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9A THE GROVE
LONDON, N6

STRUCTURAL ENGINEERS CONSTRUCTION METHOD STATEMENT FOR PLANNING

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[redacted] 20.4.15

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[redacted] 20.4.15

1290/150420-REV P1

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9A THE GROVE
LONDON, N6

CONSTRUCTION METHOD STATEMENT FOR PLANNING

Project No: 1290

The following report has been prepared on behalf of our Client, Mr Nick Burns based on the scheme proposals prepared by Richard Keep Architects. The report has been prepared to support the planning application for the project and should not be used for any other purpose. It should be read in conjunction with the structural drawings listed below, the Architects drawings and the Desk Study, Ground Investigation and Basement Impact Assessment prepared by Geotechnical & Environmental Associates.

Engineers HRW drawings:

- 1290/CS/001 P1
- 1290/CS/002 P1
- 1290/CS/010 P1

1.0 Introduction

The site is situated on The Grove in Highgate, London. The existing property is bordered by adjoining properties to the north and south with a private walled rear garden to the west. The existing front garden is utilised for parking with surrounding boundary walls and planters.

A strip of residents parking (approximately 6m wide) is located between the front garden and the public highway.

1.1 Existing Structure

The existing property is a three storey building which includes a mansard roof. The existing structure is formed from load-bearing masonry and timber studwork with timber joist floors. Intrusive investigation works have yet to be undertaken to the upper floors however it is anticipated that some steelwork has been used to form the mansard roof and to form the opening for the existing patio doors.

The property includes a small internal cellar in the north-west corner and an access chamber in the front garden which leads to a masonry vault which has been largely infilled. A number of masonry piers extend to the crown of the vault which aligns with the front elevation of the house.

Historical records confirm that the property was originally built as a single storey extension to the main house (No. 9 The Grove) and that additional floors were added c. 2002. These records also indicate that a lightwell existed to the main house until it was extended. The line of this lightwell coincides with the internal load-bearing masonry spine wall and the footings to this wall have been proven at approximately 2.5m below the existing ground floor level.

Investigations have also confirmed the presence of a void of approximately 1.0m below the majority of the existing ground floor. It is thought that this relates to the garden level of the original main house. Record drawings obtained for No. 8 The Grove indicate that the adjoining ground floor construction is similar and contains a similar void. These drawings show the footings to be formed of brickwork corbels on a concrete strip foundation just below the ground floor void.

EngineersHRW provided structural consultancy services for the works recently undertaken to No.

9 The Grove. It is therefore known that the main house includes an (original) lower ground floor with corbelled/concrete strip footings to the party wall below the basement level proposed for No. 9A. The works to No. 9 The Grove included the construction of a small rear lower ground extension. The party wall in this area is formed by reinforced concrete underpinning (to a single storey bay window and garden wall) which extends to a greater depth than the proposed basement.

1.2 Ground Conditions

A site investigation has been completed which included 1 No. borehole to 15m, 2 No. window samples to 6m in the lower area of the rear garden and ten trial pits to approximately 1.5m.

The main borehole was completed in the front garden and encountered 3.4m of made ground over Bagshot Formation sands and clays (3.9m thick) over London Clays. The window samples completed encountered slightly shallower depths of made ground over a similar formation to that recorded in the main borehole.

It is anticipated that much of the made ground encountered is related to the original construction and subsequent alterations to the property.

For full details of the ground conditions refer to the Desk Study and Ground Investigation prepares by Geotechnical and Environmental Associates (April 2015).

1.3 Groundwater

Groundwater was encountered at a depth of 12.70m during drilling within Borehole No.1 and rose to a depth of 12.30 (115.58m OD). Groundwater was not encountered in Borehole Nos. 2 & 3.

Three standpipes were installed, each to a depth of 6m. These were monitored on two subsequent occasions and were found to be dry.

During the recent works to No. 9 The Grove only nominal volumes of perched groundwater were encountered during the groundworks.

2.0 Proposed structural works

2.1 New Basement

It is proposed to form a new single storey basement below the footprint of the existing building and extending into the rear garden by approximately 5m. It is also proposed to remove the existing vault at the front of the property to enable the construction of a lightwell.

The basement walls and slab will be formed in reinforced concrete. The new ground floor will be formed either in reinforced concrete or using steelwork/timber joists.

Minor amendments to existing layouts at ground, first and second are proposed which will require nominal structural interventions to superstructure.

Overall building stability provision will be similar to the existing arrangement with floors acting as diaphragms to transfer lateral loads into masonry walls which in turn transfer these loads into the foundations. The party walls and internal spine wall are to be retained/extended to basement level. The front elevation wall is to be extended to basement level. A steel 'picture frame' is to be provided within the basement below the rear elevation masonry wall.

2.2 Underpinning

Reinforced concrete underpinning is to be constructed below the party wall line to No.8 The Grove. The presence of a floor void to both properties significantly reduces the retained height (to 2.0m or less) and therefore cantilevered reinforced concrete underpinning is proposed to the main house party wall. The reinforced concrete underpinning wall to the party (garden) wall in the rear garden will be designed as 'propped' by the new ground floor slab.

A new cantilevered reinforced concrete wall will be constructed to form the new lightwell and to underpin the adjacent front garden wall to No. 8 The Grove.

In the event that underpinning is required to the existing spine wall or to the party wall with No. 9 The Grove this will be formed in conventional mass concrete.

The proposed underpinning works are based on proven techniques. Method statements and associated temporary works designs will be submitted by the contractor for approval by engineersHRW prior to commencement.

2.3 Basement and ground floors

A reinforced concrete ground bearing slab is to be provided and will be tied into the perimeter reinforced concrete wall sections.

A suspended insitu reinforced concrete slab will be provided over the basement within the rear garden. Internally a new ground floor will be formed using steel beams and timber floor joists with a plywood deck.

2.4 Waterproofing

All reinforced concrete will be designed to the relevant British Standards and will be provided with reinforcement to both faces in both directions. The concrete itself is not waterproof and therefore it is proposed to provide a proprietary cavity drain system to the walls and floor. This will be detailed by the Architect as part of the tender/construction package.

3.0 Temporary Works

3.1 Temporary works

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

3.2 Submissions

Outline construction sequence and temporary works assumed in the design are shown in our drawings appended to this report. This information will be superseded by the Contractors proposals. The contractor will be required to submit full proposals, method statements and calculations to the engineer for approval prior to the start of any works on site.

The Contractor will also be required to appoint a Temporary Works Co-ordinator for the duration of the contract in accordance with the specification.

3.3 Monitoring

Monitoring of the existing structure and party walls will be undertaken from commencement of the works until at least 3 months after completion of structural works. Readings will be taken on a weekly basis during the groundworks phase and monthly during other works. Results will be issued to engineersHRW within 48 hours of being taken and will be assessed against Trigger and

Action values.

4.0 Method statement

The following construction sequence is to be read in conjunction with the drawings appended to this report.

4.1 Construct cantilevered contiguous piled wall within front garden behind existing masonry vault wall.

4.2 Form temporary access shafts both internally and externally of existing front and rear elevations. Shaft positions to utilise existing internal cellar and existing access shaft below front steps. Cast temporary reinforced concrete foundations (to later become part of permanent works)

4.3 Install temporary propping/needles to existing masonry walls on both elevations.

4.4 Install temporary lateral propping between party walls just above existing ground floor. Once temporary propping is installed, remove existing ground floor structure throughout.

4.5 Commence reinforced concrete underpinning works in a hit and miss sequence to the party walls with No.8 The Grove within the vault area and within the existing main house. Install low level temporary propping between party walls (subject to contractors final temporary works proposals).

4.6 Remove existing front elevation masonry below temporary propping. Remove arched section of vault internally and externally and commence removal of existing fill/piers within the vault at the same time as reduced level excavations within the main house to offset surcharge on the internal vault wall.

4.7 Continue with construction of reinforced concrete underpinning to the party (garden) wall with No.8 The Grove within the rear garden. Construct transitional underpinning beyond the line of the basement to provide adequate working space for basement construction.

4.8 Provide further underpinning to the party (garden) wall to No.9 The Grove as required.

4.9 Install steel 'picture frame' to rear elevation along with associated new reinforced concrete foundation. Once installation is complete and concrete has achieved full design strength remove temporary props and needles.

4.10 Cast remaining areas of garden basement walls and slabs including new external reinforced concrete ground floor slab.

4.11 Complete excavations within main house and lightwell including any localised underpinning to the existing masonry spine wall and party wall to No.9 The Grove. (Trial pits indicate that the footings to these walls already extend beyond the depth of the proposed basement). Cast new reinforced concrete basement slab and new foundation to front elevation masonry. Remove temporary lateral propping at the lower level.

4.12 Construct front elevation masonry between basement and ground with high strength non-shrink dry pack well rammed in at the junction between new and existing. Once these works are complete, remove temporary props and needles and make good.

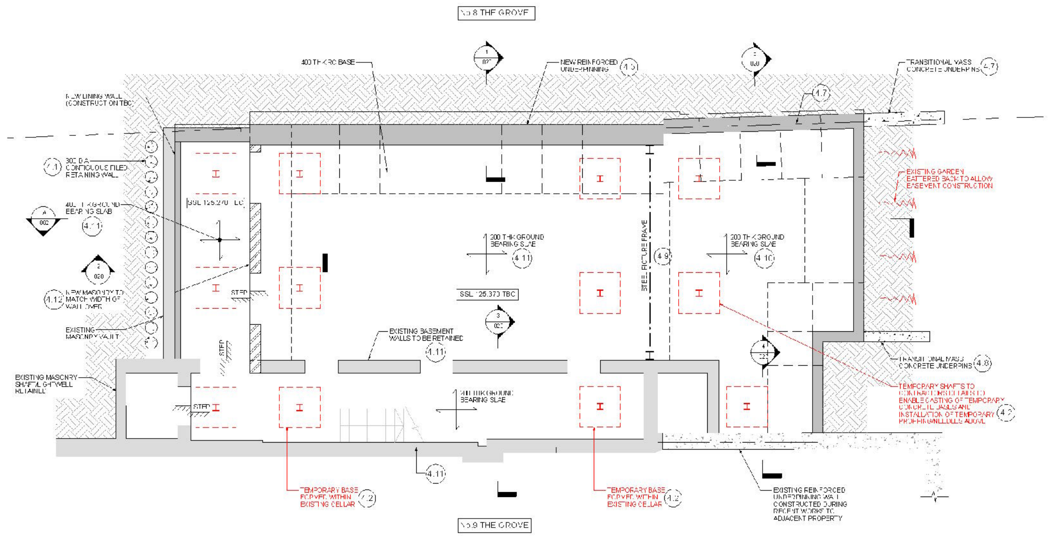
4.13 Construct new internal ground floor structure then remove temporary lateral propping.

5.0 Conclusion

Based on the commentary provided in this report we are satisfied that the proposals are feasible using conventional and proven construction methods.

The proposed basement is no lower than the existing basement immediately adjacent the existing property at No.9 The Grove and is approximately 2m below the anticipated party wall footing to No.8 The Grove.

Given the levels of the existing party wall/spine wall footings, our view is that the structural stability of the building and adjacent properties/structures will not be adversely affected by the works if they are undertaken in the proposed manner.



UNDERPINNING SPECIFICATION

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT HIS OPERATIONS DO NOT IN ANY WAY IMPAIR THE SAFETY OR CONDITION OF THE EXISTING STRUCTURE OR THE ADJACENT PROPERTIES. HE SHALL PROVIDE ANY TEMPORARY SUPPORTS REQUIRED FOR THIS PURPOSE, AND SHALL CAREFULLY INSPECT THE CONDITION OF THE STRUCTURE OR THE ADJACENT PROPERTIES. HE SHALL PROVIDE ANY TEMPORARY SUPPORTS REQUIRED FOR THIS PURPOSE AND SHALL CAREFULLY INSPECT THE CONDITION OF THE STRUCTURE BOTH BEFORE AND DURING THE EXECUTION OF THE WORK AND IMMEDIATELY INFORM THE ENGINEER IF HE CONSIDERS THAT ANY MORE STRINGENT PROCEDURE THAN THAT SPECIFIED IS NECESSARY.

2. UNDERPINNING IS TO BE CARRIED OUT IN SHORT SECTIONS NOT EXCEEDING 1000mm LENGTHS AS SPECIFIED ABOVE, IN A SEQUENCE TO BE APPROVED BY THE CONTRACT ADMINISTRATOR.

3. THE UNDERSIDE OF THE FOOTINGS ARE TO BE CLEANED AND HACKED FREE OF ANY DIRT, SOIL OR LOOSE MATERIAL BEFORE UNDERPINNING.

4. THE BODY OF THE UNDERPINNING IS TO BE CONSTRUCTED IN CONCRETE GRADE C40 SULPHATE RESISTING USING 20MM MAX AGGREGATE, AND IS TO BE CAST TO THE WIDTHS AND DEPTHS SHOWN ON THE DRAWINGS. AS FAR AS PRACTICABLE EXCAVATION AND CONCRETING OF ANY SECTION OF UNDERPINNING SHALL BE CARRIED OUT ON THE SAME DAY. UNCONCRETED SECTIONS SHALL BE KEPT COVERED TO PREVENT THE INGRESS OF WATER.

5. THE MASS CONCRETE IS TO BE STOPPED OFF APPROXIMATELY 75MM BELOW THE UNDERSIDE OF THE EXISTING FOOTING AND THE FINAL PINNING UP OVER THE WHOLE EXTENT OF THE UNDERPIN IS TO BE CARRIED OUT WITH A SEMI DRY SAND CEMENT PACKING WELL RAMMED IN AS SOON AS POSSIBLE AFTER THE FOUNDATION HAS SET HARD. THE PINNING UP CONCRETE IS TO CONSIST OF 1 PART BY VOLUME OF SULPHATE RESISTANT CEMENT TO 3 PARTS OF SHARP SAND (WELL GRADED FROM 10MM MAXIMUM SIZE DOWN TO FINE SAND) WITH A WATER/CEMENT RATIO BY WEIGHT OF 0.45. EXPANDING ADMIXTURE SUCH AS CEBEX 100 BY FOSROC IS TO BE USED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION.

6. EXCAVATION TO ANY SECTION OF UNDERPINNING SHALL NOT BE COMMENCED UNTIL AT LEAST 48 HOURS AFTER COMPLETION OF ANY ADJACENT SECTION OF THE WORK.

7. THE JOINT BETWEEN ADJACENT SECTIONS OF UNDERPINNING IS TO BE FORMED BY CREATING A ROUGH SURFACE AGAINST WHICH THE FIRST SECTION IS CAST INCORPORATING SHEAR KEYS ("JOGGLE JOINTS"). THEN, HAVING THOROUGHLY CLEANED THE EXPOSED CONCRETE FACE, THE ADJACENT SECTION MAY BE CAST.

8. THE CONTRACTOR SHALL PREPARE A SEQUENCE OF WORK AND SUBMIT IT TO THE ENGINEER FOR HIS COMMENTS PRIOR TO THE COMMENCEMENT OF THE WORK.

1:50 0 1000 2000 3000 4000 5000

NOTES

1. DO NOT SCALE OUT OF THIS DRAWING
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTS AND OTHER CONSULTANT'S INFORMATION
3. REFER TO THE ARCHITECT FOR DIMENSIONS AND SETTING OUT FOR ALL NEW OPENINGS etc.
4. ALL AREAS OF DEFECTIVE STRUCTURE FOUND DURING DEMOLITION WORKS ARE TO BE REPORTED TO THE ENGINEER, IF NOT ALREADY ADDRESSED.
5. WHERE POSSIBLE REMEDIAL OR REPLACEMENT WORKS TO BE INSTALLED BEFORE REMOVAL OF EXISTING STRUCTURE. IF IN DOUBT, REFER TO THE ENGINEER.

LEGEND

- DENOTES EXISTING LOADBEARING MASONRY WALLS TO BE RETAINED
- DENOTES NEW LOAD BEARING MASONRY WALLS
- DENOTES NEW RC WALLS / UNDERPINNING
- DENOTES DOUBLED JOIST OR FLITCH BEAM LOCATION
- 200 RC — DENOTES 200 THK RC SLAB
- (4.1) — DENOTES CONSTRUCTION ACTIVITY 4.31. REFER TO CONSTRUCTION METHOD STATEMENT FOR PLANNING PREPARED BY ENGINEERS HRW

Rev	Date	Comments	Dr	Chk
P1	20.01.15	ISSUED FOR PLANNING	DJP	AR

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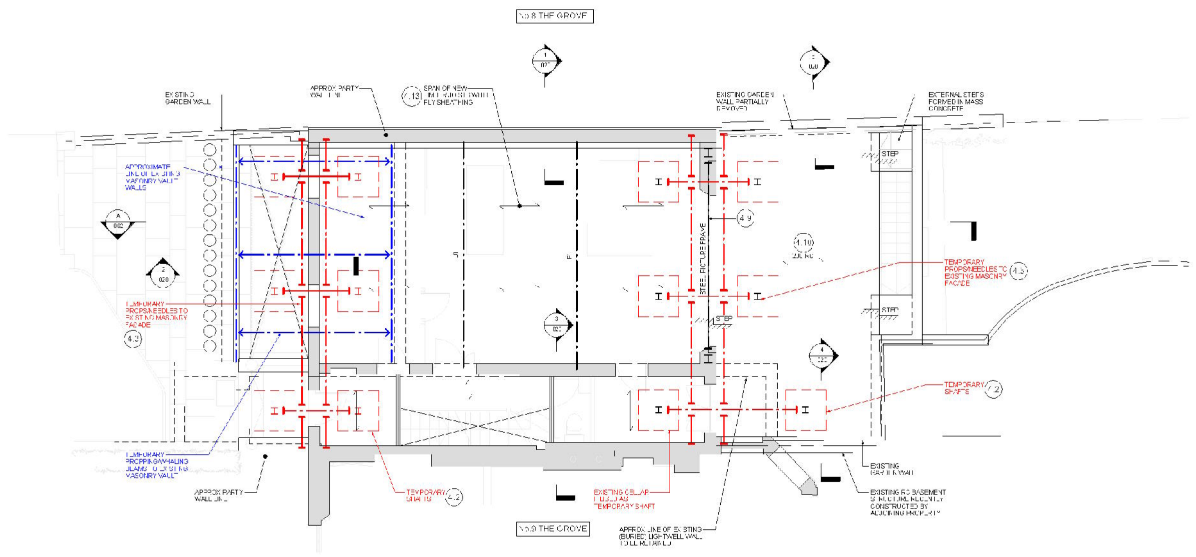
Project: **9A The Grove**

Drawing title: **Proposed Basement Plan (Temporary Works/ Construction Sequence)**

Scale at A1	Drawn by	Date	Checked
1:50	DJP	APR 2015	AR

PLANNING

Project number	Drawing Type	Drawing No	Revision
1290	CS	060	P1


No.8 THE GROVE
No.9 THE GROVE
EXISTING GARDEN WALL
APPROX PARTY WALL LINE
SPAN OF NEW JOISTS WITH FLY SHEATHING
EXISTING GARDEN WALL PARTIALLY REMOVED
EXTERNAL STEPS FORMED IN MASS CONCRETE
STEP
APPROXIMATE LINE OF EXISTING VASONRY VAULT WALLS
TEMPORARY PROPS & NEEDLES TO EXISTING MASONRY FACADE
TEMPORARY PROPPING/WALING BEAMS TO EXISTING MASONRY VAULT
APPROX PARTY WALL LINE
TEMPORARY SHAFTS
EXISTING CELLAR USED AS TEMPORARY SHAFT
APPROX LINE OF EXISTING (BURIED) LIGHTWELL WALL TO BE RETAINED
EXISTING BASEMENT STRUCTURE RECENTLY CONSTRUCTED BY ADJOINING PROPERTY
STEEL PICTURE FRAME
200 RC
TEMPORARY SHAFTS

NOTES

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	DENOTES DOUBLED JOISTS OR FLITCH BEAM LOCATION
200 RC	DENOTES 200 THK RC SLAB
(4.1)	DENOTES CONSTRUCTION ACTIVITY 4.31. REFER TO CONSTRUCTION METHOD STATEMENT FOR PLANNING PREPARED BY ENGINEERS HRW

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Rev	Date	Amendments	By	Chk'd
P1	20.01.15	ISSUED FOR PLANNING	DJP	AR

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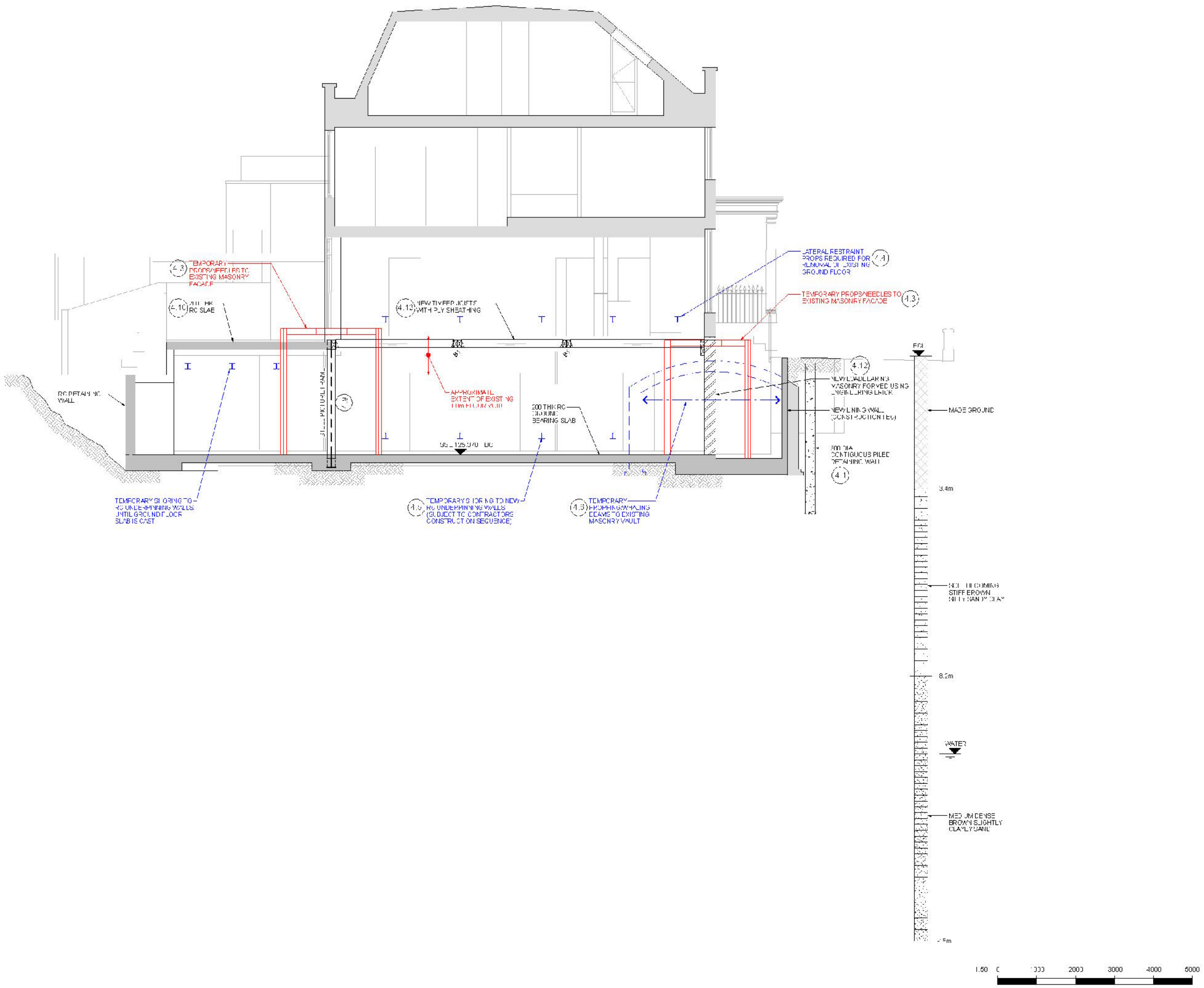
Project:
9A The Grove

Drawing title:
Proposed Ground Floor Plan (Temporary Works/ Construction Sequence)

Scale at A1:	Drawn by:	Date:	Chk'd by:
1 : 50	DJP	APR' 2015	AR

PLANNING

Project Number:	Drawing Type:	Drawing No:	Revision:
1290	CS	061	P1



TEMPORARY PROPS/NEEDLES TO EXISTING MASONRY FACADE
4.10 RC SLAB
4.12 NEW TIMBER JOISTS WITH PLY SHEATHING
LATERAL RESTRAINT PROPS REQUIRED FOR REMOVAL OF GROUND FLOOR
TEMPORARY PROPS/NEEDLES TO EXISTING MASONRY FACADE
4.12 NEW LOADBEARING MASONRY FORMED USING ENGINEERING BRICK
NEW LINING WALL (CONSTRUCTION TEO)
300 DIA CONTIGUOUS PILED RETAINING WALL
4.1
RETAINING WALL
APPROXIMATE EXTENT OF EXISTING FEW BRICK COURSES ABOVE
200 THK RC BEARING SLAB
TEMPORARY SHORING TO UNDERPINNING WALLS UNTIL GROUND FLOOR SLAB IS CAST
TEMPORARY SHORING TO NEW RC UNDERPINNING WALLS (SUBJECT TO CONTRACTORS CONSTRUCTION SEQUENCE)
TEMPORARY PROPPING/SHORING BEAMS TO EXISTING MASONRY VAULT
FGL
MADE GROUND
3.4m
STIFF BROWN SILTY SANDY CLAY
6.5m
8.5m
WATER
MEDIUM DENSE BROWN SLIGHTLY CLAYEY SAND
…5m
1:50 0 1000 2000 3000 4000 5000

NOTES

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Rev	Date	Amendments	By	Chkd
P1	20.01.15	ISSUED FOR PLANNING	DJP	AR

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Project: 9A The Grove

Drawing title: Proposed Section A-A (Temporary Works/ Construction Sequence)

Scale at A3	Drawn by	Date	Checked
1:50	DJP	APR 2015	AIR

PLANNING

Project number	Drawing Type	Drawing No	Revision
1290	CS	062	P1