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Constructure Ltd

47 Queens Grove

Structural Planning Report

Rev C

October 2015

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Contents

1.0 Introduction

Constructure Ltd were appointed in August 2015 for structural advice on the proposed refurbishment and extension of this property. This report has been produced to accompany the Planning Application submission by Pennington Phillips, describing the scope and nature of the structural works. It details the outline approach that will be taken to safeguard the integrity and stability of the existing building and adjoining property, in particular with the construction of the proposed lower ground floor structure.

1.1 Description of Works

It is proposed to construct a new two storey extension to the rear of the property, with new lowered area created with steps leading up to the higher level garden. The existing garage is proposed to be lowered and extended to the left side of the building (when viewed from the front). Please refer to supporting sketches 1379/001 and 002.

1.2 Camden Planning Guidance CPG4 (including DP27)

The following categories were initially addressed as follows. These informed the further desk study in the subsequent sections:

1.2.1 Subterranean/Groundwater

- Is the site located directly above an aquifer? NO
- Will the proposed basement extended beneath the water table surface? NO
- Is the site within 100m of a watercourse, well (used/disused) or potential spring line? NO
- Is the site within the catchment of the pond Chains on Hampstead Heath? NO
- Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas? NO
- As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)? NO
- Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just ponds chains on Hampstead Heath) or spring line. NO

1.2.2 Slope Stability

- Does the existing site include slopes, natural or manmade, greater than 7°? (approximately 1 in 8) NO
- Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7°? (approximately 1 in 8) NO
- Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°? (approximately 1 in 8) NO
- Is the site within a wider hillside setting in which the general slope is greater than 7°? (approximately 1 in 8) NO
- Is the London Clay the shallowest strata at the site? YES
- Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree zones where trees are to be retained? YES
- Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site? NO
- Is the site within 100m of a watercourse or a potential spring line? NO (see section 2.1)
- Is the site within an area of previously worked ground? NO
- Is the site within an aquifer?. If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction? NO
- Is the site within 50m of the Hampstead Heath ponds? NO
- Is the site within 5m of a highway or pedestrian right of way? NO
- Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties? NO
- Is the site over (or with the exclusion zone of) any tunnels e.g. railway lines? NO

1.2.3 Surface Flow and Flooding

- Is the site within the catchment of the ponds on Hampstead Heath? NO
- As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route? NO
- Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas? NO
- Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses? NO
- Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses? NO
- Is the site in an area known to be at risk from Surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature? NO

2.0 The Site

Situated within the residential area of St Johns Wood, the property is believed to have been built circa 1840, a semi-detached house.

The ground floor is at a higher level than the road level. There exists a walled hard-standing forecourt between the house and public highway, which is part of the demise of this property.

2.1 Local Geology

From the geological maps and borehole records for the area, the underlying soil is seen to be London Clay down to 30-40m, possibly with thin layer of Made Ground overlying. These strata are underlain by about 10m of the Lambeth Group, overlying 10-15m of Thanet Sand. Chalk is thought to be present at around -30mOD.

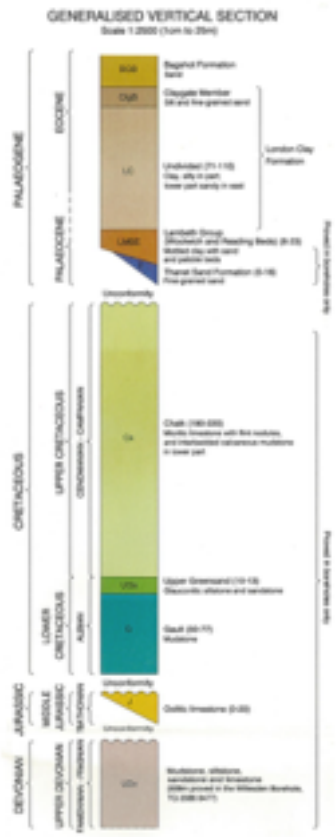


Figure 1 - Geological map showing site

2.2 London Underground

Consultation of LUL Route Maps demonstrate that the site is sufficiently far from London Underground infrastructure. Additionally, the new substructures are no deeper than the existing foundations. Therefore no consultation with the London Underground Asset Protection team will be necessary.

2.3 Existing Utilities and Underground Services

Existing services including sewers and drainage runs will be identified prior to commencing the works. The outfall to public sewer is known to be deeper than the existing property foundations, as such this will not be impacted by the proposed extension.

3.0 Investigation Works and Assessments

3.1 Site investigation

No site investigation has been carried out to date, but a basic investigation comprising trial pits and soil testing will be completed prior to detailed design works.

3.1.1 Contamination testing

Contamination testing is to be carried out by the contractor during the excavation works to allow WAC classification for disposal.

3.1.2 Groundwater

Based on nearby site investigation data, groundwater and in particular groundwater levels are unlikely to affect this site.

3.1.3 Soil Properties

The high plasticity of clays expected upon the site will ordinarily mean that foundation depths will need to be designed to be deep enough to reach beyond the influence of any trees, though in this case the proposed excavation for the basement will be sufficiently deep so as not to be critical in this respect.

3.2 Stability of excavations

Excavations in Made Ground are likely to be unstable and so may require temporary support. Excavations within the London Clay are expected to be more stable in the short term. The boundaries will be shored and propped to the contractor's temporary works engineer's design, alternatively the reinforced retaining walls formed in 1m bays, to contractor's preference.

3.3 Flood Risk

With reference to the Environment Agency's Flood Risk map, it can be seen that the site lies outside any flood risk zones. The site is on higher ground than the areas that historically experienced flooding most recently in 1975. As such, no detailed Flood Risk Assessment is deemed required.

The area of hardstanding and roof areas combined do not materially increase in the proposed scheme, and so the outflows into the public sewer system from the site due to surface waters will be comparable to the existing site.

3.4 Hydrogeological Assessment

The extension of the lower ground floor to the front will not be deeper than the existing deepest substructure, as shown on the supporting drawings.

Because the property already has a full-depth structural foundation, the proposed extension has a negligible volumetric impact upon the subsoils. The clay subsoils are relatively impermeable, and so any lateral ground

water flows would be minimal. As such, the proposed extension is deemed to have no significant effect on the local hydrogeology.

4.0 Construction and Design Parameters

4.1 Back Bedroom Extension

Please refer to drawing 002.

4.2.1 Retaining walls

The backcourt will be excavated to meet the level of the ground floor, and 0.8m back from the boundary to the east and to the west, will be retained using a new reinforced concrete cantilevered retaining wall.

4.1.2 Highways

The back of the property is adjacent to the public highway. The surcharge used in the design is based on the Highways Agency Design Manual for Roads and Bridges Volume 1, Section 3, Part 14. Values of HB loading of 12.0kN/m^2 or HA loading of 10.0kN/m^2 are to be considered. The proposed back retaining wall will therefore be designed to resist these forces.

4.2 Party Walls

The proposed development falls within the scope of the Party Wall Act 1996. Procedures under the Act will be dealt with in full by the Employer's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary notices under the provisions of the Act and agree Party Wall Awards in the event of disputes. The Contractor will be required to provide the Party Wall Surveyor with appropriate drawings, Method Statements and other relevant information covering the works that are notifiable under the Act. The resolution of matter under the Act and provision of the Party Wall Awards will protect the interests of all owners.

The scheme for 47 Queens Grove will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties in the street. The Surveyors will verify this as part of the process under the Act.

4.3 Design Codes

The following design codes will be followed during the detailed design stage:

The Building Regulations 2010 - Approved Document A

BS 648 - Weights of building materials

BS 5950:1 - Structural use of steelwork in building

BS 6399:1 - Loadings for buildings (Dead and imposed loads)

BS 6399:2 - Loadings for buildings (Wind loads)

BS 8110:1 - Structural use of Concrete

BS 8004 - Foundations

BS 8002 - Earth retaining structures

BS 8102 - Protection of structures against water from the ground

5.0 Outline Construction Sequence

The outline construction sequence and temporary works assumed in the design and described in this report will be superseded by the Contractor's construction proposals. The Contractor will be required to provide full proposals, method statements and calculations to the engineer prior to the commencement of any works on site and these will be considered in conjunction with the permanent structures and verified as suitable before the works are implemented.

The appointed contractor will be required to provide a detailed works sequence with their tender submission. An outline sequence of the substructures works is likely to be as follows:

- Secure site, erect hoardings, establish welfare facilities, and divert on-site services.
- Enabling works, demolition and stripping out works. Detailed sequence by specialist contractor. Remove debris and excavation arisings from site via the highway, in accordance with agreed traffic management plan.
- Prop floors and rear wall from raised ground floor upwards on right hand side of the house.
- Demolish the existing rear walls and roof of the rear room.
- Break out and remove existing garage walls and slab and rear room floor local to extension.
- Excavate underpins for perimeter wall in sequenced 1.0m wide bays, removing the existing corbel carefully. Cast mass concrete against soil to the terminate concrete 300mm below the proposed lower ground floor formation level. Leave 50-75mm gap at top of underpin.
- 24 hours after casting concrete, ram dry-pack mortar into the gap between pre-existing footing and new underpin.
- Once underpinning is complete, reduce the level of soil to the proposed lower ground level incrementally, installing horizontal props as the excavation progresses.
- Place and compact 150mm hardcore to provide suitable working surface.
- Lay sand blinding for new slabs
- Arrange reinforcement for slab and place wall starter bars. Then cast slab with kicker.
- Place wall reinforcement and provide formwork for the wall, then pour concrete.
- Once cured, remove temporary props.
- Build new cavity walls up from the RC walls and construct timber floors in the conventional manner.

6.0 Temporary Works

Temporary works design and coordination is to be carried out by a suitably qualified and experienced specialist and full design details (drawings and calculations) will be submitted to the engineer for comment. This specialist will be appointed by the Contractor who will be responsible for the design, erection and maintenance of all temporary works to ensure the stability of the existing structure, excavations and adjacent structures at all times.

7.0 Trees

There is a number of mature tress present to the rear of the house and smaller trees to the front. Founding depths will be designed in accordance to NHBC standards to avoid problems related to clay heave or swelling due to fluctuations in moisture.

8.0 Drainage Services

The development is a small extension of a single family dwelling house. Therefore, there will be no significant increased discharge into the existing drainage and sewage systems. Surface water will not be altered as the majority of the proposed works are underground and there will be no addition to the hard surface areas formed at ground level. The outfall to the Queens Grove public sewer can therefore be continued as per historic use.

9.0 Summary

During construction, lateral and vertical stability of the building will be maintained by directly underpinning and temporarily propping, such that no significant adverse movement is expected.

Environmental impacts have been assessed, and the response to geotechnical and hydrological aspects have been considered. The proposals are deemed to not have any adverse impact in this respect.

Once complete, the new structure will provide a robust and secure support for both new and existing structure without detriment to the overall stability of the building or adjoining property.

None of the proposed superstructure alterations will fundamentally affect the integrity and stability of the original structures upon and adjacent the site.

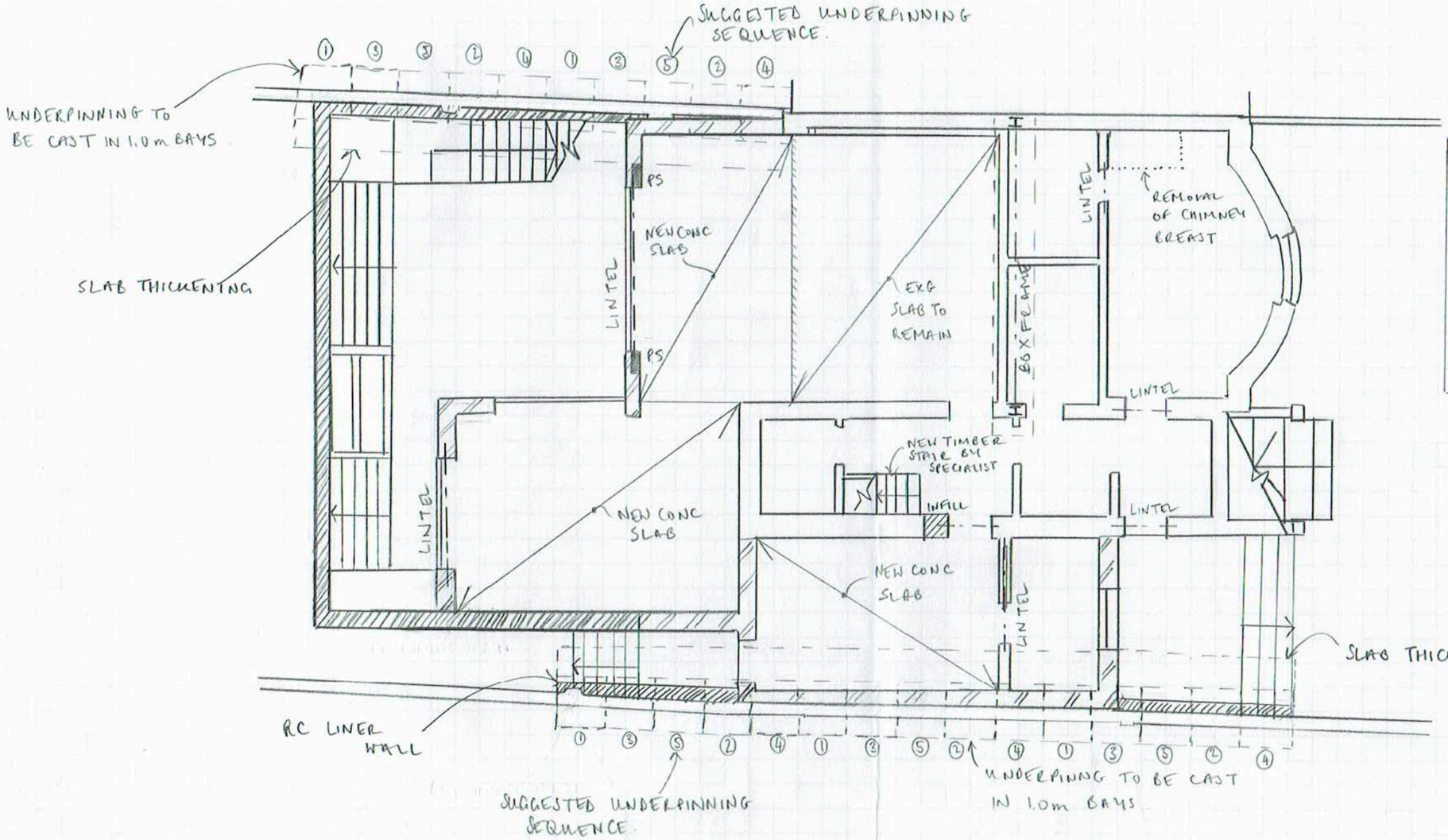
Appendices

Appendix A: Sketches SK-01 - SK-04: Proposals

Sketch SK-101: Indicative construction sequence

KEY

- NEW RETAINING WALL
- NEW BRICKWORK WALL
- PS – MASS CONCRETE PADSTONE
- NEW BEAM



NOTES:

- TEMPORARY WORKS & PROPPING TO CONTRACTOR'S DESIGN.
- INSULATION, WATERPROOFING, CAVITY DRAINAGE AND FINISHES TO ARCHITECT'S DETAILS

LOWER GROUND FLOOR

@ 1:100 @ A3

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Notes:-

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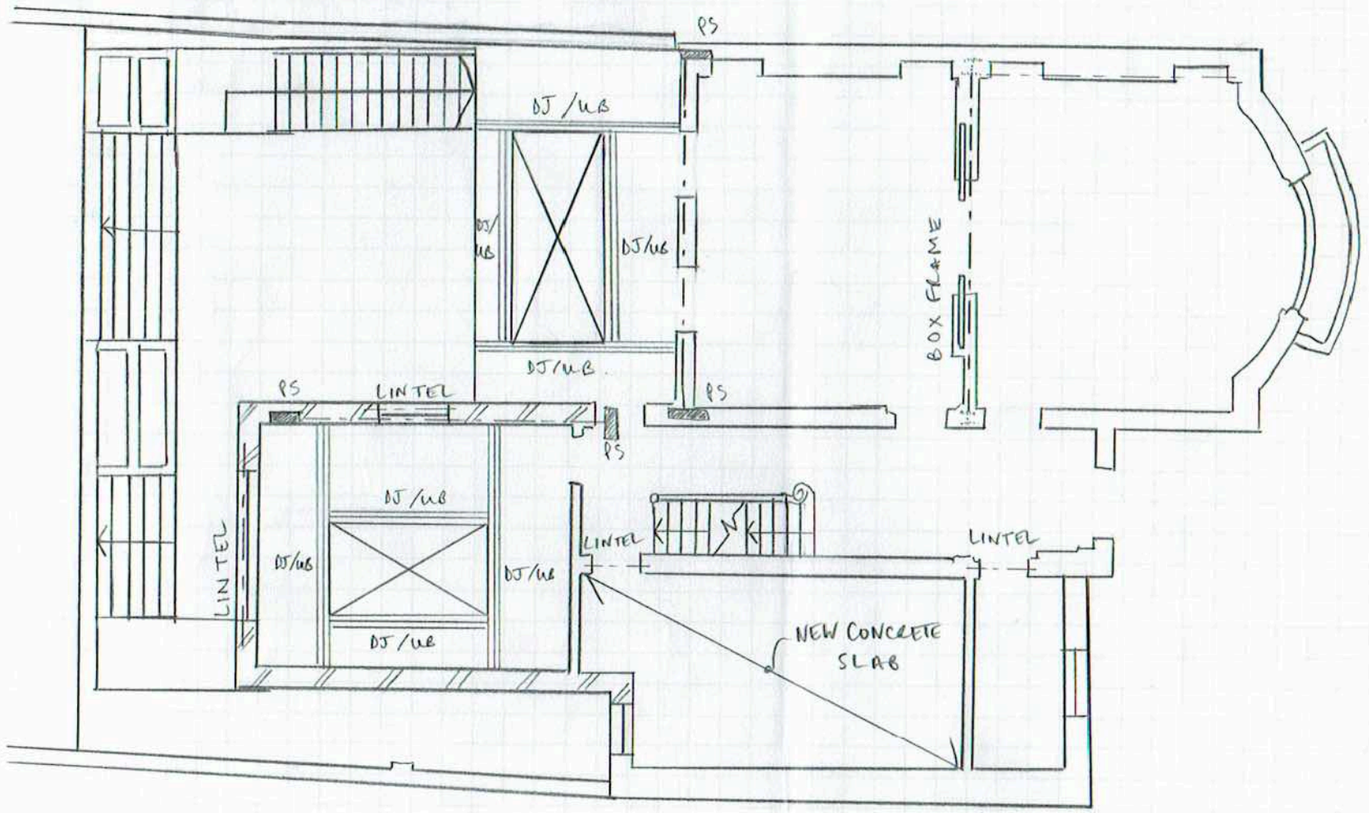
Project QUEENS GROVE		
Project No. 1424	Sheet SK-01	Rev.
Date 26-8-15	Eng. TC	Chk.

KEY

- NEW BRICKWORK WALL
- ps - MASS CONCRETE PADSTONE
- NEW BEAM
- DJ/UB - DOUBLE UB JOISTS / NEW UB BEAM



UPPER GROUND FLOOR

@ 1:100 @ A3

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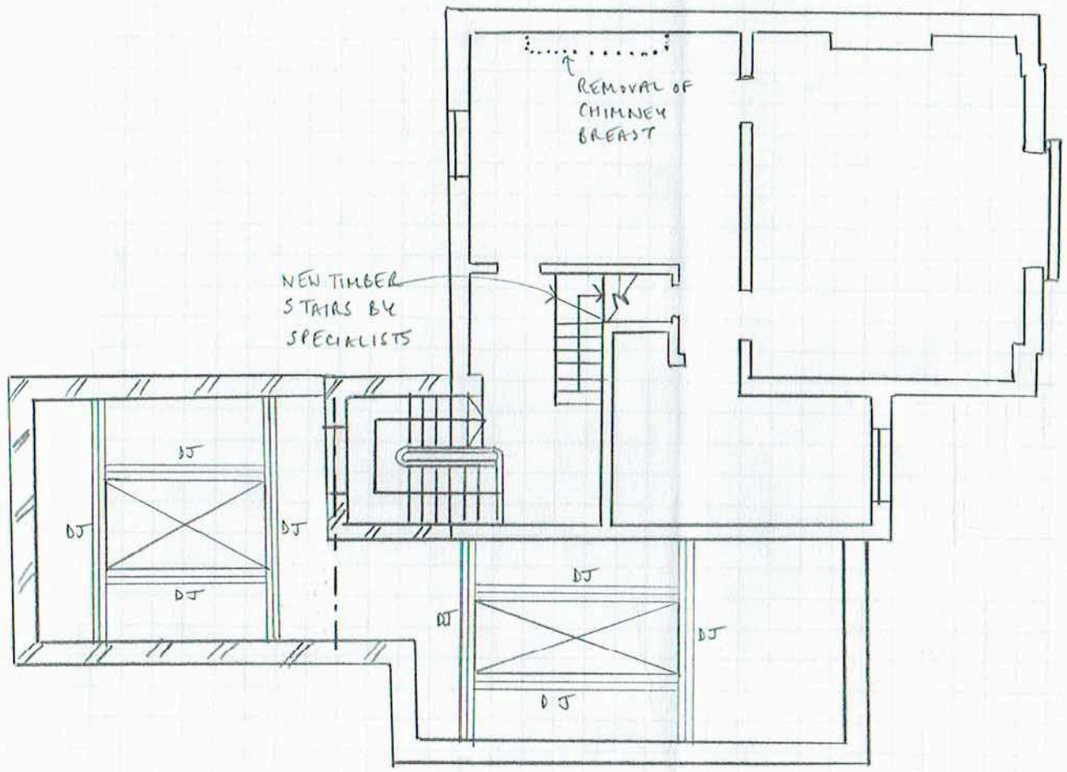
Project	QUEENS GROVE	
Project No. 1424	Sheet SK-02	Rev.
Date 26-8-15	Eng. TC	Chk.

KEY

— NEW BRICKWORK WALL

— NEW BEAM

DJ — DOUBLE UP JOISTS.



FIRST FLOOR

@ 1:100 @ A3

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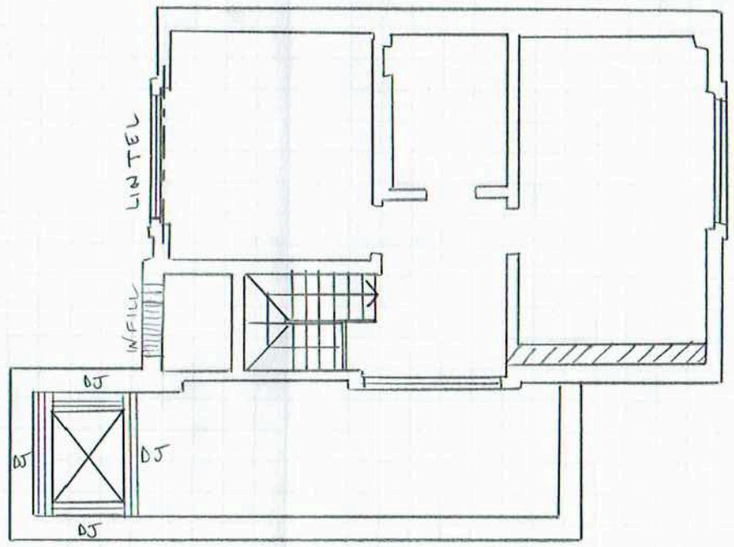
Project	QUEENS GROVE		
Project No.	1424	Sheet SK-03	Rev.
Date	26-8-15	Eng. TC	Chk.

KEY

- NEW BEAM
- INFILL
- DJ — DOUBLE UP JOISTS
- NEW WALL



SECOND FLOOR

~1:100 @ A3

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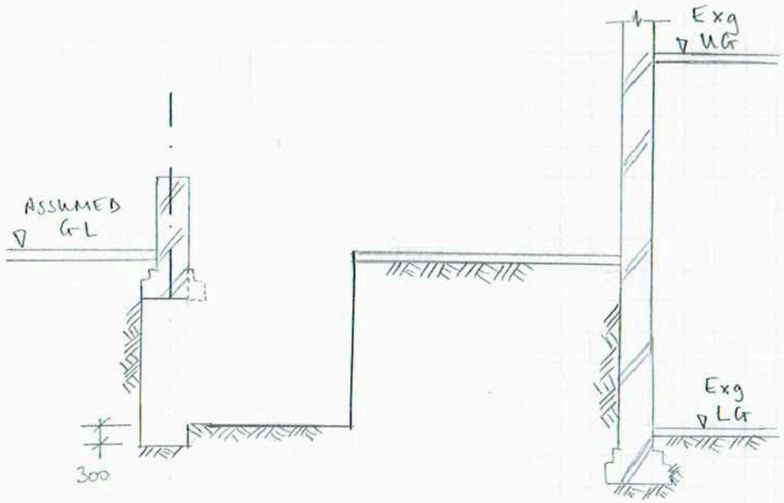
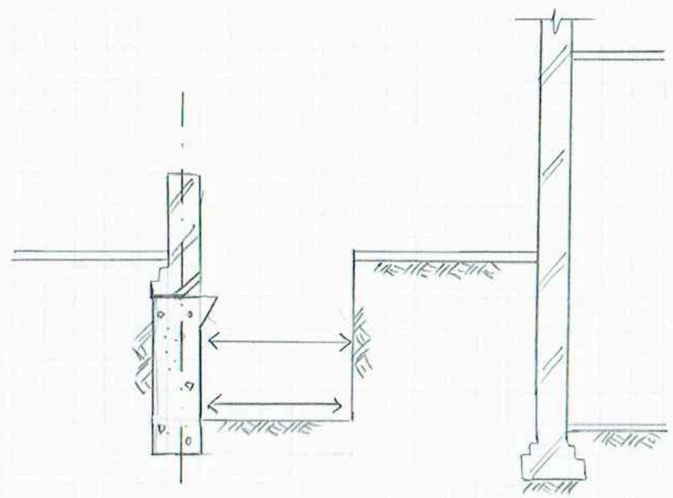
Project	QUEENS GROVE		
Project No.	1424	Sheet SK-04	Rev.
Date	27-8-15	Eng. TC	Chk.

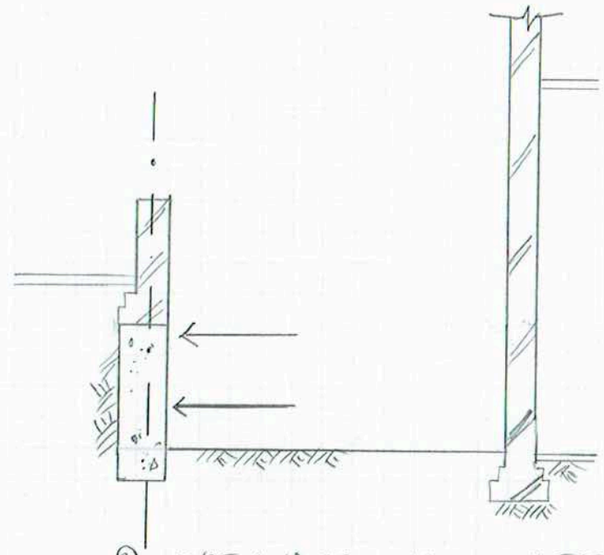
INDICATIVE CONSTRUCTION SEQUENCE



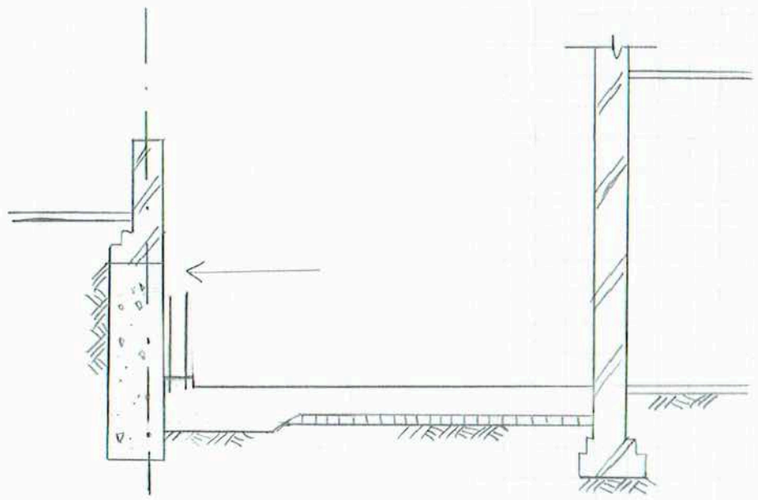
① BREAK OUT GROUND FLOOR SLAB. EXCAVATE FIRST UNDERPINS IN SEQUENCED 1.0m WIDE BAYS.



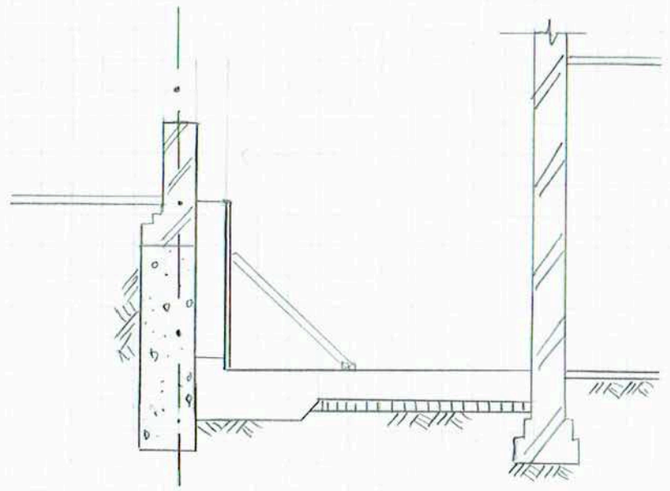
② CAST FIRST UNDERPINS (UNREINFORCED). PROPPING AS EXCAVATION PROGRESSES. PUMP OUT ANY GROUND WATER AS NECESSARY.



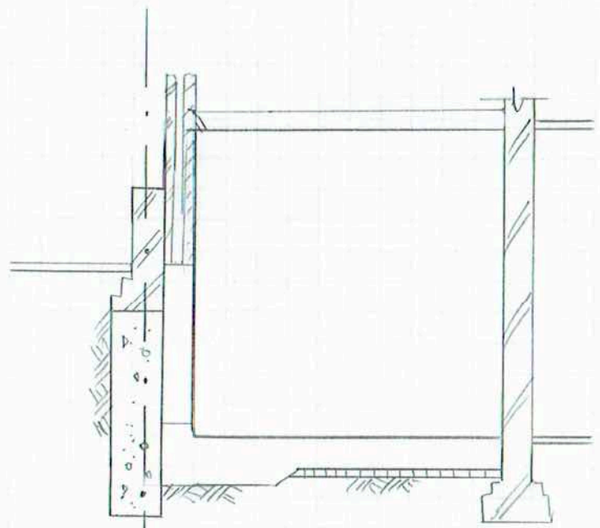
③ ONCE UNDERPINNING IS COMPLETE, REDUCE LEVEL OF SOIL TO PROPOSED LG FLOOR FORMATION LEVEL. PROPPING HORIZONTALLY AS EXCAVATION PROGRESSES



④ ARRANGE REINFORCEMENT FOR SLAB AND PLACE WALL STARTER BARS. THEN CAST SLAB WITH KICKER.



⑤ PLACE WALL REINFORCEMENT AND PROVIDE FORMWORK, THEN POUR CONCRETE



⑥ ONCE CURED, REMOVE TEMP PROPS. BUILD NEW CAVITY WALLS AND CONSTRUCT TIMBER FLOORS IN CONVENTIONAL MANNER.

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Project	QUEENS GROVE		
Project No. 1424	Sheet SK-101	Rev.
Date 23-9-15	Eng. TC	Chk.