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Devonshire House, 69 Fitzjohns Avenue, NW3

Basement Impact Assessment – Structural Proposals and Suggested Construction Sequence

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Rev No: Planning

1.0 INTRODUCTION

1.1 It is proposed to construct a new single storey rear extension to the lower ground floor of this Victorian four storey school property, at level into the garden area which presently steps and slopes up to the rear garden level.

1.2 This report is in response to The Camden Development Policy DP27, with reference to paragraph 27.3., the proposed extension is a single storey at level with the rear garden and owing to the sloped nature of the ground, does not remove a full storey's worth of soil over it's whole area.

1.3 Following the format guidance in The Camden Policy Guidance PG4, the stages for a Basement Impact Assessment are:

- Stage 1 - Screening;
- Stage 2 - Scoping;
- Stage 3 - Site investigation and study;
- Stage 4 - Impact assessment; and
- Stage 5 - Review and decision making.

This report prepared by Geotechnical & Environmental Associates (GEA) follows these Flow Charts and uses the Figurative information given in the Camden Geological, Hydro-geological and Hydrological Study to submit data with relevance to the scale of this project to address stages 1 and 2.

1.4 The Flowcharts of the Appendix E to the Camden Geological, Hydro-geological and Hydrological Study are completed in table format by GEA and form the screening element of this report, including:

- Surface Flow and Flooding Impact Identification
- Subterranean (groundwater) Flow Impact Identification
- Slope Stability screening flowchart

2.0 SITE INFORMATION

2.1 69 Fitzjohns Avenue is a Victorian 'villa' style property, four storey detached build circa 1870s. The construction is typical for buildings of this era with load bearing masonry walls and timber floors. The proposed development a lateral rear extension to the existing lower ground floor.

2.2 Fitzjohns Avenue lies within the generally sloped setting of Hampstead, although the area to either side of no 69 is relatively flat, with the land that forms the garden sloping up from the rear towards Fitzjohns Avenue.

2.3 Neighbouring the property on either side are Nos 67 and 71 Fitzjohns Avenue, with both being detached properties. Both these properties are four storeys including their lower ground floor levels.

2.4 Both of the neighbouring properties are more than 6m from the proposed development and will not be affected in the temporary or permanent conditions, by the proposed works. Both of these properties are a good distance from the proposed works and 45 degree lines taken from the base of the excavation will not cross the properties' foundations.

2.5 The geology, hydrology and Hydrogeology of the site are discussed in depth by GEA in their report.

2.6 GEA have also considered any existing services below or in the environs of the site.

3.0 PROPOSED SCHEME – STRUCTURE

3.1 Structural Arrangement drawings for the proposals are in the Appendix A of the report.

3.2 It is proposed to form a reinforced concrete box within the existing sloped rear garden. This box is to meet the existing lower ground floor level to Devonshire House at the rear facade of the building.

3.3 The new basement perimeter walls will be required to support lateral pressures generated by both the earth and surcharge from the adjacent garden area which are designed to take account of worst case temporary and permanent load combinations. Slope instability cannot occur.

3.4 Hypothetical buoyancy will also have to be considered due to a potential raised groundwater level – this is to be resisted by the weight of the wall structures and the mass of the building above.

3.5 It is proposed to lower a section of the existing lower ground floor by approximately 900mm. Trial pits have been carried out to these areas and have identified a ground bearing slab and relatively shallow traditional corbelled brick footings. In order to lower this area of floor it will be necessary to underpin the load bearing walls in these locations. It is proposed to provide wider foundations whilst underpinning, where necessary, to ensure these footings can carry the additional loads form the proposals.

3.6 As the underpinning sections progress, each section will be tied together to form one continuous section of basement wall. All of the underpinning works are to be carried out by a competent foundation contractor who is familiar with the suggested proposals.

3.7 A number of load-bearing walls in the existing lower ground floor are to be removed. Steel beams and framing will be required within the ground floor construction to re-support the ground floor and walls above. These beams have been identified on the ground floor plan in Appendix A of this report. Any temporary works required to permit the safe installation of these beams are to be designed and detailed by the main Contractors temporary works engineer with full details being issued for comment prior to any works commencing on site.

3.8 The proposed basement slab, underpinning and walls are to be concrete. The concrete structure will be designed to BS8110. The basement slab will be a reinforced concrete slab bearing onto the natural strata. It will act to laterally prop the base of the underpinned walls and prevent sliding of these bases. It will be designed to resist water pressure and any potential heave as previously mentioned.

3.9 As the basement is to form a habitable space it will require waterproofing in accordance with BS8102 and Ciria Report 139 to Grade 3. A waterproofing solution will be specified by the architect. Wherever possible, drainage will be discharged through a gravity system.

3.10 The ground floor slab ‘lid’ is of insitu RC construction and is to be designed to carry the lightweight ground floor steel and glass extension. This slab spans from the top of the RC retaining wall on the garden side and is pocketed into and takes support from the existing rear wall of Devonshire House on the building side. As discussed earlier, the foundation to this wall will be increased due to the proposed underpinning. This will demonstrated as acceptable by calculation in due course.

3.11 As outlined earlier, the property is detached and the proposals are more than 6m away from any boundary. As such, the development falls outside the scope of the Party Wall Act 1996. The proposed design will not preclude or inhibit similar, or indeed any works on the adjoining properties.

3.12 The proposals do not have any impact on any trees in the vicinity of the site.

4.0 CONSTRUCTION METHOD STATEMENT

4.1 The construction method statement describes how the works can proceed safely while minimising the impact of the works.

4.2 All of the underpinning works are to be carried out by a competent foundation contractor who is familiar with the suggested proposals. Works will be executed to comply with the Considerate Contractors Scheme.

4.3 The outline construction sequence and temporary works as described below will be superseded by the Contractors' final proposal. The contractor will be required to submit full proposals, method statement and calculations to the Structural Engineer for review prior to the start of any works on site.

4.4 The Contractor is responsible for the design and erection of all temporary works in accordance with all relevant British Standards. The Contractor is to provide adequate supervision to ensure that the stability of the existing structure, excavations and surrounding structures are maintained at all times.

4.5 The size of the semi-basement is relatively small and the anticipated duration of the basement excavations and construction is less than 3-4 months.

4.6 It is assumed deliveries, removals and access for operatives will take place from Fitzjohns Avenue. This access point is to be managed and controlled in such a way to ensure the safety to site operatives and the general public at all times.

4.7 At this stage the exact construction sequence has not been established, however, below is a suggested construction sequence for the works.

- Mobilisation and site set up. Erect a fully enclosed site hoarding to the front of the property. Terminate/protect services as necessary.
- Install monitoring survey points on existing structure as agreed necessary with Structural Engineer.
- Commence demolition of existing ground floor structure at the rear of the property in the reverse order of construction and reduce levels in garden as appropriate battering earth back at a safe angle of repose.
- Grub up existing lower ground floor slabs where required and commence underpinning of existing walls where required following agreed sequence.

- Reduce level dig to formation level and prepare sub-base to side lightwell area and proposed dining hall area.

- Place formwork and reinforcement for new retaining wall structures and cast integrally with basement slab which acts as the base to the retaining walls. Tie the new slab into the existing construction where required with dowel bars resin bonded into existing fabric of building. Back fill behind walls as required with free draining material.

- Place formwork and reinforcement to cast ground floor 'lid' over lower ground floor. Form hit and miss pockets in the existing masonry wall construction where support for the new slab is to be taken on the existing wall lines (see drawings). Cast ground floor slab.

- Install temporary works to allow the installation of permanent steelwork where load bearing elements in the existing lower ground floor are to be removed. Install permanent steelwork ensuring all existing structure is adequately supported. Remove temporary works

- Commence ground floor 'lightweight' steel framed construction built off ground floor slab level.

- Commence internal fit out.

5.0 SERVICES AND GROUND WATER

5.1 It is envisaged that the development will only impact, if at all, on the below ground services serving 69 Fitzjohns Avenue. If required, these will have to be diverted accordingly to avoid clashing with the proposed basement development.

5.2 The proposals do not change the management of the surface water on the existing site.

5.3 The management of the foul water is for a gravity discharge arrangement as currently exists.

5.4 The proposed basement development is above the level of the groundwater and as such no water is expected in any of the excavations. However, this will be closely monitored and if any perched water is encountered above the clay strata it will be managed accordingly. It is also worth noting that the basement slab and retaining walls will be designed to resist a nominal head of water assuming the water rises to 1.5m below existing ground level which is a conservative assessment.

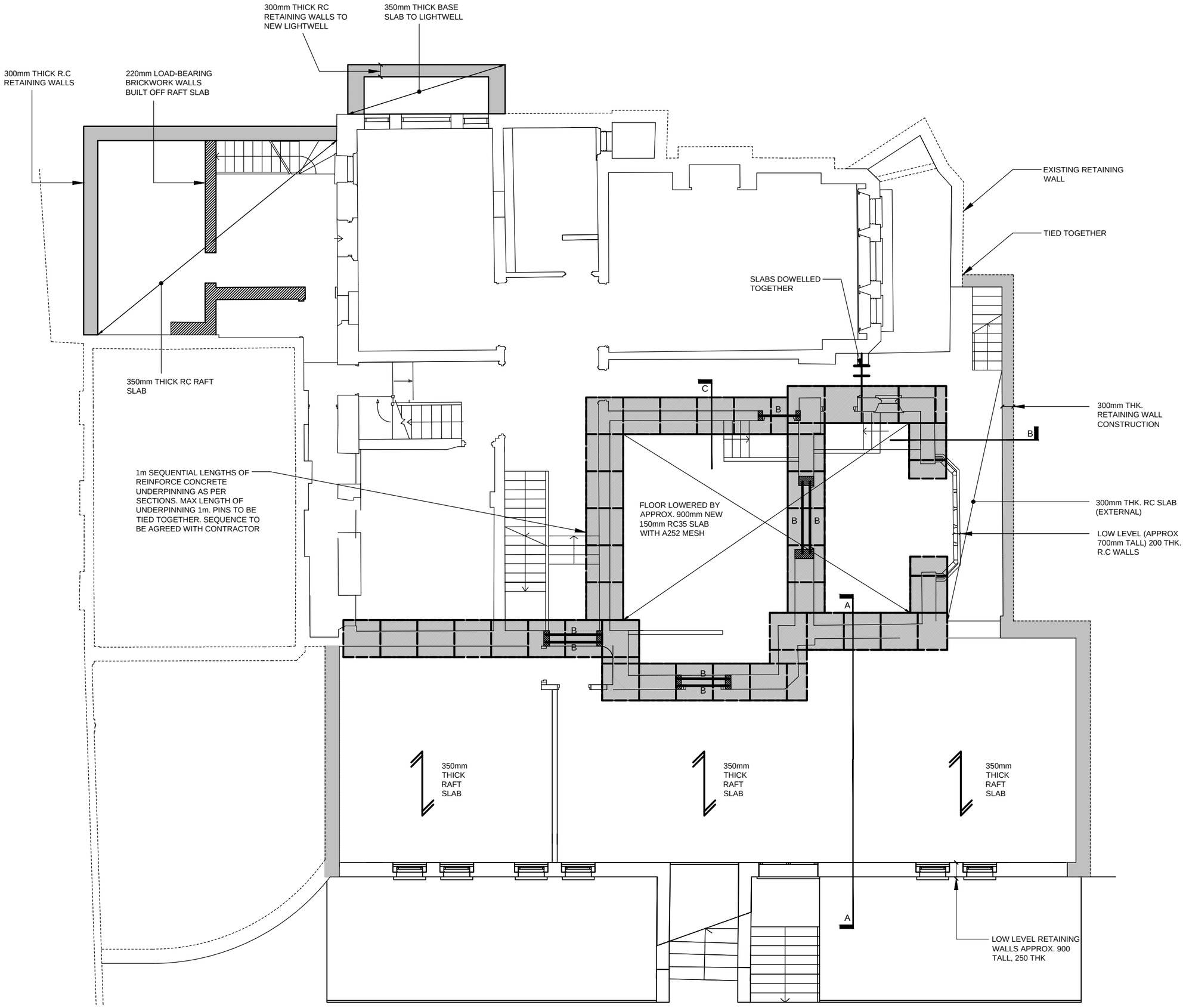
5.5 The depth of the adjacent lower ground floor to 69 Fitzjohns Avenue means that ground water flows under the site will not be affected.

5.6 A CCTV Survey is to be organised to ascertain the existing site drainage outfall.

6.0 MITIGATING NOISE AND NUISANCE

6.1 The main contractor shall implement measures in accordance with any Planning Conditions imposed to keep noise from construction activities to within acceptable limits. Also it should be noted that sequential underpinning and insitu RC construction generally has been recommended to construct the semi- basement rather than piling as it is a quieter, less disruptive construction process.

Keith Hirst
MSc BEng (Hons) CEng MIStructE



NOT FOR CONSTRUCTION

Rev	Date	Description	Drawn	Check

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Drawing Status
PRELIMINARY

Project
69 FITZJOHN AVENUE
LONDON NW3 6PD

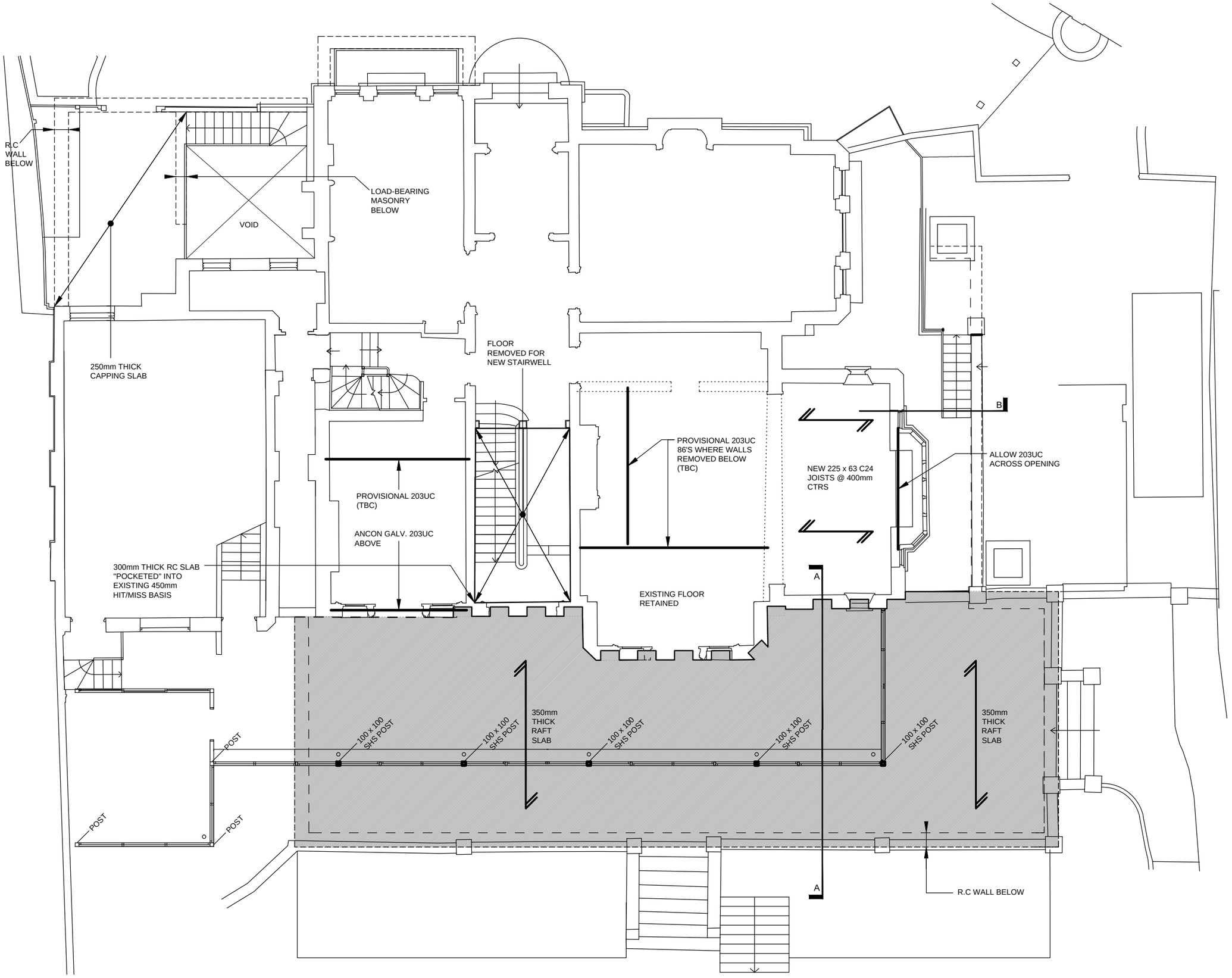
Title
PROPOSED BASEMENT PLAN

Date MAR 2015
Scale 1:100 @ A1
Drawn MC
Engineer KH

Project No
140330

Drawing No
SSK01

Revision
P1



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Drawing Status
PRELIMINARY

Project
69 FITZJOHN AVENUE
LONDON NW3 6PD

Title
PROPOSED GROUND FLOOR

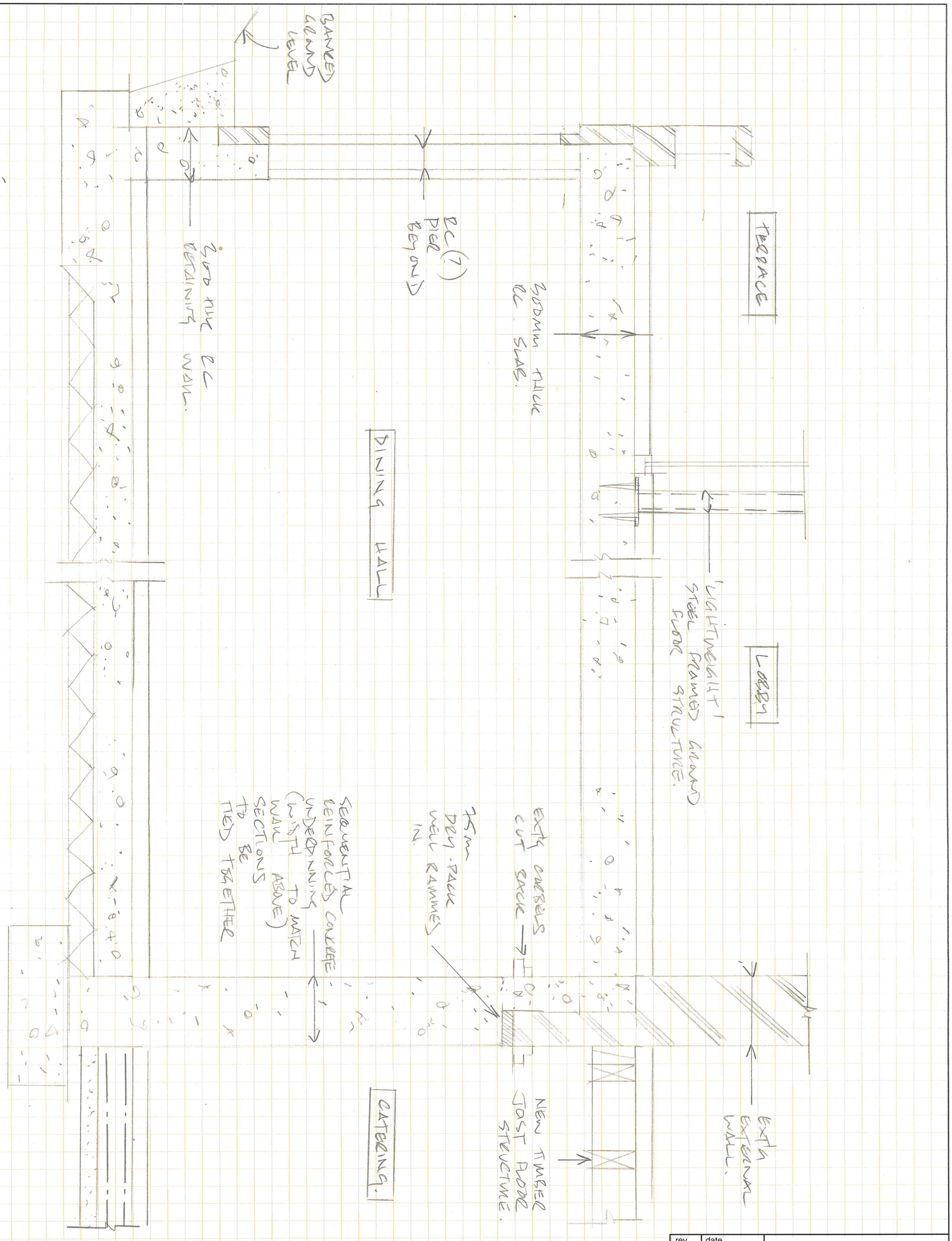
Date MAR 2015
Scale 1:100 @ A1
Drawn MC
Engineer KH

Project No
140330

Drawing No
SSK02

Revision
P1

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER RELEVANT DRAWINGS. DO NOT SCALE FROM THIS DRAWING.



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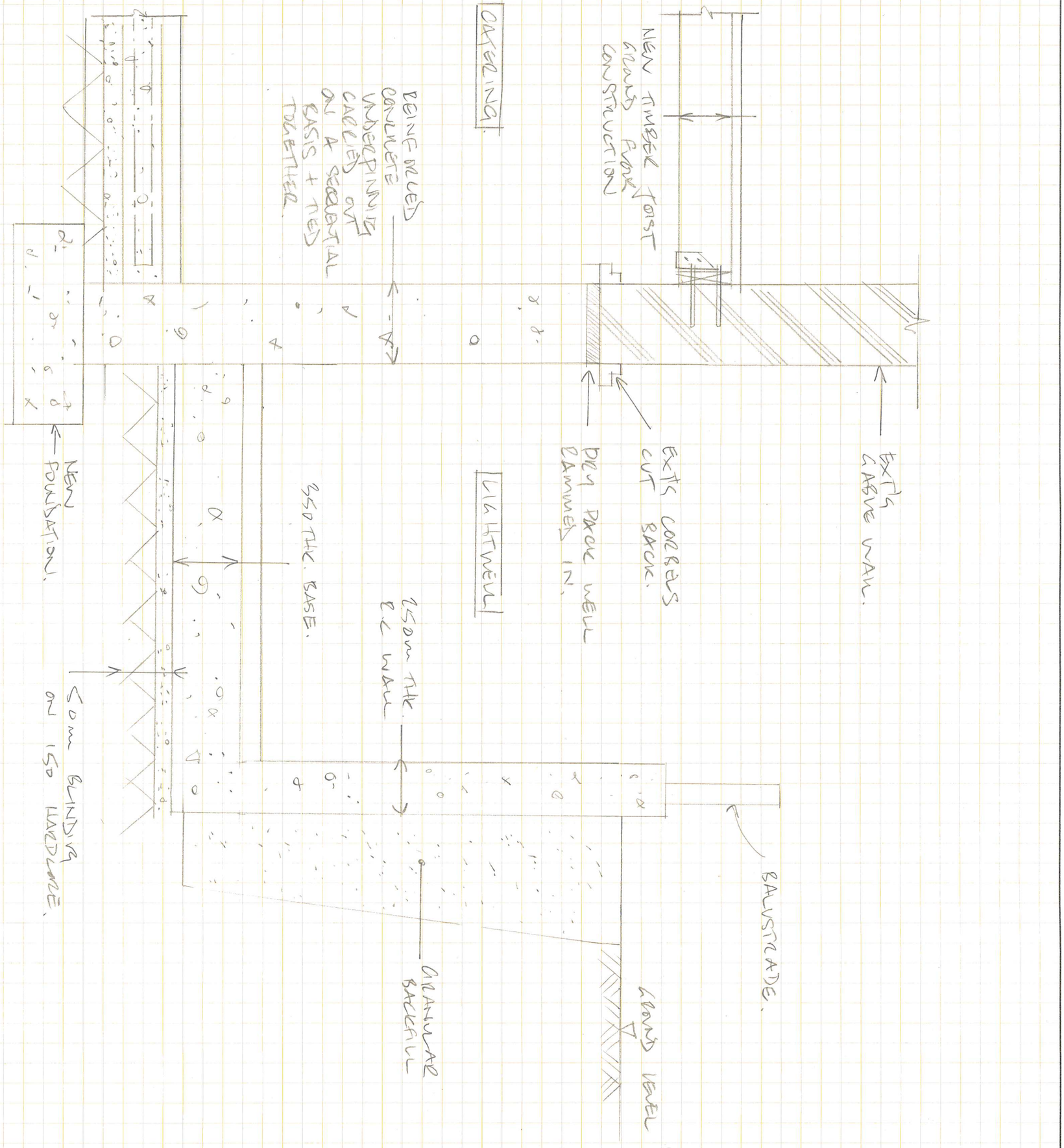
project	69 FITZJOHNS AVE
title	SECTION A-A.

rev.	date	
drawing status	INFORMATION	
scale 1/20	date 2/15.	drawn KH. / checked
job no. 140330	drg no. SSK101	rev.



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project	69 FITZJOHNS AVE.	rev.	date
		drawing status	INFORMATION.
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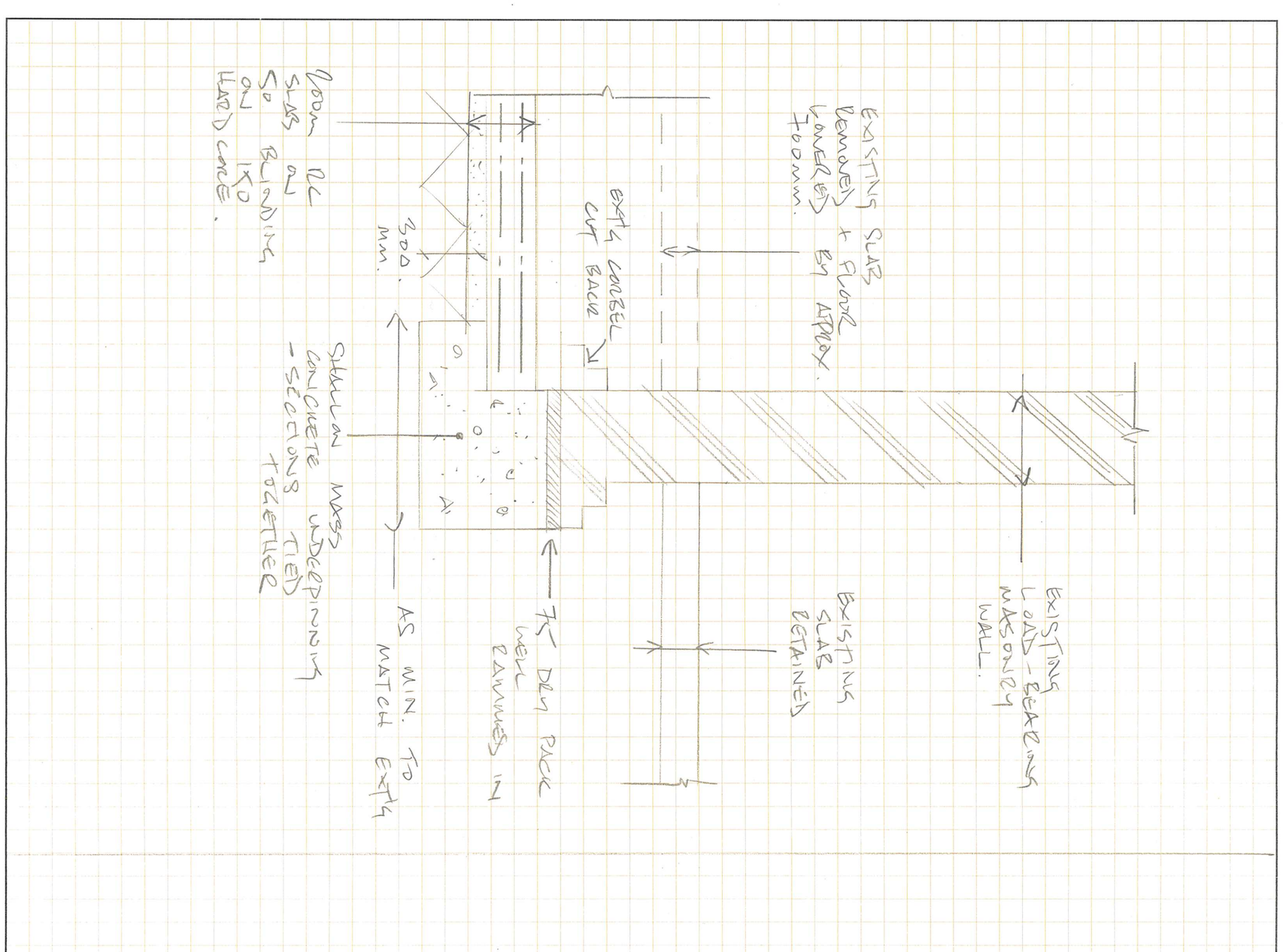
		drawn EH	checked
title	SECTION B-B.	job no. 140330	drg no. SSK102
		rev.	



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project
69 FITZJOHNS AVE.

title
SECTION C-C.

rev.	date	
drawing status	INFORMATION	
scale 1/20.	date 2/15.	drawn KH. / checked
job no. 140330	drg no. SSK103	rev.