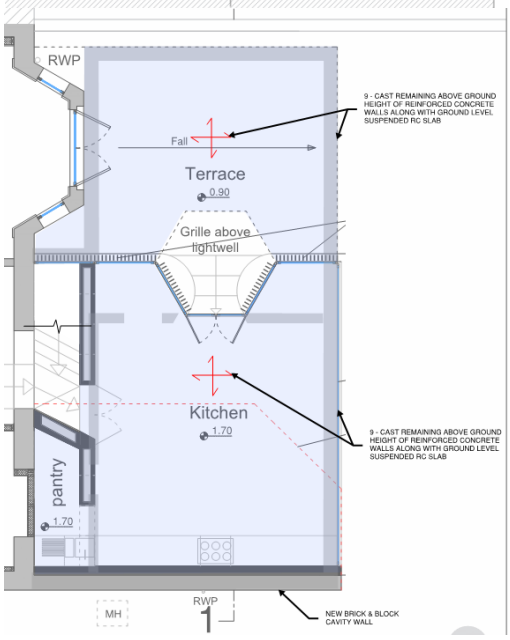
1. Erect necessary site hording & necessary site welfare facilities, ensuring side passage remains clear for access & egress.
2. Excavate locally to identify and, where necessary, redirect existing services and to find underside of existing foundations.
3. Batter garden earth back to allow for Southern basement wall to be cast as single element.
4. Cast mass concrete underpinning beneath existing rear wall.
5. Cast RC retaining wall throughout proposed basement footprint. Northern, Western and Eastern walls to be cast in hit & miss sequence. Southern wall can be cast as single element. Cast RC thickening at toe with all underpins.
6. Excavate to underside of construction installing temporary lateral propping as indicated.
7. Cast remaining basement foundations & slab, including RC retaining wall at step in level.
8. Remove low level horizontal props.
9. Cast remaining above ground height of reinforced concrete walls along with ground level suspended RC slab.
10. Remove all temporary propping.
11. Build load bearing & erect still frame to form extension roof.
12. Install timber deck to infill steel roof grillage.
13. Complete finishes to architect’s specification.



1. Steps 1 - 5



2. Steps 5-6



3. Steps 7 - 8

Figure 1 – Anticipated construction sequence

3.2 Single underpin sequence

Due to the depth of wall required, each 1m length of retaining wall can be cast in a single pour. Once each pin is cast and the earth around it excavated, it should be laterally propped at high level to prevent it from overturning. The concrete thickening at the toe of the retaining wall provides passive resistance against sliding in the temporary condition.

Reinforced concrete retaining wall section excavations shall be maximum 1m width and in the standard 1 3 5 4 2 sequence. Each section will be completed, and a minimum of 48 hours lapsed before an adjacent excavation is commenced. Each retaining wall section shall be dug in a day with the concrete base cast the same day.

1. Hand dig the 1m wide excavation down to underside of construction level, including portion of excavation for RC thickening at toe.
2. Install sacrificial shuttering at back of excavation allowing for cementitious grout to be poured behind to infill voids.
3. Install vertical 225x50 timber polling boards at 450mm centres on the remaining excavation side walls and front wall.
4. Install 2 no. horizontal 100x100 timber wailing beams at 800mm centres on both side walls.
5. Install 100x100 timber struts secured with folding wedges and screwed into place.
6. Carefully remove the projecting footing back to the face of the wall over.
7. Fix the required reinforcement.
8. Cast up to the required height leaving reinforcement exposed as required to ensure continuity.

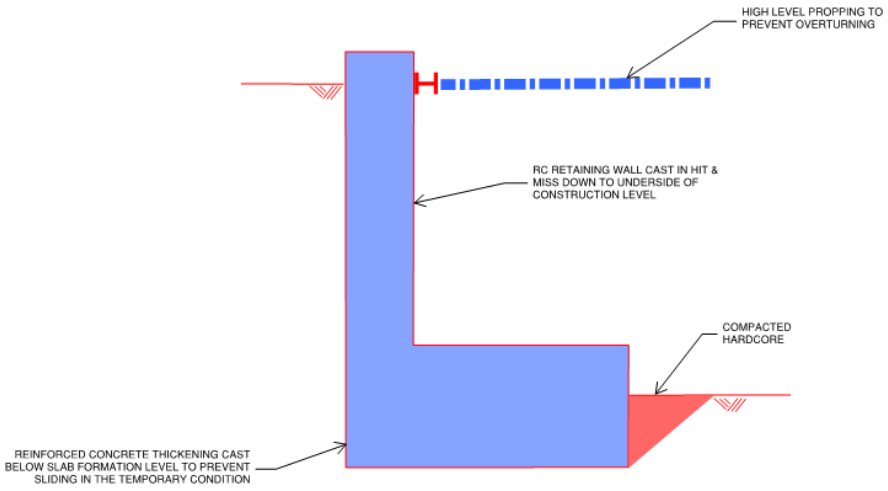


Figure 2 - Typical underpin sequence