

20 LEIGHTON ROAD

LONDON

NW5

STRUCTURAL STABILITY ASSESSMENT

REPORT

for

J WAGNER & C DILLE

by

DOUGLAS KENNEY LIMITED
STRUCTURAL ENGINEERS
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DK/JD/2430

DATE: 30th MARCH 2019

1.0 Introduction

This report is intended to provide a description of the structural form and stability of the property at 20 Leighton Road, Camden, London NW5 2QE.

We carried out an initial visual inspection of the property on 21st November 2018. This report is intended to provide an understanding of the structural form and phasing sequence of the proposed alterations to ensure stability during and after the proposed works.

This report should be read in conjunction with the Basement Impact Assessment (BIA) carried out by Ashton Bennett ref JWCD 3365, Gregori Chiarotti architectural drawings and Douglas Kenney drawing No 2430/01 relating to this property. The BIA report provides details of potential ground and building movement (including detailed calculations) caused by the proposed works. We do not consider replication of this analysis carried out in the BIA necessary but have provided comment where appropriate.

2.0 Form of Construction

20 Leighton Road is understood to have been constructed in the mid 1800's. We understand the property is Grade ii listed.

The property is semi-detached with solid masonry party wall built up to form the ridge between the properties.

The basic form of the construction comprises load bearing masonry walls with timber floors and a traditionally constructed timber roof.

The external walls are of solid brick construction with masonry and timber load bearing internal partitions.

The timber roof comprises timber rafters supported by purlins and struts. There is a small area of flat roof above first floor level to the side flank wall of the property.

The existing Lower Ground floor slab is located about 1.5 m below ground levels to the front of the property. There is a small area of terrace with brick retaining walls and steps leading to the rear garden which is at a similar level to the front garden. There is also rear access into the property from the higher level garden/terrace to the stairwell at ground floor level (also refer to Gregori Chiarotti Architects drawings).

The overall stiffness of the building relies upon the perimeter and party masonry walls as shear walls and lateral support to these walls is provided by the roof and floors at each level.

3.0 Scope of Inspections

Our visual inspections relate to the external walls as viewed from ground level and internal observations.

We did not carry out opening-up of the construction or other intrusive investigations.

We did not inspect woodwork or other parts of the construction which were inaccessible or concealed and are therefore unable to report that any such part is free from defect.

4.0 Proposed works.

The proposed works allow for lowering the existing rear lower ground floor slab to rear reception room only to increase headroom from 2180mm to approximately 2600mm. It will be necessary to underpin the existing party wall and walls separating this area from front reception room and stairwell. Underpinning depths required at approximately 500mm.

A rear extension is also proposed which will require removal of existing steps and earth to the rear garden and existing terrace access at ground floor. Retaining walls will be formed on the side boundaries and to the rear garden. Access steps are proposed from the extension to rear garden (refer to architects drawings and preliminary structural drawing No.2430/01 attached showing the extent of excavations and underpinning specification and sequencing).

5.0 Adjacent Structures, Potential Ground Movement and Monitoring

Also refer to BIA report for detailed commentary and calculation with respect to possible ground movement during excavations and construction. The proposed monitoring strategy by Ashton Bennett also appears satisfactory.

We have prepared a drawing which shows the proposed sequence of underpinning works and works to retaining structures which is attached to this document. The works must be carried out by a competent contractor with significant experience completing successful underpinning works.

The proposed removal of part of the rear wall at lower ground floor will be required to form an opening between the existing rear reception room and new extension. The opening will be formed and existing rear wall temporarily supported using specialist needle and prop methods. The contractor will be responsible for the design which must be carried out by specialist temporary works engineers.

Excavation to reduce existing levels within the existing rear extension will be carried out in bays and in sequence to ensure the existing building foundations are adequately supported during the works (refer to attached drawing No. 2430/01).

The potential ground movement due to excavations and installation of new foundations appears negligible (refer to BIA report by Ashton Bennett ref JWCD 3365). The maximum depth of excavations will be about 1.80m. Preliminary, heave analysis has been carried out by Ashton Bennett and predict maximum heave displacements of approximately 1.1/2.7mm horizontal movement due to excavation and installing new foundations. They also predict vertical movement of 1.1/1.8mm due to excavation and installing new foundations.

All predicted movements appear well within acceptable limits and appear to represent a maximum figure based on values for the predicted London Clay soils.



4.3 External Inspection

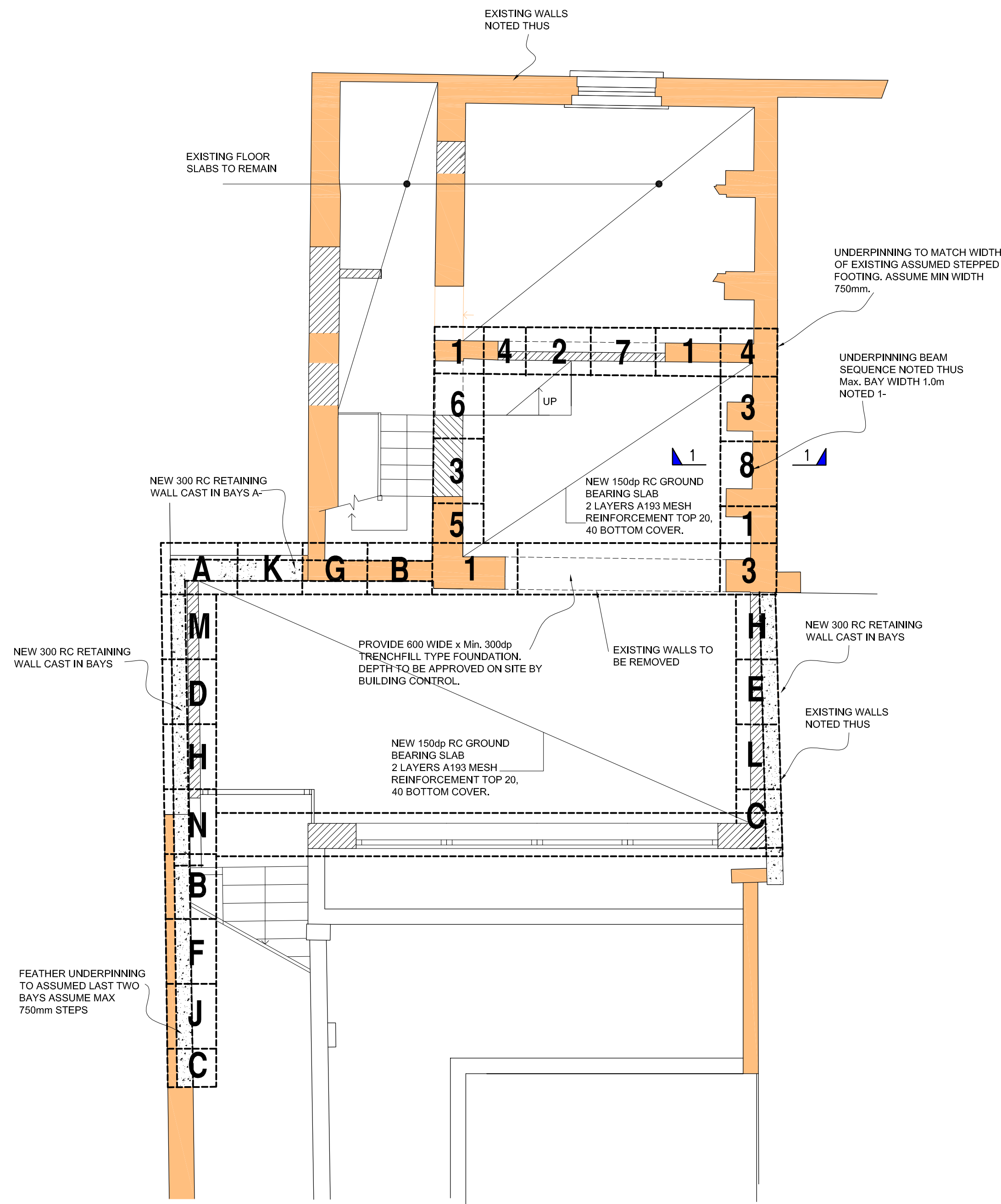
The external south facing wall was viewed from ground level. There were no significant cracks noted. However, some cracking was observed to the adjoining semi detached building. All existing cracks will be noted and monitored and will form part of the Party Wall Agreement.

4.4 Inspection of Roof space

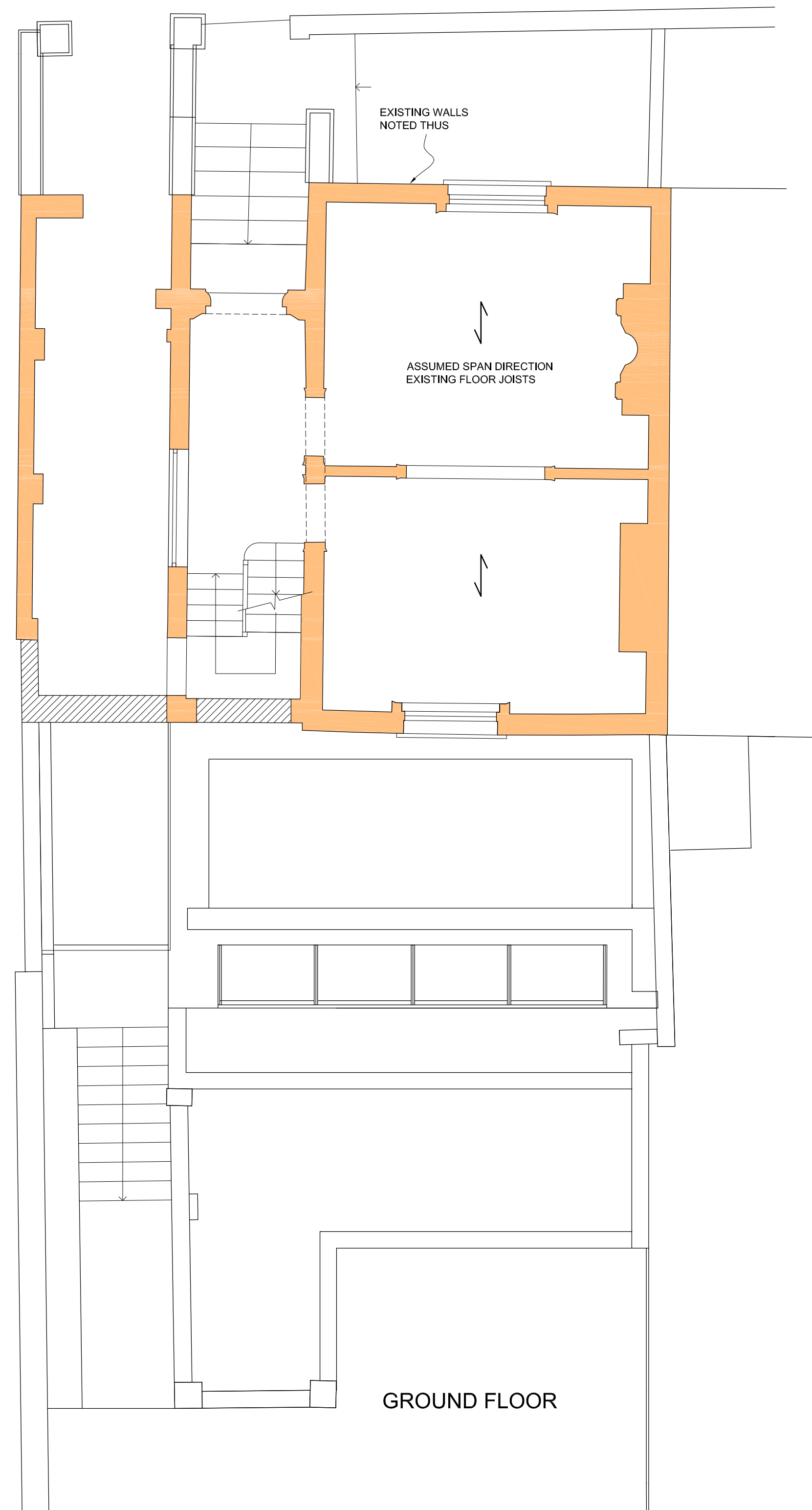
Access to the roof space was not possible due to the pitch of the roof and part flat roof areas.

We trust you find the above satisfactory. Please do not hesitate to contact us if you have any queries or would like further assistance.

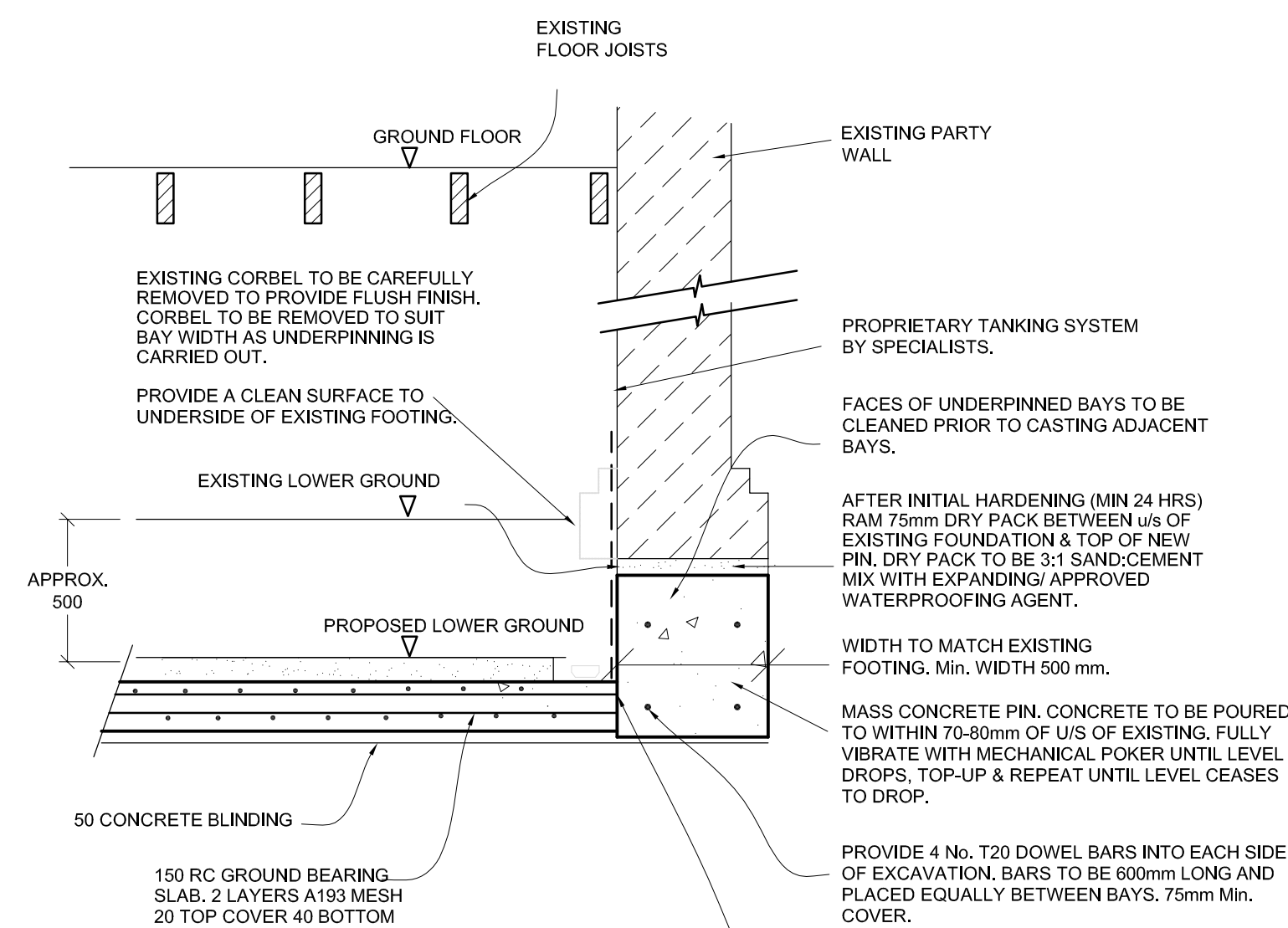
Prepared By	Verified By
	
Jonathan Douglas IEng AMIStructE	Christopher Smith CEng MICE MIStructE



BASEMENT



GROUND FLOOR



SECTION 1-1 1:20

SPECIFICATION FOR UNDERPINNING

- 10 Responsibilities**
The Contractor shall be completely responsible for the safety of the existing structure during the underpinning operations and he shall design, supply and erect all the temporary supports that may be required or prove necessary during the course of the work. The details of such supports shall be agreed with the Engineer and other interested parties prior to their erection.
- 2.0 Survey & Condition of Building**
Before commencing work the Contractor shall carry out an inspection and produce a Schedule of Condition for the building to be underpinned. This shall be agreed with the Architect before commencing work. Where necessary repairs shall be effected to enable the underpinning to be carried out.
- 3.0 Programme & Sequence**
The Contractor shall produce a complete programme for the underpinning which must show the sequence of excavation and construction of each section. The programme must be agreed with the Engineer and other interested parties prior to work commencing.
- 4.0 Protection**
The Contractor shall protect the area in which the work is being carried out by the provision of suitable hoardings, fences etc.
- 5.0** Unless otherwise instructed by the Architect all work shall be carried out from within the site.
- The underpinning shall be carried out in sections not exceeding 1100mm. The excavation and construction of the sections shall be carried out in a "hit and miss" pattern such that a maximum degree of support is offered to the wall at all times.
- Unless otherwise stated on the drawings the underpinning shall be carried out for the whole width of the existing foundation.
- 6.0 Excavation**
Where excavations exceed 1000mm in depth or wherever it is found necessary or called for on the drawings, all excavations shall be fully planked and strutted.
- The material providing the support to the remote earth face below the foundations shall, if necessary, be left in position. It must not therefore be subject to deterioration. Any gaps between this support and the earth face shall be filled with cementitious grout.
- All timber planking and strutting shall be removed.
- The underside of the exposed foundations shall be thoroughly cleaned of all soil and other loose material before the section of underpinning is constructed.
- Excavations which are left open overnight shall be blinded with 50mm of 18 concrete with sulphate resisting cement.
- If water is struck during excavation, excavation shall cease until a method of dewatering has been devised which will not be detrimental to the adjoining foundations and has been agreed with the Engineer.
- 7.0 Construction of Underpinning**
It is recommended that the underpinning is carried out in concrete sections and this has been detailed on the drawings.
- In the event that the Contractor requests that the work be carried out in brickwork then his alternative proposals will be considered by the Engineer.
- For the concrete work;
a) The concrete mix shall be grade 25 with sulphate resisting cement unless noted otherwise on the drawings.
b) Where dowel bars are shown on the drawings they shall be so provided or toggle joints at 1/3 positions as noted on the drawings.
c) The concrete shall be brought to within 75mm of the underside of the foundations.
- A period of 24 hours shall elapse between completion of new concrete foundations and the commencement of the dry packing.
- A period of 24 hours shall elapse between the dry packing operation and the commencement of excavations to the adjoining section of underpinning.
- 8.0 Pining Up**
A semi-dry 1:3 mix with 10mm aggregate shall be thoroughly rammed into position between the concrete stool and the underside of the existing foundation. A suitable tool shall be used to ensure that no voids are left in the dry pack zone.
- A non-shrinking grout agent may be employed in the mix to the Engineers approval.
- 9.0 Records**
The Contractor shall keep an accurate record of the progress of underpinning operations that shall be available for reference any time.

GENERAL

- This drawing is to be read in conjunction with all drawings and specifications issued by the Engineer, Architect and other Specialists.
- DO NOT SCALE THIS DRAWING. Use figured dimensions only.
- Any apparent discrepancies in dimensions or details should be referred to DOUGLAS KENNEY.

MASONRY

- Unless noted otherwise all walls shown are to be built of bricks and blocks.
- All bed and perpendicular joints are to be properly filled with mortar.
- All blocks used below dpc level are to be dense concrete blocks.
- All mortar used below dpc level is to be 1:3 Ordinary Portland Cement:Sand by volume.
- Unless noted otherwise all mortar above dpc is to be 1:6 Ordinary Portland Cement:Lime:Sand by volume or an equivalent mix with plasticiser.
- The maximum spacing and type of cavity wall ties used is to be in accordance with Table 6 of the Building Regulations 1991 Approved Document A.
- Spacing requirements of vertical movement joints in block and brick walls to manufacturers recommendations.
- All load bearing block walls to be constructed in strength 7N/mm² blocks.
- Provide BRC Bricktor bed joint reinforcement for two courses above and below all openings, extending 600mm beyond opening. Reinforcement in external leaf to be stainless steel.

CONCRETE

- All concrete is to be produced in accordance with BS8110:1997.
- All concrete is to be properly vibrated to ensure compaction.
- All mass concrete is to be Grade 20 with minimum cement content of 240 kg/m³ and a maximum water/cement ratio of 0.6 unless noted otherwise. Adopt sulphate resisting cement unless site investigation carried out.
- The position of any construction joints not shown on the drawing are to be approved by Douglas Kenney.
- All holes through structural members are to be approved by Douglas Kenney prior to casting concrete.

FOUNDATIONS

- The foundation design is based upon a safe groundbearing capacity of 100 kN/m².
- All foundations are to be positioned centrally beneath walls unless shown otherwise. For full setting out dimensions of walls refer to the Architects drawings.
- All foundations are to be taken to the minimum depth defined on section.
- Douglas Kenney are to be given the opportunity to inspect all excavations with a minimum notice period of 24 hours.
- All foundation depths to be approved on site by Building Control.

Rev.	Amendments	Date
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Project **20 LEIGHTON ROAD, LONDON, NW5 2QE**

Drawing **LOWER AND GROUND FLOOR FOUNDATIONS AS PROPOSED**

Client _____

Drawn **RS** Drawing Number _____

Date **MAR 19** _____

Checked _____

Date **24/30/01** _____

Scales **1:50** _____

Revisions _____

PRELIMINARY ISSUE