Davies Maguire

32 Crediton Hill, London, NW6 1HP

Project No. 21-64

Construction Method Statement

DMAG-2164-CMS
2021

Produced for Mr & Mrs Thurlin

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Davies Maguire

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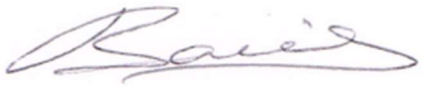
REVISION HISTORY:

Rev	Date	Purpose/Status	Document Ref.
P01	27/10/2021	Planning Submission	DMAG-2164-CMS P01
P02	15/12/2021	Revised basement layout	DMAG-2164-CMS-P02

QUALITY CONTROL:

Prepared by:



Jessica Davies MICE
Associate

Approved by:

Gareth Davies MIStructE
Director

1 Introduction

1.1 Appointment

Davies Maguire were appointed by the homeowners of Crediton Hill in September 2021 to provide structural and geotechnical engineering services for the basement design and construction methodology to assist with the planning application for works at 32 Crediton Hill, NW6 1HP.

This report has been produced for the exclusive use of the client and should not be used in whole or in part by any third party without the permission of Davies Maguire in writing.

The report should not be relied upon exclusively for decision making purposes and should be read in conjunction with other drawings and reports by the design team.

1.2 Executive Summary

Davies Maguire are an award-winning Structural and Civil Engineering Design consultants with a track record for successfully unlocking the value in complex projects.

Davies Maguire have extensive experience with existing and listed buildings, along with producing designs for basements for both existing and new buildings. Our approach to working with structures has been developed over many years, and our experience of developing these designs and working closely with contractors during their construction puts us in a strong position to advise clients on works to their buildings and in particular the design and construction of their basement.

The proposed development at Crediton Hill will comprise alteration and extension of the existing building with the construction and extension of new single storey of basements beneath the existing building.

As part of the process of developing this Construction Method Statement, Davies Maguire have undertaken a site specific historical and geological desk study, along with site investigations, to gain a detailed knowledge and understanding of the site.

With consideration of the existing site constraints Davies Maguire have undertaken the structural design of the proposed basement, including establishment of load paths, design of remedial works/ alterations to superstructure and new basement structures. An indicative construction sequence has also been developed to confirm how the basement could be built safely without significant impact or disturbance to the surrounding buildings and highways.

In addition to this, preliminary design of temporary works associated with the proposed indicative construction sequence have been completed. Final design of these works is to be undertaken by the Contractor, once appointed, and developed to suit their preferred construction methodology.

The proposed structure and modifications have been designed to safeguard the structural stability of the retained façade, nearby buildings and other infrastructure.

2 The Site

32 Crediton Road is located in Camden, north of West Hampstead station. Crediton Hill is bounded to the rear by open space, which is various sports clubs.

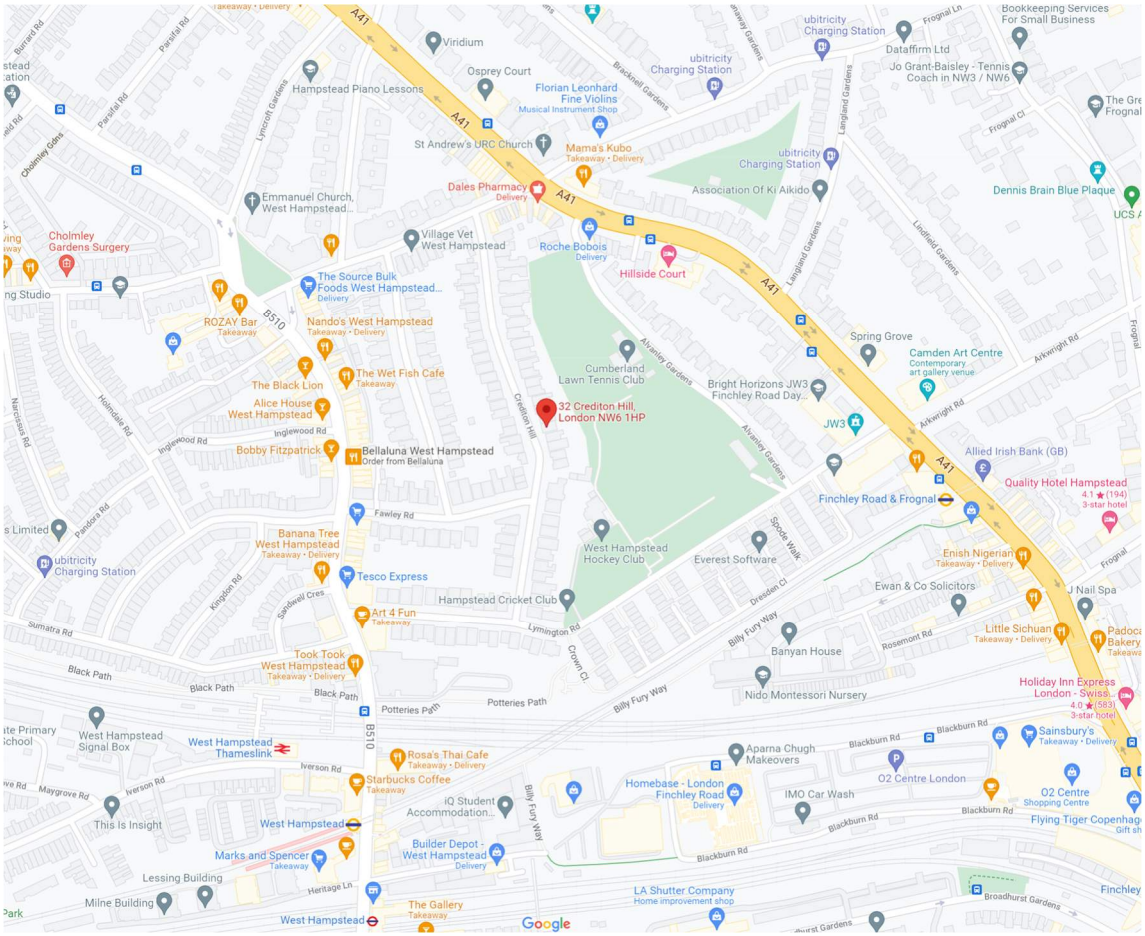


Figure 1- Site Location (Copyright © 2021 Google)

Figure 2- Street View

3 Existing Structure

32 Crediton Hill is a semi-detached property, connected to 34 Crediton Hill. It was constructed in the late 20th Century.

This along with our experience of buildings of a similar age and type the building is constructed with timber floors and roof supported on load bearing brickwork external walls and a combination of masonry and timber internal walls. The building is supported on corbelled brickwork foundations, which are expected to bear on the Firm Clay.

With buildings of this age and type the overall stability of the building is provided by the cellular arrangement of the loadbearing walls and diaphragm action of the timber floors at each level.

As is common in similar buildings, Crediton Hill has had numerous modifications carried out over the years, these were mostly likely often carried out on a piecemeal basis. It is therefore anticipated that a number of further unexpected discoveries will be made during construction.

The adjoining property (no. 34) has had two basements installed previously. There is an earlier basement to the rear (2010 planning application) and a later basement beneath the front garden and front of the property (2014 planning application). Information available from these planning applications indicates the existing footings on the party wall are very deep in some areas, and are formed with masonry corbels at the base. Elsewhere the party wall has been underpinned to complete the basements, so it is unlikely that any additional underpinning will be required here. This will be confirmed on site.

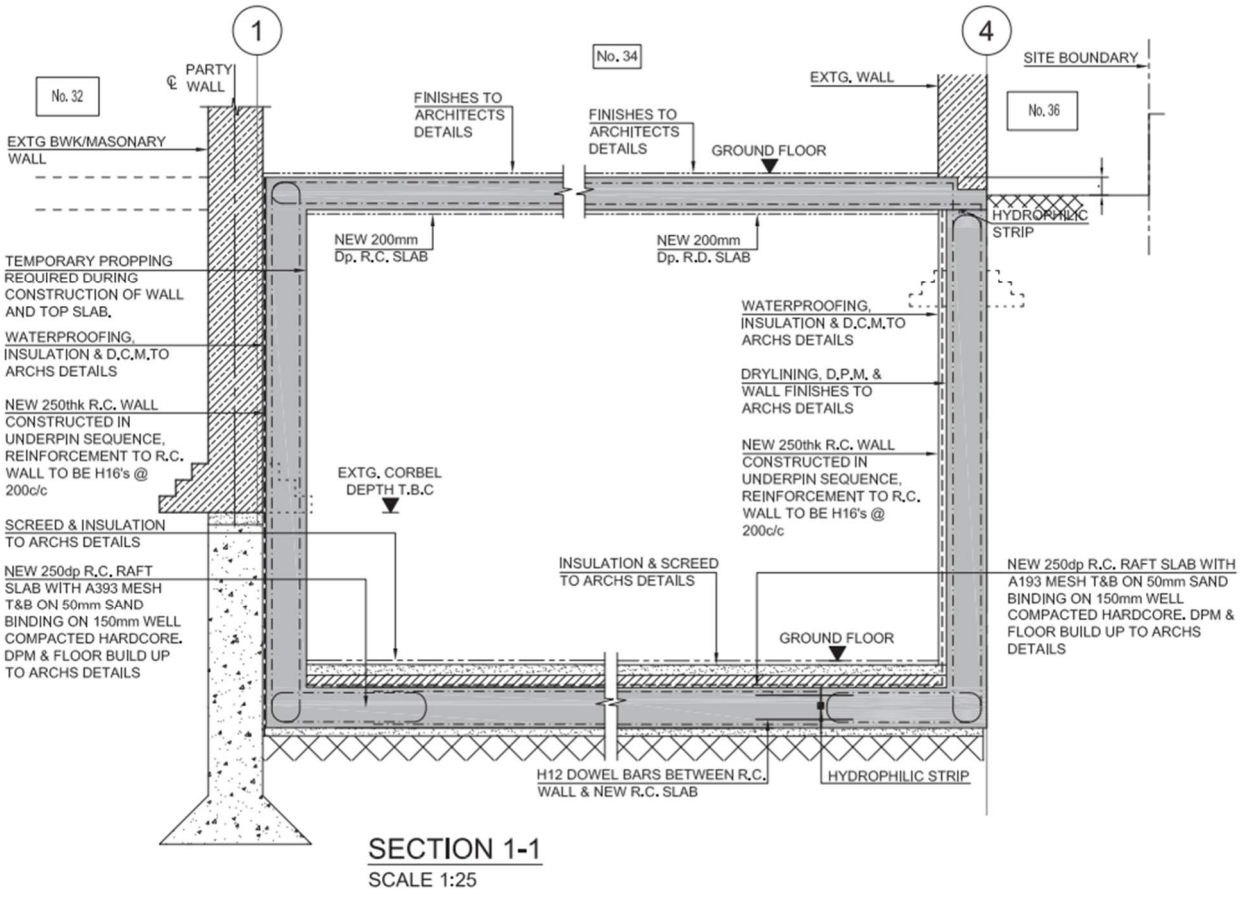


Figure 3: Section showing basement works to no. 34 in 2014, and party wall condition towards the front of the properties

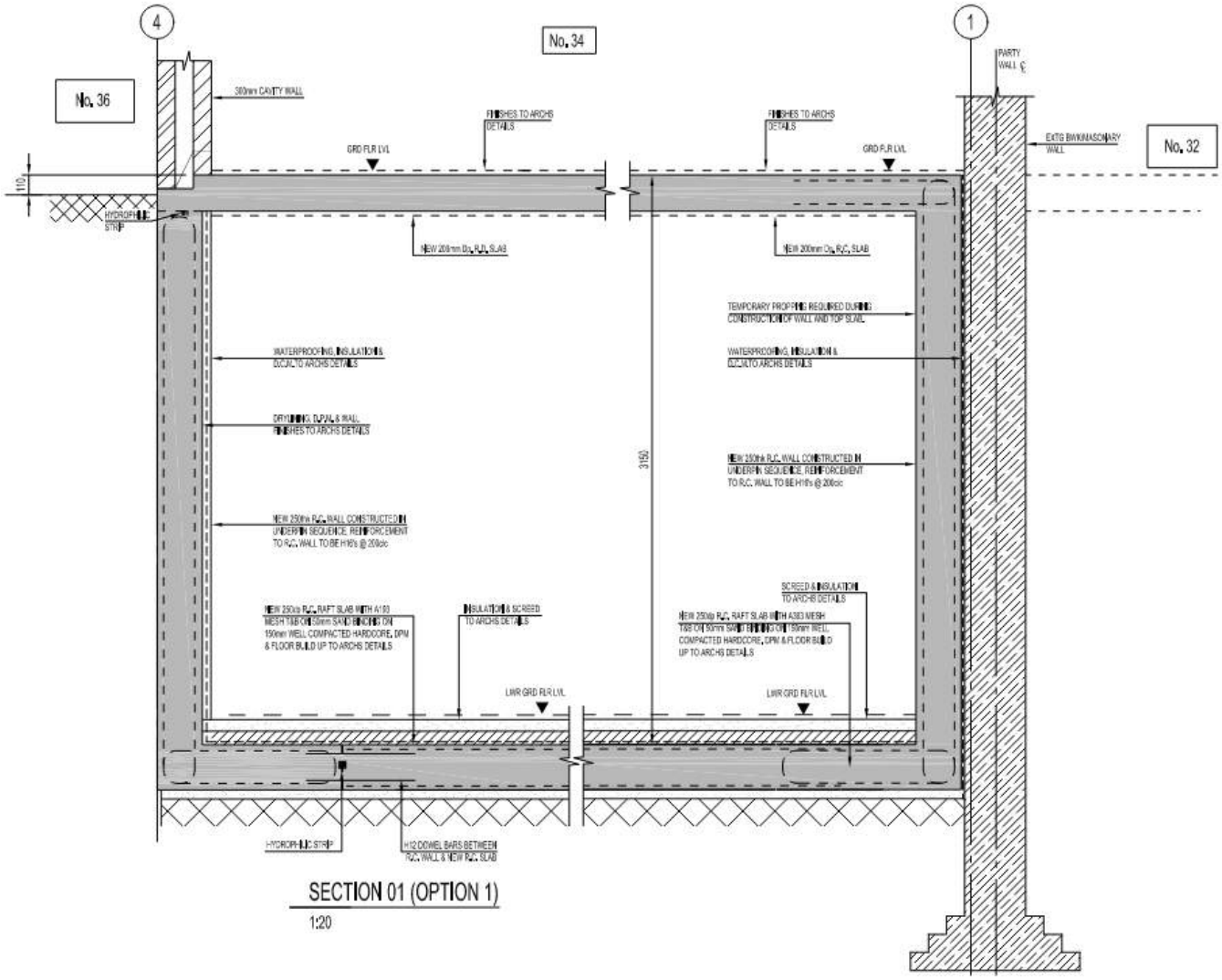


Figure 4: Section showing basement works to no. 34 in 2010, and party wall condition towards the rear of the properties

Number 30 Crediton hill is adjacent to number 32 but not attached, there is an alleyway between the two. No. 30 doesn't appear to have had a basement installed previously. As the buildings were constructed at a similar time and are of similar construction, it can be assumed that the existing footings are corbelled masonry in the same manner.

4 Desk Study Summary

A desk study was carried out by Davies Maguire which referenced National Library of Scotland and historical mapping along with available information on the adjacent properties.

4.1 Site History

32 Crediton Hill is a semi-detached house within the West End Green Conservation area. It was constructed in the late 20th Century, and comprises 3 storeys.

From a review of the historic maps the area seems to be a vacant plot, with a pond covering some of the site. This is reflected in the ground investigation, which has found made ground fill in the area where the pond was.

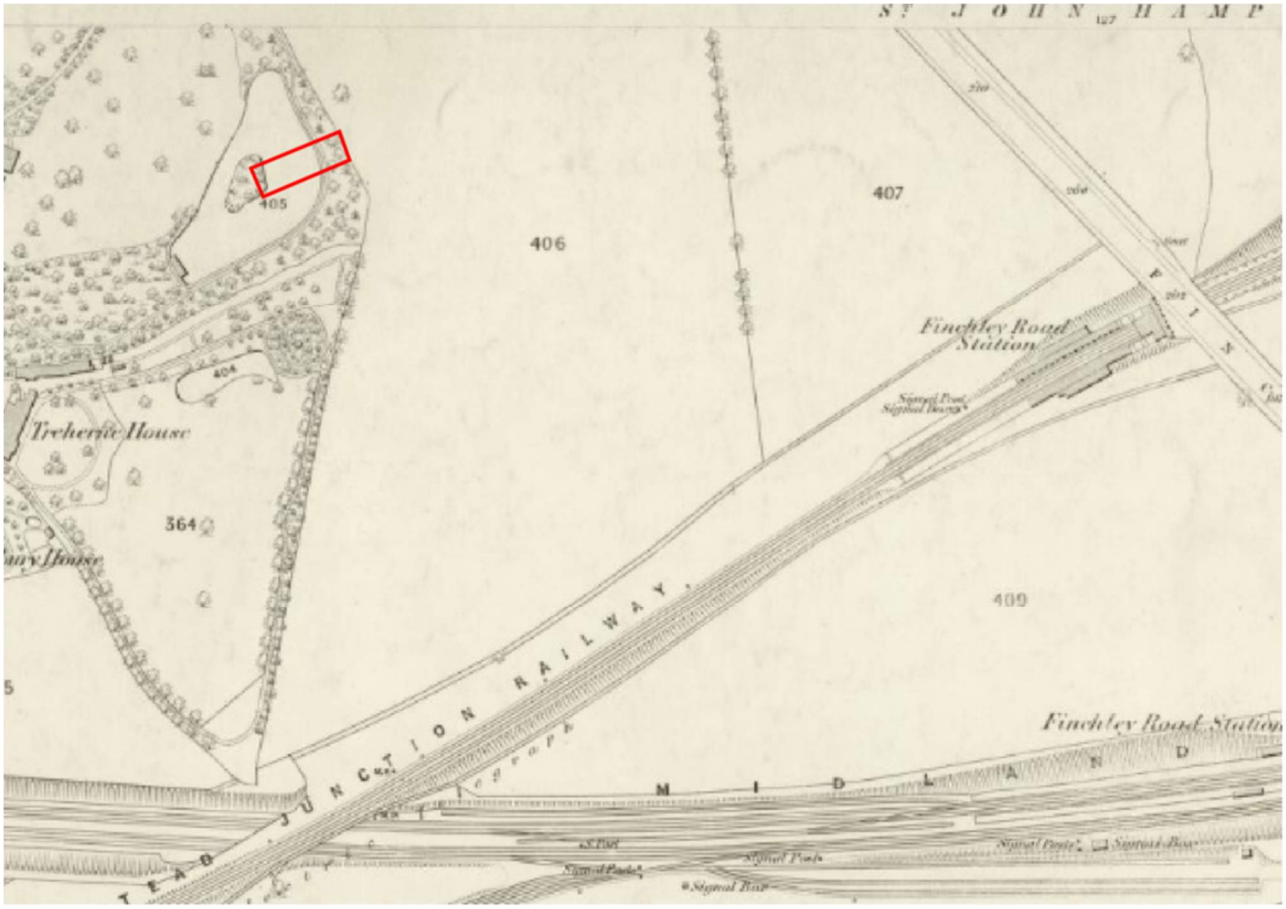


Figure 5- Historical Map Published 1866 (Copyright National Library of Scotland)

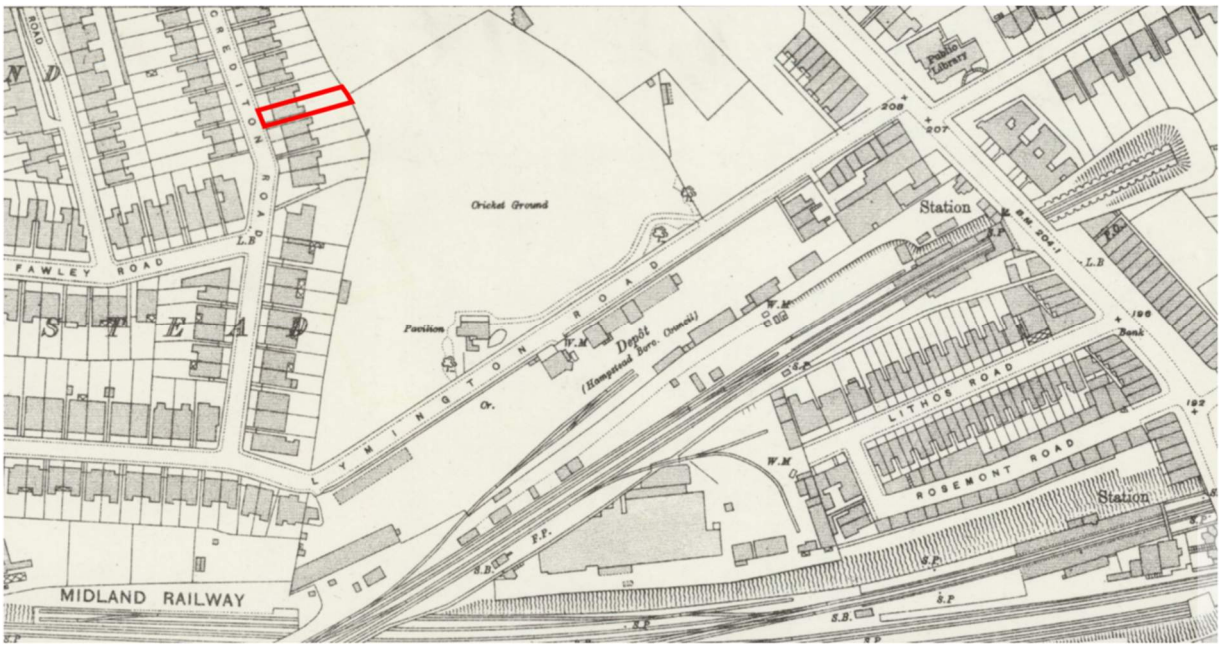


Figure 6- Historical Map Published 1915 (Copyright National Library of Scotland)

A desktop study has confirmed that the Metropolitan underground tube tunnel runs approximately 150m to the south of the site. The London underground also runs south of the site just beyond. In both

cases they are considered far enough away to not be a concern and therefore it will not be necessary to advise the London Underground asset protection department to agree our proposals.
No other underground structures, tunnels or vaults are expected in the vicinity of the proposed works.

4.2 Site Geology

A full site investigation has been carried out, the works 3 boreholes to 6m, a trial pit and associated material testing. Groundwater monitoring was also carried out. They confirmed that the ground is made ground to varying depths, above stiff London Clay. The made ground varies from 3.3m deep at the front of the property to 4.7m deep at the rear. There is some perched water above the clay layer.

A ground gas assessment was also undertaken, and there is some ground gas on site. This is likely to be due to the made ground which was used to infill the pond. A membrane will therefore be incorporated into the proposed basement.

A summary of these investigations is described in Section 5, with the full site investigation report included in the ground movement assessment.

4.3 Site Hydrology

The hydrogeology of the site has been determined by the solid geology of the London Clay Formation which according to the Environment Agency is classified as unproductive strata.
Unproductive Strata (formally non-aquifers) comprise rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
The main chalk aquifer is estimated to be at least 80m below ground level and as a result the structural works will not influence or present a meaningful risk to the aquifer and general hydrogeology under the site. The perched groundwater above the clay is local, due to the impermeability of the clay.

5 The Proposed Development

5.1 Summary of Proposed Structural Works

The proposed works comprise a new basement beneath the existing building, formed with underpinning and reinforced concrete liner walls. Above the new basement, the existing ground floor will be replaced with a new reinforced concrete slab. In addition, there is a new single storey extension to the rear of the existing ground floor. This will be supported on extended masonry perimeter walls and a new steel portal frame. The portal frame also provides stability to the rear of the building, to allow removal of the existing rear masonry wall. There are a number of changes to existing internal walls at ground and first floor levels, which will require new lintels and steel beams to support superstructure above. A chimney breast on the party wall will also be removed, with the chimney pot retained at roof level supported on steel beams.

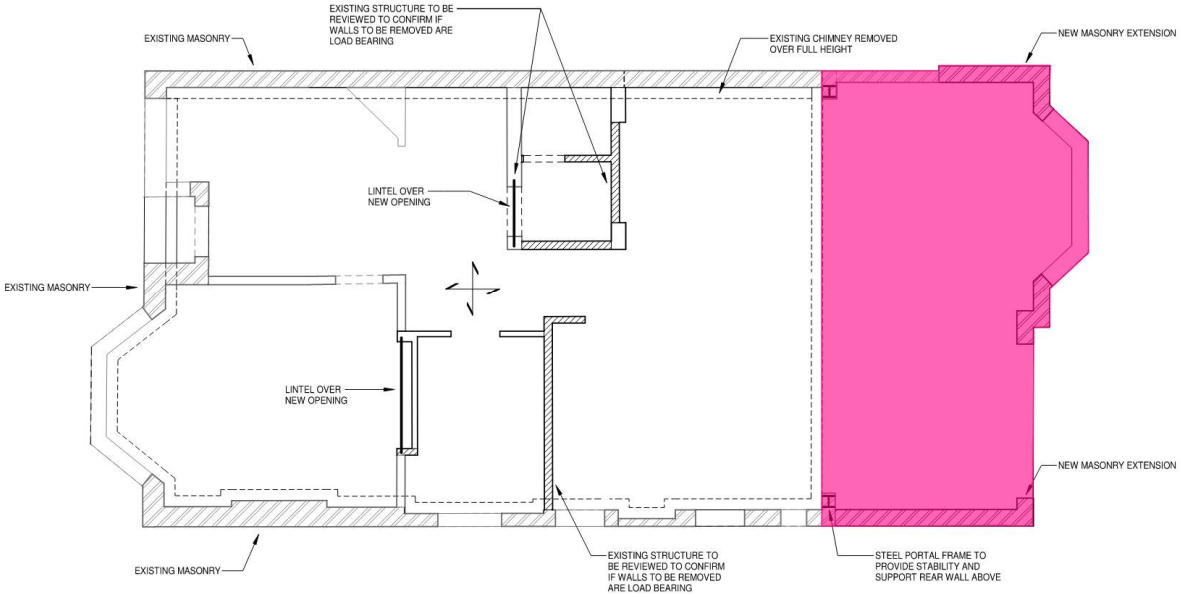


Figure 7: Proposed ground floor, with new rear extension shown in pink

5.1.1 Disproportionate Collapse

The new structure is to conform with The Building Regulations 2010 Edition (England and Wales): Approved Document A – Section A3 Disproportionate Collapse, the building should be considered as Class 1, therefore, no additional measures should be necessary.

5.2 Substructure

The proposed structural works for this scheme include a new basement beneath the footprint of the existing building. This is proposed to be constructed with underpinning to the existing foundations to a sufficient depth to accommodate the new basement.

A reinforced concrete lining wall is then to be located in front of the underpinning, with the reinforced concrete basement and ground floor slabs fully tied into the wall thus providing lateral restraint. There will be new internal load bearing blockwork walls within the basement, which support the new ground floor slab and existing load bearing masonry walls at ground floor level. These sit directly on the basement floor slab. Two levels of basement waterproofing will then be provided by waterproof admixture to the reinforced concrete and a drained cavity designed by the architect. A membrane to provide gas protection will also be included in the basement slab, in addition to a heave mat below the slab to protect the basement from heave.

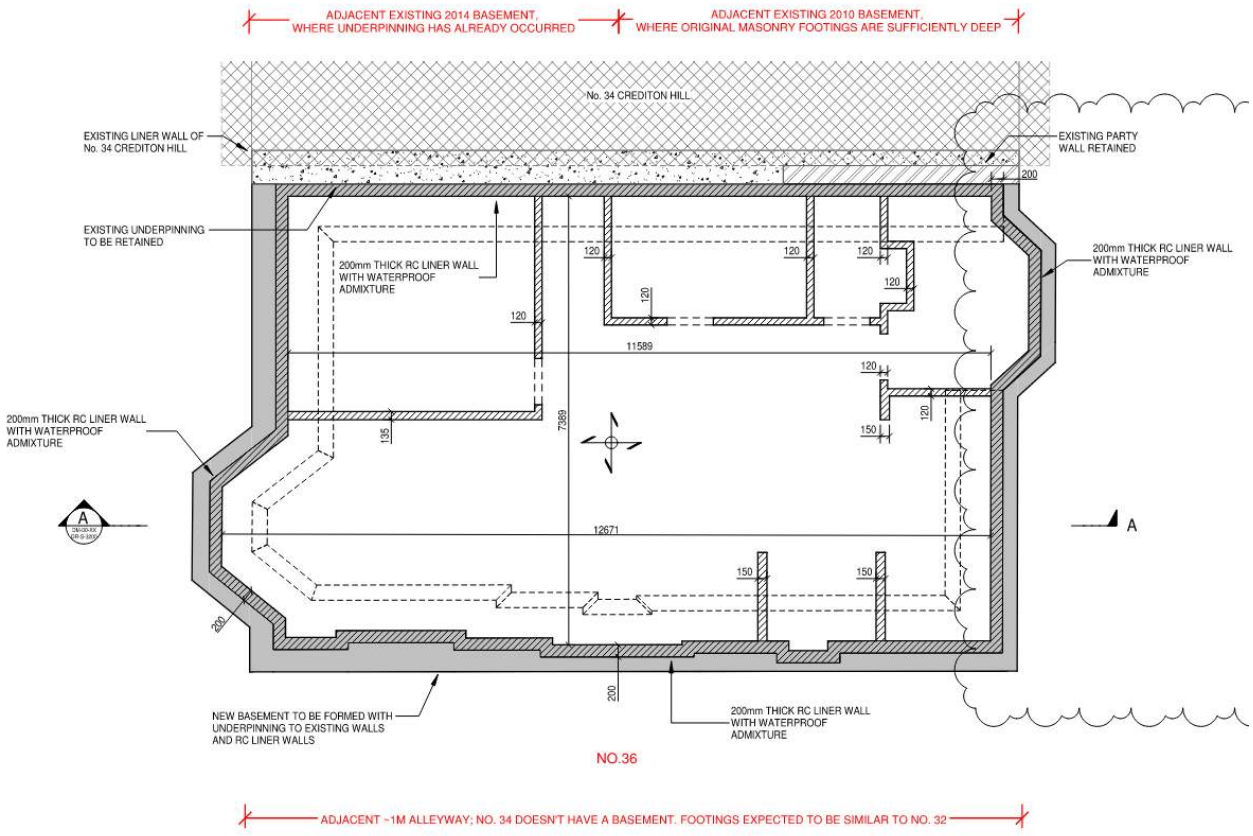


Figure 8- Proposed Basement Floor Plan

5.3 Effect on Neighbouring Structures

The design and construction of the single storey basements below the existing footprint of the house at Crediton Hill is relatively straightforward.

Underpinning is envisaged beneath the existing foundations. The basement would then be constructed with normal excavation and construction techniques.

The method of construction of the basement, and the temporary/permanent case will be designed to ensure that there will be no significant structural effect to either of the adjacent structures.

Please refer to the Milvum Associates report which covers a complete ground movement assessment for the proposed basement. This confirms the neighbouring properties will experience maximum movement within Category 1 as described in the generally accepted 'Classification of visible damage to walls' table by geotechnical specialist Burland, Boscardin et al. i.e. very slight fine cracks that can be easily be treated during normal decoration.

An engineer is to be appointed by the contractor to supervise construction on site, in liaison with the contractor to ensure safe practices are used throughout. The neighbouring properties will also be monitored during construction, to guarantee that any adverse movement is caught at the earliest opportunity. In addition, the existence of road is taken into account during the design stages, to ensure there is no detrimental effect to the highways load bearing capacity during or after the works.

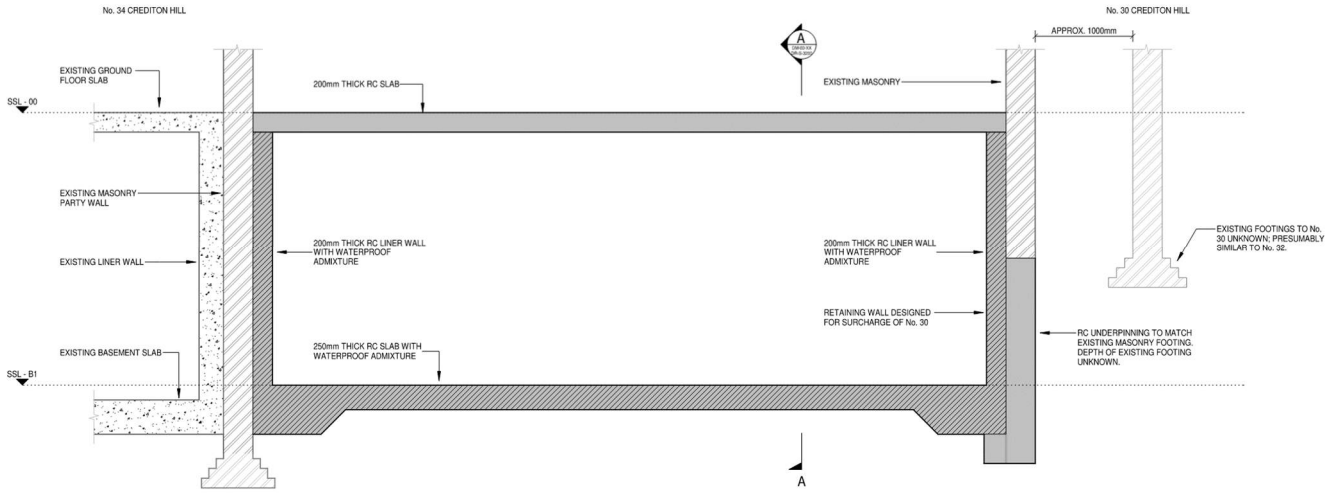


Figure 9: Section showing neighbouring building foundations

5.4 Construction Sequence Summary

5.4.1 Basement Construction Sequence

The following sequence shall be implemented to retain the existing structure above, while extending and constructing the new basement at Crediton hill. The depths of the underpinning will be determined by the proposed basement depth and the depth of the clay. As there is made ground on site, it will be ensured that the underpins are deep enough to reach the clay.

As stated elsewhere, information available on the basements installed at 34 Crediton hill indicate that the existing footings to the party wall are deep and have been underpinned in some instances. This may mean limited underpinning is required, if the existing footings are already deeper than the proposed basement. The depths of the existing footings will be confirmed on site. In this case, excavation will be undertaken and the new RC liner wall will be installed to provide waterproofing.

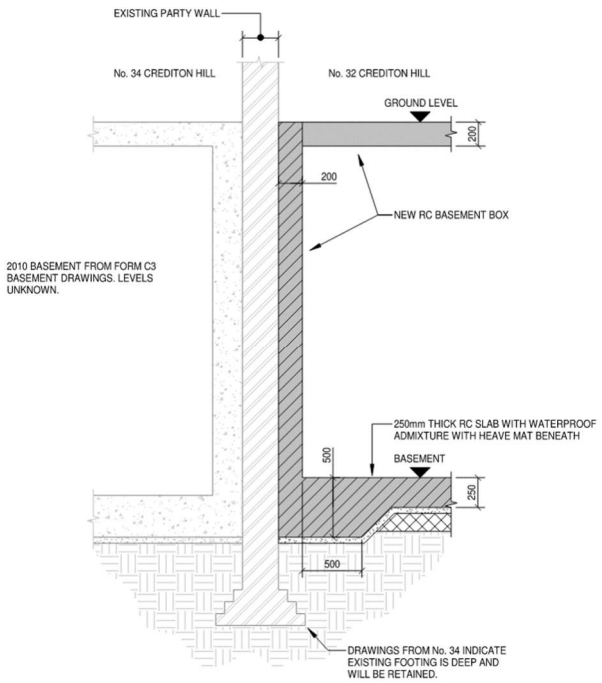
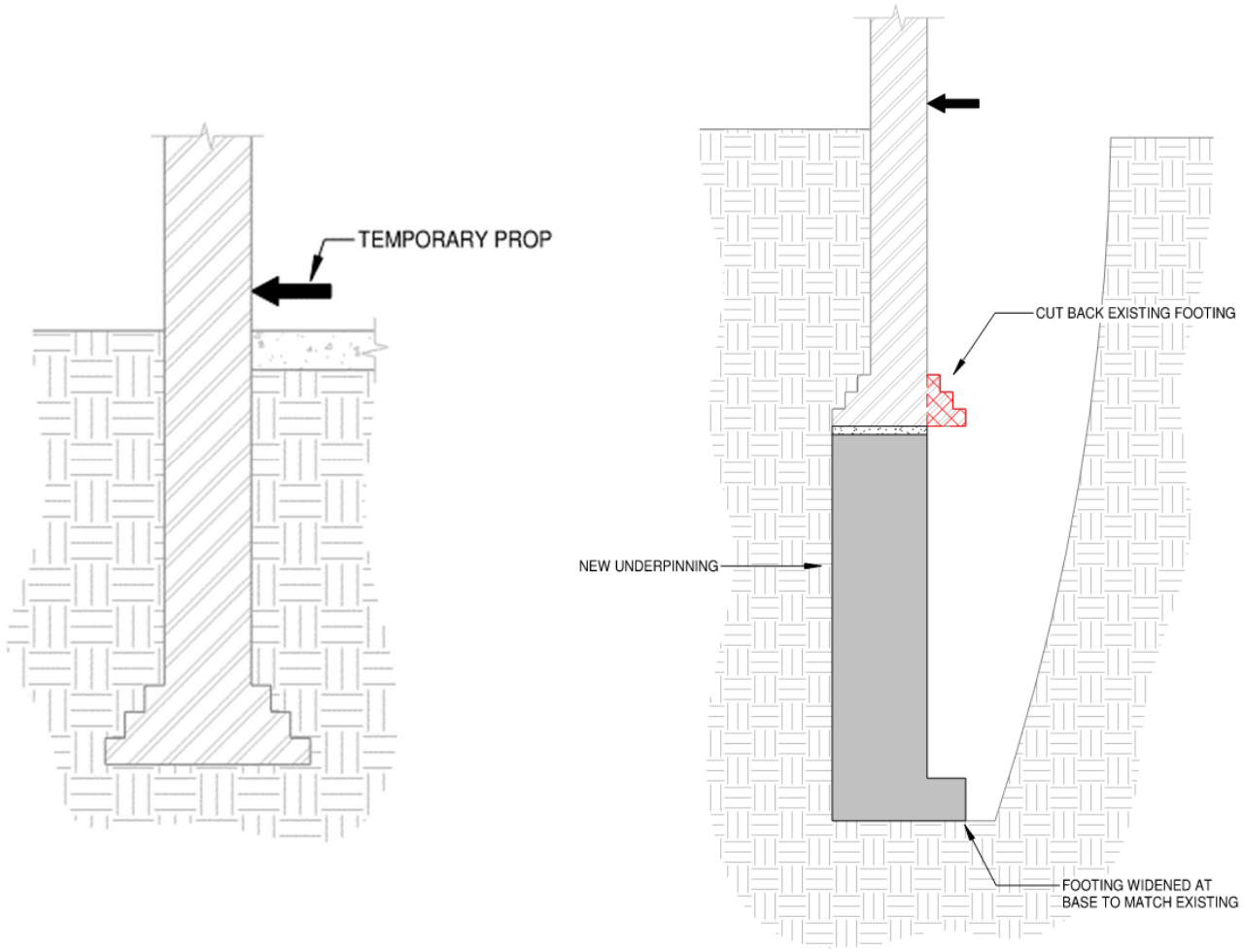


Figure 10: Proposed section to party wall



1. The existing walls will be propped, and then are to be underpinned in a controlled sequence, with each underpin on plan a maximum of 1200mm in length and packed tight to the underside of the existing foundations 24 hours after the mass concrete underpin has been poured. The local excavation is then to be backfilled and compacted.

   Excavation of any section of underpinning shall not be started until at least 48 hours after completion of any adjacent sections of work.

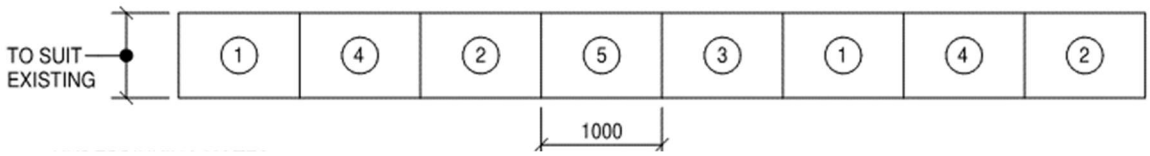
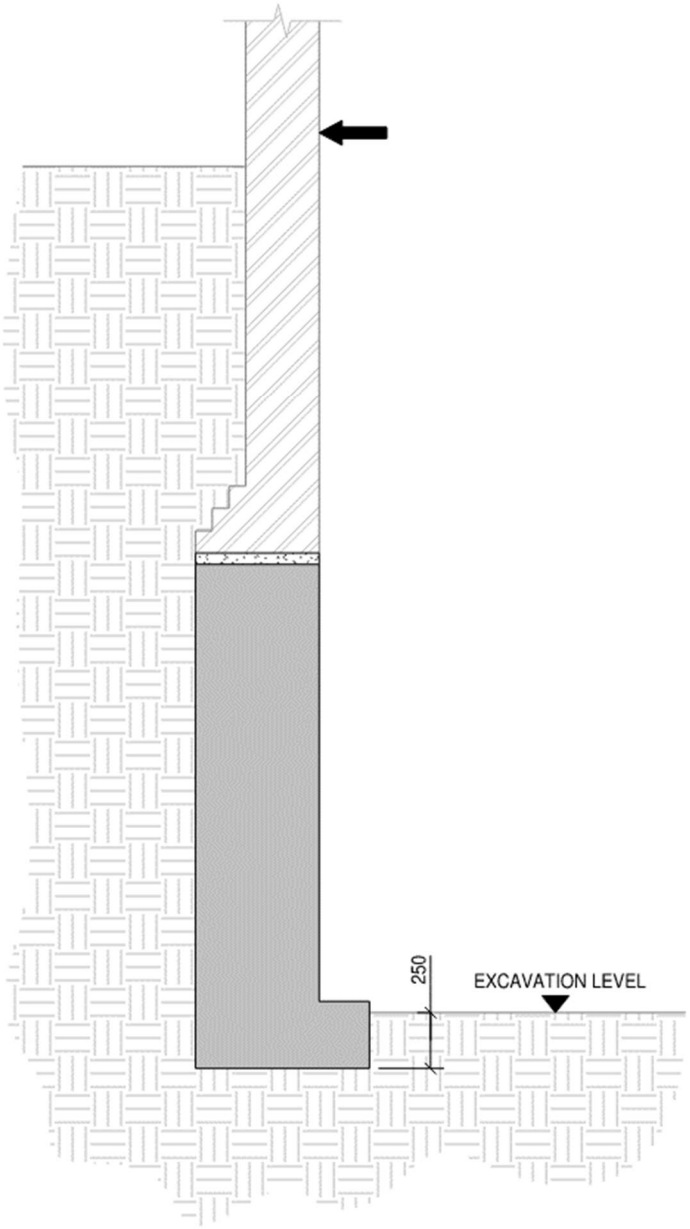


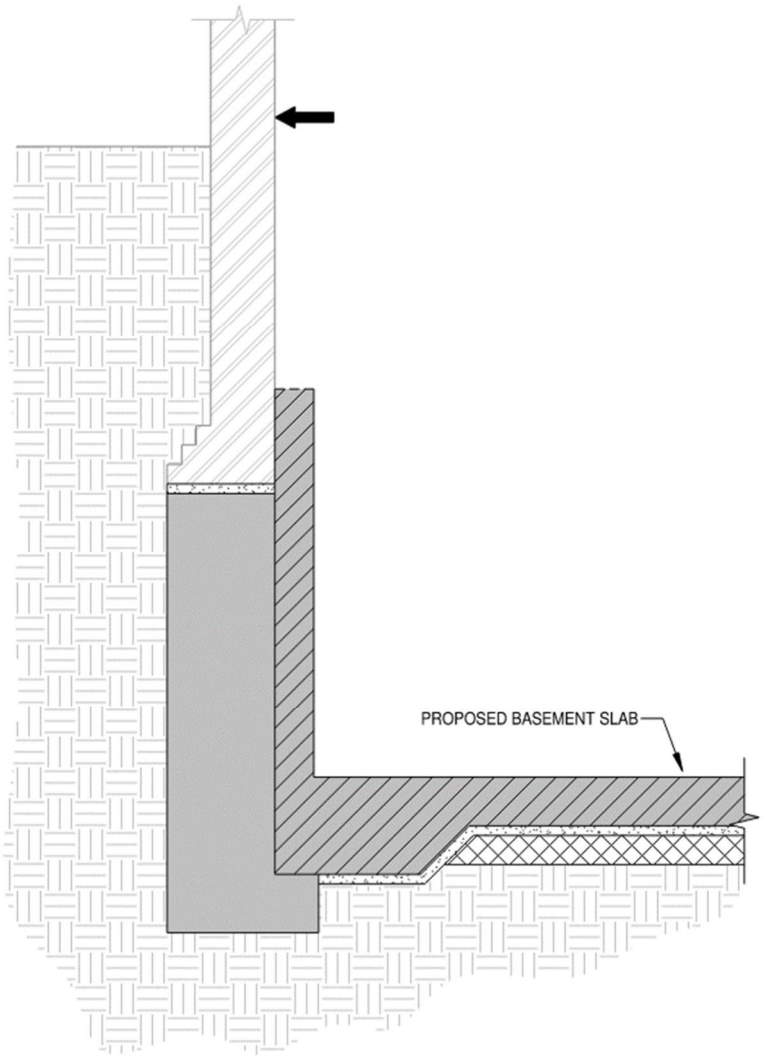
Figure 9- Indicative Underpinning Sequence

The underpinning will be carried out to into the clay strata and a minimum 250mm deeper than the proposed basement excavation.

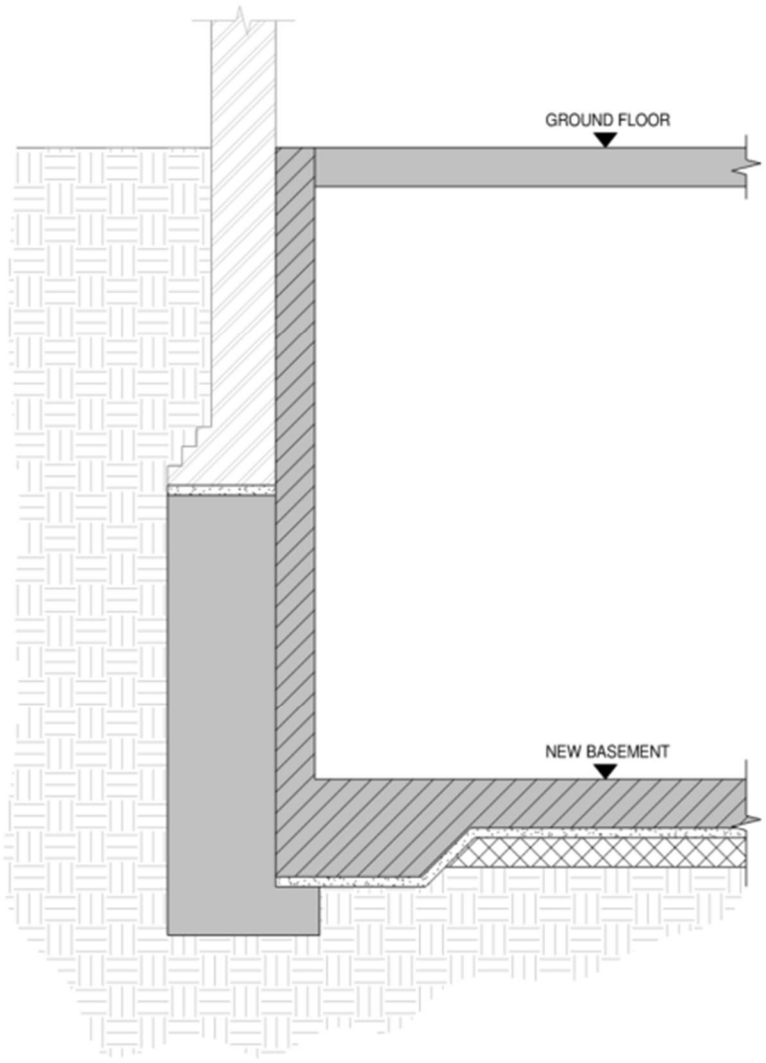
2. Once all the underpinning sequences are complete, the excavation of the basement can be carried out. The prop at ground floor level remains in situ throughout, and there will be internal vertical props to the existing load bearing internal walls. New support here will be provided by load bearing blockwork walls.



3. The new reinforced concrete basement slab and perimeter thickenings can then be cast along with the bottom section of the reinforced concrete liner wall.



4. Once the ground floor slab is constructed, the props can be removed.



5.5 Design Assumptions

- The basement will be designed to create a Grade 3 environment in accordance with BS 8102:2009. Structural waterproofing will be used as a secondary barrier to achieve this in combination with a primary form of waterproofing; most likely a drained cavity system designed to architect's details. The reinforced concrete basement structure will be constructed using a waterproof concrete admixture such as Pudlo or similar approved and the reinforcement shall be detailed to achieve a maximum crack width of 0.3mm.

- The proposed basement walls will be designed for lateral earth pressures associated with the "at rest" condition. In addition to this, a nominal live load surcharge associated with the use of the highway (HB Loading) shall be applied in accordance with the Design Manual for Highways and Bridges document BD37/01.

5.6 Temporary Works Scheme

5.6.1 Responsibilities

The Contractual approach with regards to Temporary Works design is that the appointed Contractor has full design responsibility. They may in turn appoint their own Engineers to design the works. For tender purposes we would expect to define the project expectations in terms of permitted movements, approvals, and general design criteria. This would be supported with an outline scheme which defines the minimum expectations.

5.6.2 Temporary propping

In order to complete these works within the space defined by the RC retaining walls it will be essential to introduce a system of walers, struts and props. These will be introduced at regular intervals as the excavation gains depth. They will be designed to ensure that the works can be completed efficiently and safely. The phasing of the works and sizing of members will also be designed to keep lateral deflection of the foundations within the limits defined at the start of the project.

5.7 Temporary ground water

Any ground water encountered during the excavation will be locally pumped away from the site. If necessary de-watering techniques will be used.

5.8 Noise, dust and vibration

Construction works generally are a source of noise and nuisance which can affect both operatives within the work site as well as neighbours and passing members of the public. Deconstruction and excavation works are particular sources of this potential harm so it will be necessary during these works for the contractor to mitigate the extent and impact of noise, dust, traffic and vibration.

5.8.1 Noise

Disruption: Noise which will be generated by the mechanical equipment used to deconstruct existing construction and excavate for the new basement.

Control Measure: Mitigated by undertaking deconstruction of the existing structure in a controlled and considered deconstruction sequence. By using saw cutting methods rather than pneumatic breakers to reduce noise. By working only within agreed and designated hours. By using machinery equipped with baffles and noise attenuation systems. By performing a noise monitoring regime to ensure acceptable noise levels are not routinely breached.

5.8.2 Dust

Disruption: Generated by excavation works and transfer of arisings from the work area to the disposal skip or wagon.

Control Measure: Mitigated by damping conveyors when in operation, damping ground before clearing sites, by washing down vehicle wheels before leaving site. Using machinery with dust suppression systems fitted.

5.8.3 Vibration

Disruption: Generated by use of heavy machinery for sustained periods and by heavy vehicles.

Control measure: Mitigated by using concrete saws and crushers using deconstruction of the existing building which eliminate vibration. By undertaking disruptive works during agreed and designated hours. By using non-vibration alternative methods where possible.

The final methods of noise, dust and vibration control are the responsibility of the contractor. Once appointed, the contractor will issue detailed plans for the control of noise, dust, and vibration in the form of a project Contractor's method statement for the review and comment of the design team.

Such measures listed above represent good working practices which are commonplace on the many construction projects we have experience of.

6 Outline Material Specification

6.1 Concrete

6.1.1 Grades

Location	Designated Mix to BS 8500	Characteristic Cube Strength
Substructure • General RC Foundations	RC35/45	45 N/mm^2

6.1.2 Material Properties

Density	2500kg/m^3 (normal weight) 1900kg/m^3 (light weight)
Young's Modulus	28kN/mm^2 (short term) 10kN/mm^2 (long term)
Poisson's Ratio	0.2 (allowing for creep and shrinkage)

Coefficient of Thermal Expansion 12 x 10^{-6} per ^{o}C

6.1.3 Covers

All covers to be in accordance with BS EN 1992-1-1:2004.

Nominal cover to all reinforcement shall be as follows unless noted otherwise on the drawings

Substructure	50mm (75mm if cast onto earth)
Superstructure	35mm (internal) 40mm (external)

6.1.4 Cast-in fixings/holes/chases

It is the responsibility of the Main Contractor to determine locations of all cast-in fixings, holes and chases required for cladding and services and any other fixings as required by the Architect.

6.1.5 Concrete Finishes

Formed concrete finishes are detailed in the Davies Maguire Concrete Specification.

6.2 Steelwork

6.2.1 Member sizes and connection design

Sizes of members and end connection loads are scheduled on the drawings for the final (completed) building state only.

It is the responsibility of the steelwork sub-contractor to produce calculations for the steelwork connections, taking account of any temporary works requirements, and submit them to the Architect/Engineer and Local Authority for approval.

All connections have a minimum of 2 No. M16 Grade 8.8 bolts unless noted otherwise.

6.2.2 Steel grades (Eurocode 3)

Grades of steelwork/bolts are to be as follows (unless noted otherwise on the drawings)

All steelwork	Grade S355
All bolts	Grade 8.8
Structural Stainless Steel	Grade 360

Material Properties – the following properties have been used in the design:

Density	7850 kg/m^3
Young's Modulus	210 kN/mm^2
Poisson's Ratio	0.27
Coefficient of thermal expansion	11.7 x 10^{-6} per ^{o}C
Shear modulus	80 kN/mm^2

6.3 Timber

6.3.1 Timber Sourcing

Timber (including timber for wood-based products) should be obtained from well-managed forests and/or plantations in accordance with:

- The laws governing forest management in the producer country or countries.
- International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).

Documentation – provide either:

- Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
- Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.

6.3.2 Timber Grades

All timber members are to be grade C24 to BS EN 1995-1-1:2004 unless noted otherwise. Timber to be pressure-impregnated with preservative and cut ends brush treated.

Material Properties – the following properties have been used in the design:

Density	400 – 600 kg/m^3
Shrinkage	3 – 4%
Bending parallel to grain	7.5 N/mm^2
Tension parallel to grain	4.5 N/mm^2
Compression parallel to grain	7.9 N/mm^2
Min. compression perpendicular to grain	1.9 N/mm^2
Shear parallel to grain	0.7 N/mm^2
Min. modulus of elasticity	7200 N/mm^2

6.3.3 Workmanship

All work to be in accordance with BS 8000-0:2014: Workmanship on Building Sites – Code of Practice for Carpentry, Joinery and General Fixings, and BS EN 1995-1-1:2004.

Sundry fixings:

- All plugging is to be executed in hardwood.
- Nails are to comply with BS EN 14592.
- Wood screws are to comply with BS EN 14592.
- Metal bolts and nuts are to comply with BS EN 14592.
- Rag bolts are to comply with BS EN 14592.

Joists marked DJ are to be doubled joists, TJ are to be triple joists, bolted together using M12 grade 8.8 bolts at centres along span to be specified by the Engineer.

All bolts into timber are to have 50sq x 3 thick ms washers below nut.

Solid blocking or herringbone strutting to be provided between all timber joists or rafters as follows:

- 2.5m to 4.5m span: midspan and at each end support.
- Spans longer than 4.5m: two rows equally spaced in span and at end supports.
- Outer joists or rafters to be blocked solidly to perimeter walls.

7 Fire Protection

In liaison with the architect and the Approved Inspector (Building Control) we understand that the current requirements are for a 60-minute fire rating.

8 Health and Safety

8.1 CDM Regulations

The role of Davies Maguire on this project is that of designer as defined by CDM regulation 9. As such, the design will be considered for foreseeable hazards and associated risks. The design has been developed and, where possible, the risks identified will be reduced or eliminated. The Principal Designer for this project is responsible for co-ordinating the Health and Safety plan. Health and Safety issues relating to the construction of the buildings and materials used will be identified in the plan. However, this item should in no way be considered as a complete and final list. The Contractor's normal Health and Safety obligations still apply when undertaking constructional operations on and off site.

9 Design Life

The design life of a building can be defined as the period of use intended by the designer as agreed with the client. It should be noted that the design life of a building's components may not be the same as the design life of the building. As such two categories arise for defining durability of building elements:

- Maintainable – with periodic treatment will last the life of the building
- Lifelong – will last for the life of the building

With a design life of 50 years the development can be categorised as 'normal life' to Eurocode 0.

Elements of structure can be categorised as follows:

Construction element	Material type	Category of design life	Maintenance / repair required
Floor slabs	Timber joist / Steel Frame	Maintainable	
Basement construction	Concrete	Lifelong	Damage or breaking of surface to be repaired to ensure water tightness.

10 Contractor Designed Portions during Basement Construction

This section outlines the elements to be designed by others:

- Temporary works during deconstruction and construction
- Temporary groundwater management
- Permanent formwork to in-situ concrete
- Reinforcement detailing
- Staircases
- Steel to steel connection design

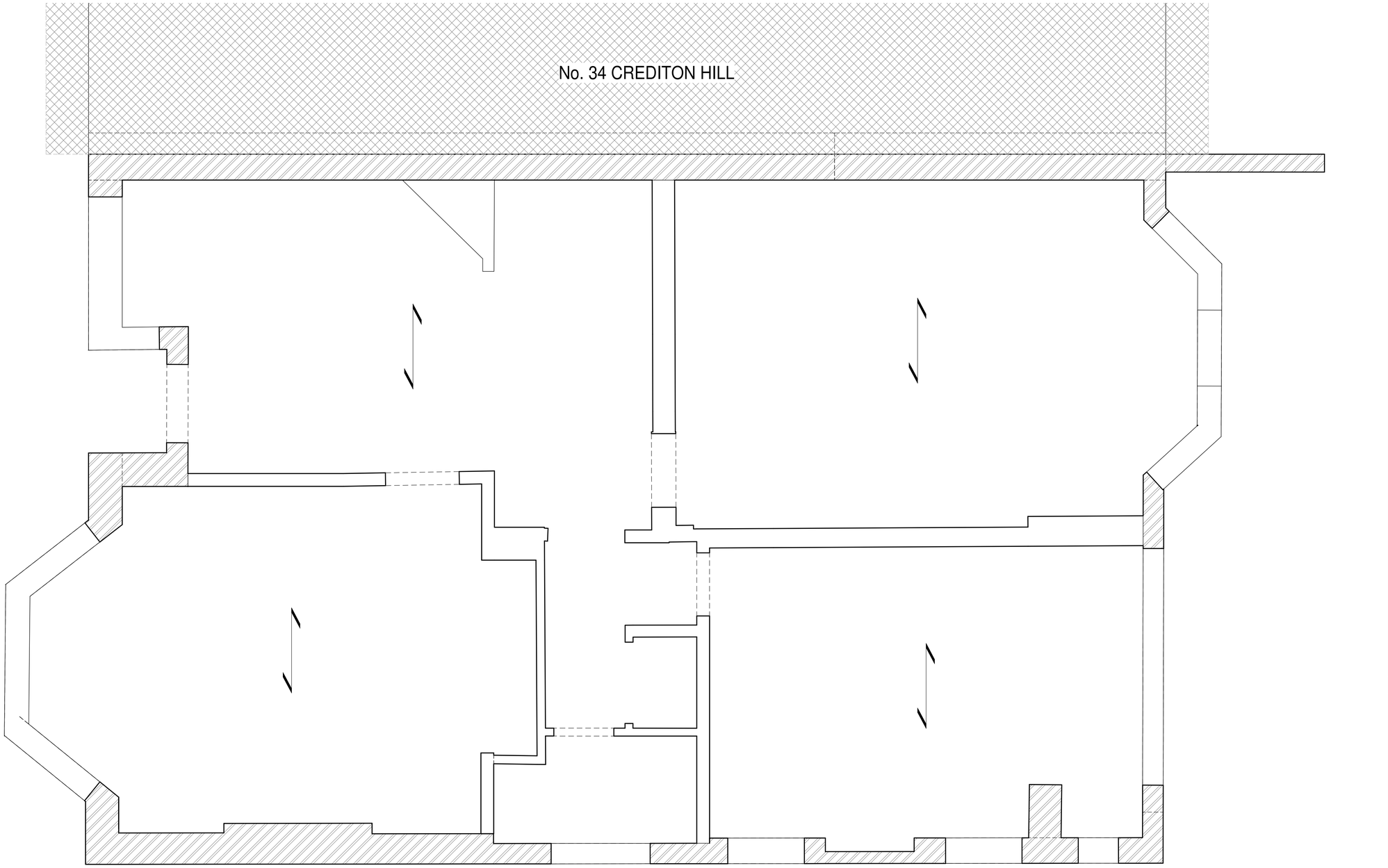
11 References

The following British Standards, Codes of Practice and References have been applied:

Building Regulations 2010 (2010 Edition)

BS 7543	Durability of Buildings and Building Elements, Products and Components
BS EN 1990	Eurocode: Basis of Structural Design
BS EN 1991	Eurocode 1: Actions on Structures
BS EN 1992	Eurocode 2: Design of Concrete Structures
BS EN 1993	Eurocode 3: Design of Steel Structures
BS EN 1995	Eurocode 5: Design of Timber Structures
BS EN 1996	Eurocode 6: Design of Masonry Structures
BS EN 1997	Eurocode 7: Geotechnical Design
BS 8102	Protection of Structures Against Water from the Ground
BS 8007	Design of Concrete Structures for Retaining Aqueous Liquids
CIRIA Report TN107	Design for movement in buildings
CIRIA Report 139	Water-resisting Basements

APPENDIX A – PROPOSED STRUCTURAL DRAWINGS



DENOTES EXISTING TIMBER JOISTS SPANNING BETWEEN MASONRY WALLS. SPAN AND LOCATIONS TO BE CONFIRMED ON SITE.

P02

Notes:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.
3. ALL HEIGHTS ARE IN METRES ABOVE ORDNANCE DATUM U.N.O.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

0m 0.25m 0.5m 1m 2m 2.5m

SCALE - 1:25 @ A1, 1:50 @ A3

Rev	Description	Date	By	App
P02	UPDATED AS PER COMMENTS	27/10 2021	JBA	JD
P01	ISSUED FOR INFORMATION	22/10 2021	JBA	JD

Stage: PRELIMINARY

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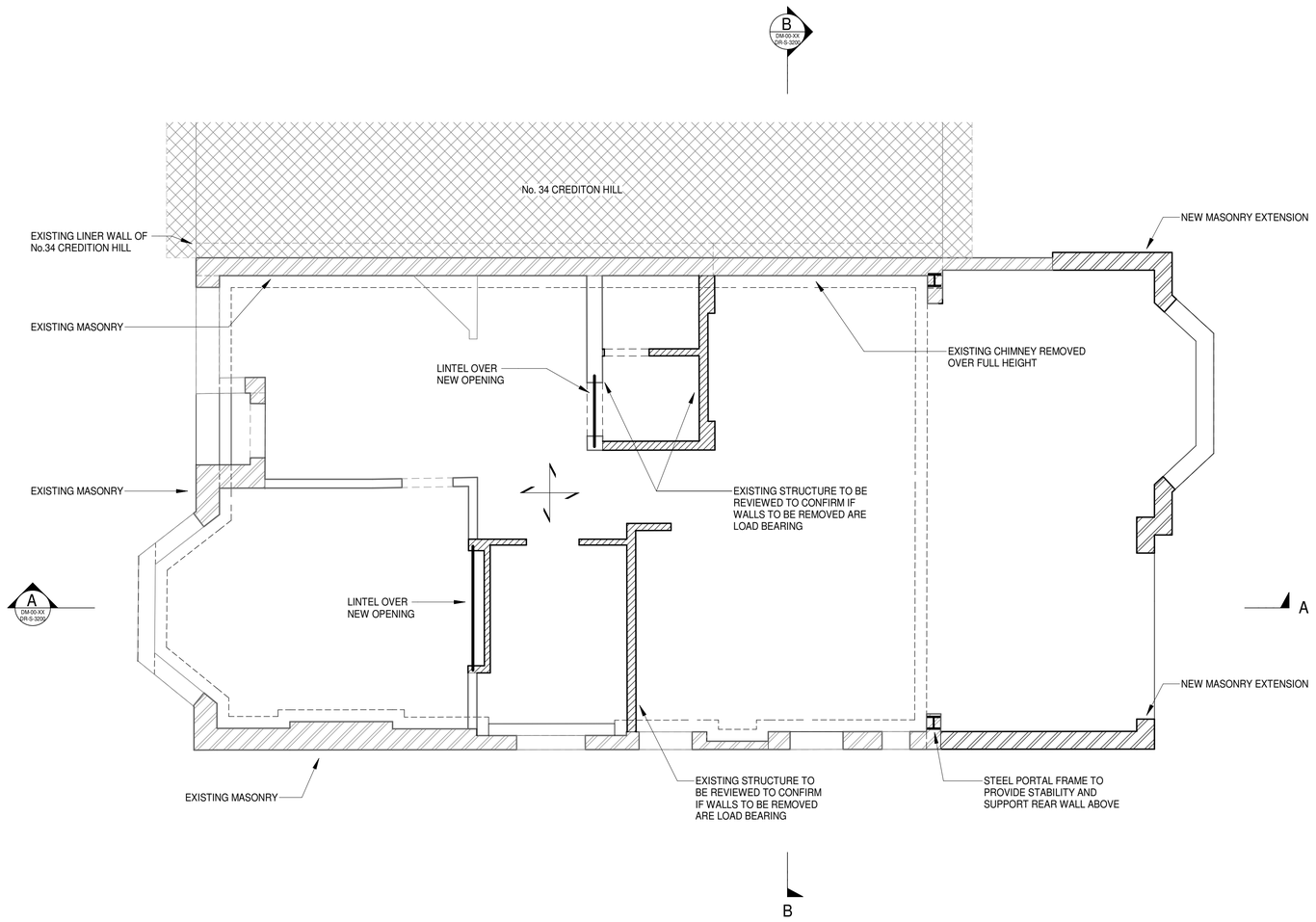
Client: MR. & MRS. THURLIN

Project Title: 32 CREDITON HILL

Drawing Title: EXISTING GROUND FLOOR GENERAL ARRANGEMENT

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	1 : 25

Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM-	00-	00-	DR-	S-	1100	P02



DENOTES 200mm THICK RC SLAB

Notes:

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2. ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.
3. ALL HEIGHTS ARE IN METRES ABOVE ORDNANCE DATUM U.N.O.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

0m 0.5m 1m 2.5m 5m

SCALE - 1:50 @ A1, 1:100 @ A3

Rev	Description	Date	By	App
P02	UPDATED AS PER COMMENTS	27/10 2021	JBA	JD
P01	ISSUED FOR INFORMATION	22/10 2021	JBA	JD

Stage: PRELIMINARY

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Client: MR. & MRS. THURLIN

Project Title: 32 CREDITON HILL

Drawing Title: PROPOSED GROUND FLOOR GENERAL ARRANGEMENT

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	1 : 50

Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM-	00-	00-	DR-	S-	3100	P02

DENOTES 250mm THICK RC BASEMENT SLAB WITH WATERPROOF ADMIXTURE AND HEAVE MAT BENEATH.

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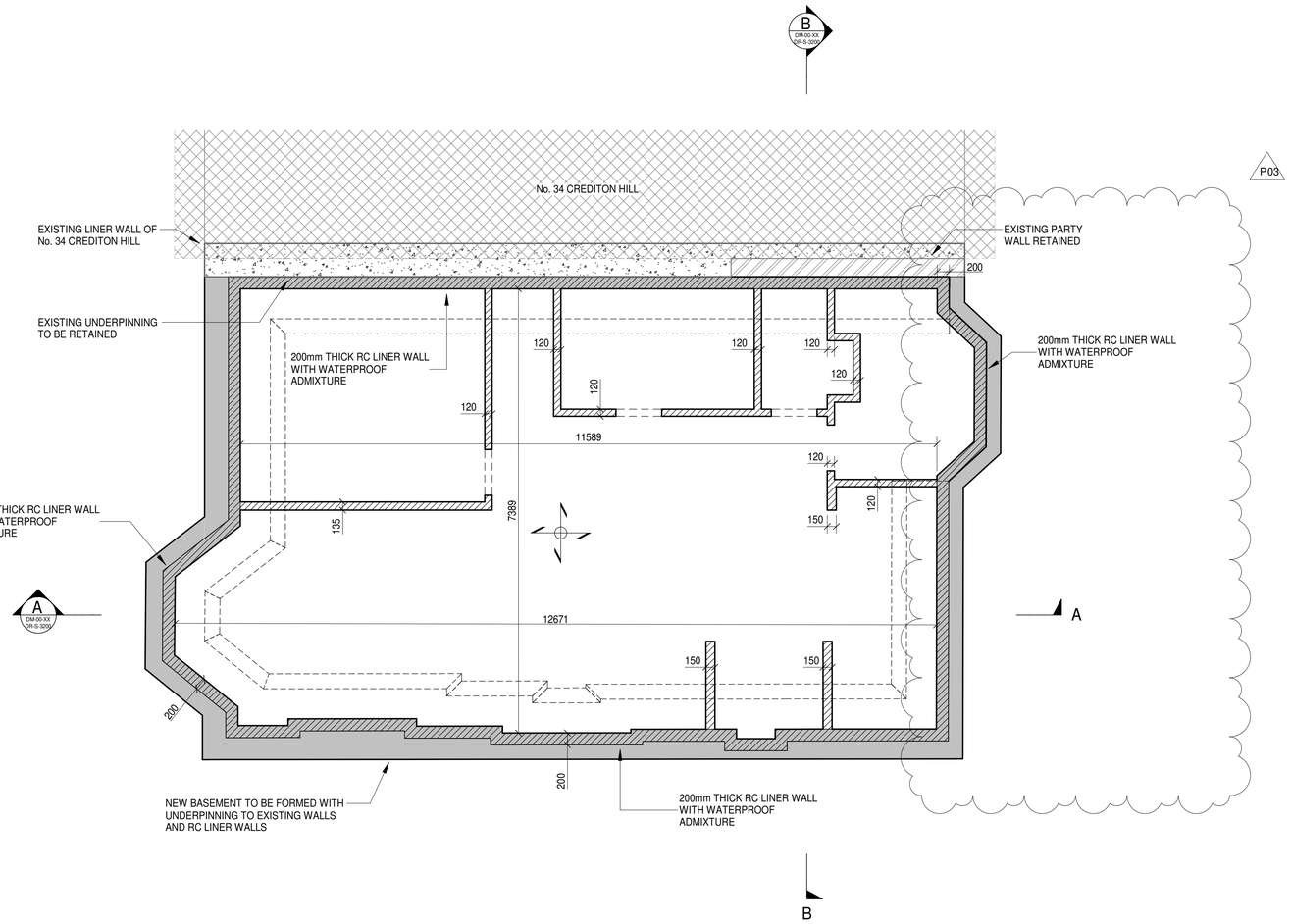

0m 0.5m 1m 2.5m 5m

SCALE - 1:50 @ A1, 1:100 @ A3

Rev	Description	Date	By	App
P03	UPDATED AS PER COMMENTS	14/12 2021	JBA	JD
P02	UPDATED AS PER COMMENTS	27/10 2021	JBA	JD
P01	ISSUED FOR INFORMATION	22/10 2021	JBA	JD

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Client: MR. & MRS. THURLIN

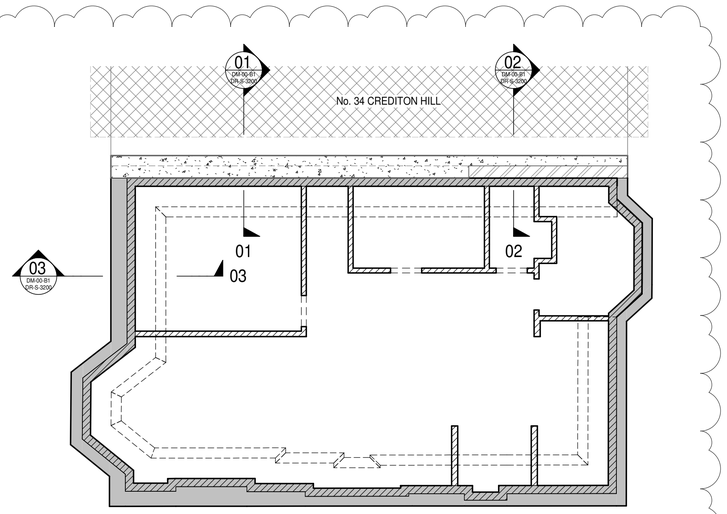
Project Title: 32 CREDITON HILL

Drawing Title: PROPOSED BASEMENT GENERAL ARRANGEMENT

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	1 : 50

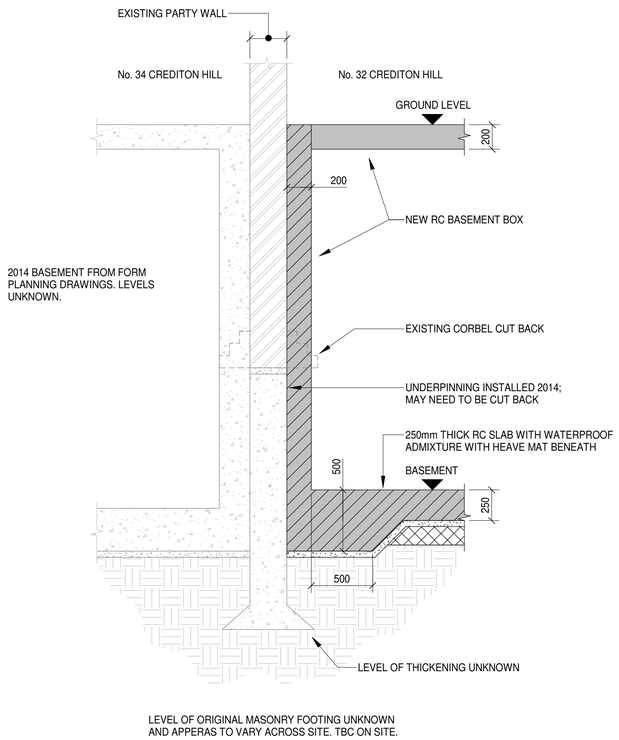
Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM	00	B1	DR	S	3100	P03

P02



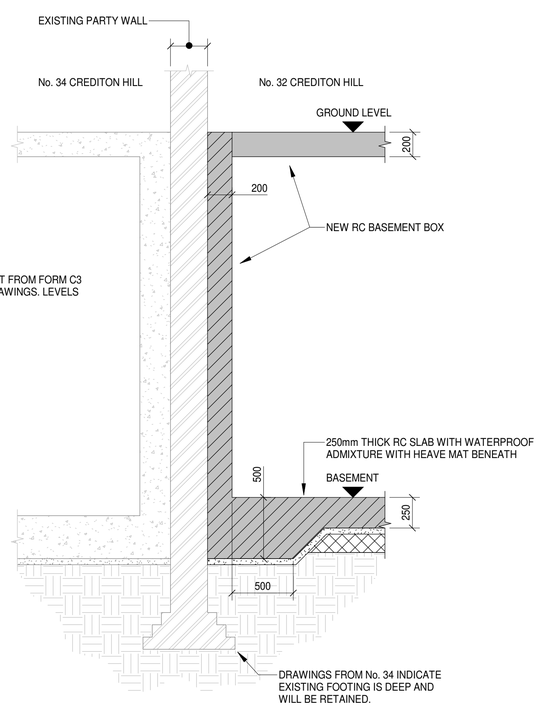
BASEMENT KEY PLAN

1 : 75



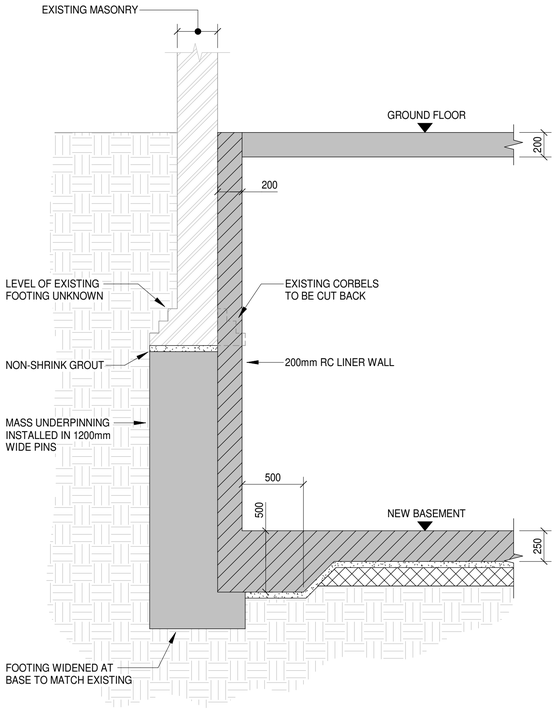
01 BASEMENT SECTION

1 : 25



02 BASEMENT SECTION

1 : 25



03 TYPICAL BASEMENT SECTION

1 : 25

Notes:

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Rev	Description	Date	By	App
P02	KEY PLAN UPDATED	14/12 2021	JBA	JD
P01	ISSUED FOR INFORMATION	27/10 2021	JBA	JD

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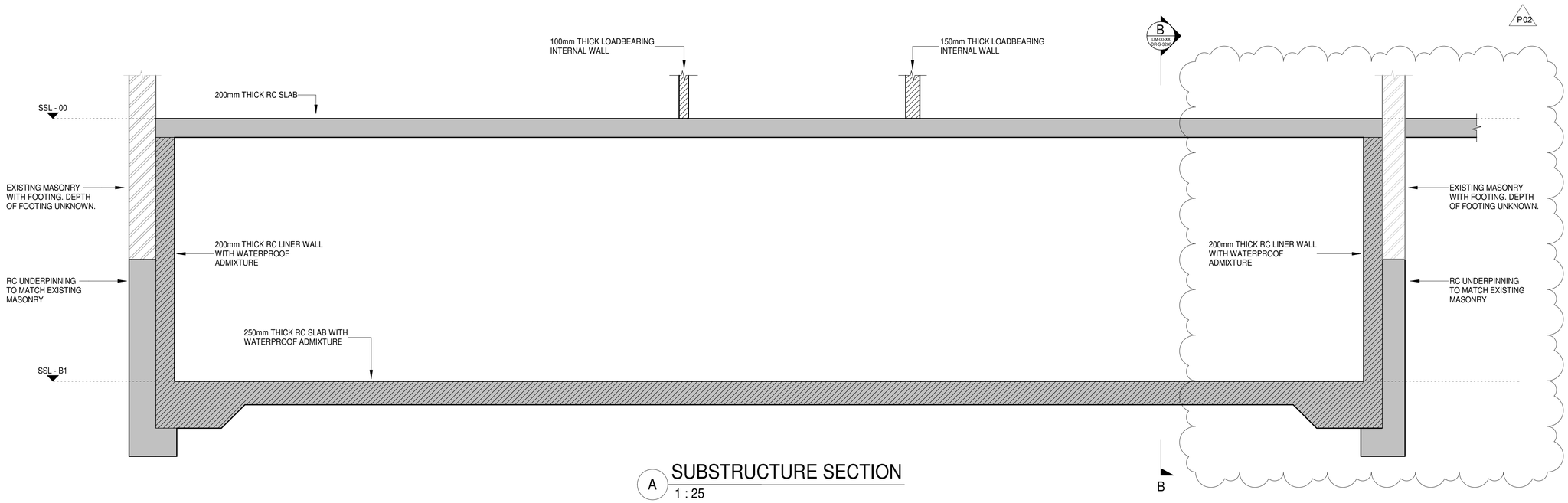
Client: MR. & MRS. THURLIN

Project Title: 32 CREDITON HILL

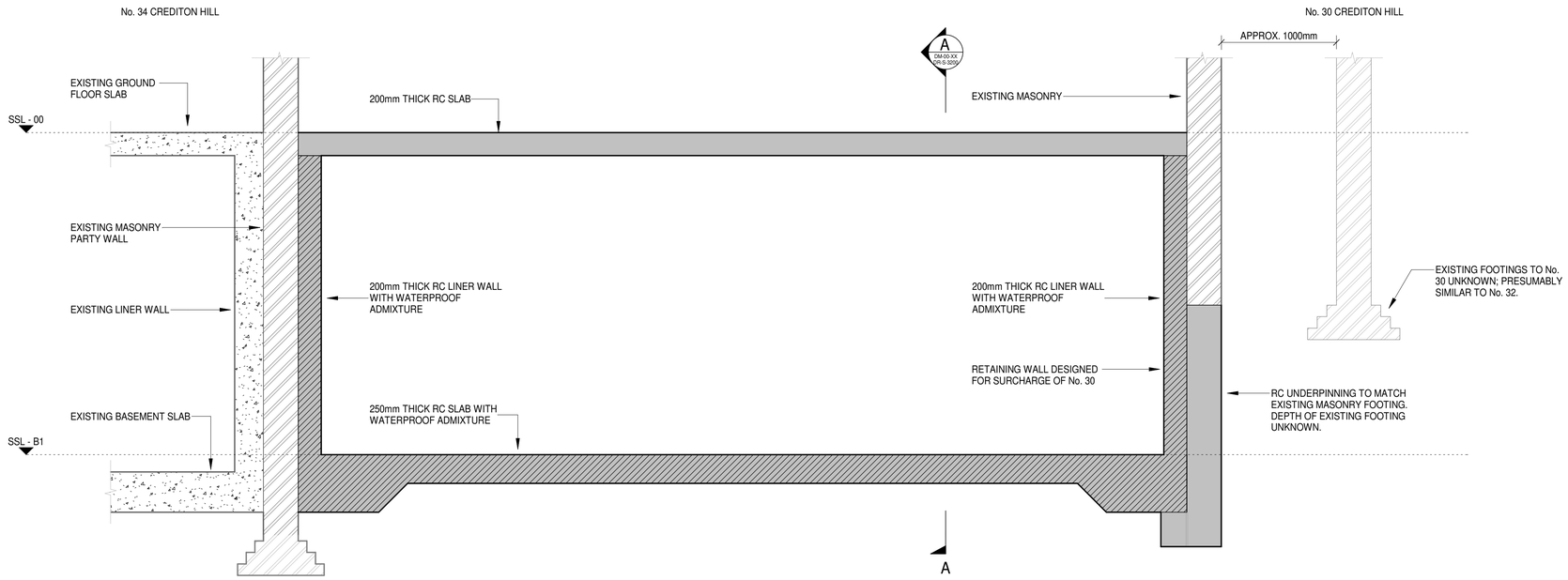
Drawing Title: PROPOSED BASEMENT SECTIONS

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	As indicated

Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM	00	B1	DR	S	3200	P02



A SUBSTRUCTURE SECTION
1 : 25



B SUBSTRUCTURE SECTION
1 : 25

0m 0.25m 0.5m 1m 2m 2.5m
SCALE - 1:25 @ A1, 1:50 @ A3

Notes:

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Rev	Description	Date	By	App
P02	UPDATED AS PER COMMENTS	14/12 2021	JBA	JD
P01	ISSUED FOR INFORMATION	27/10 2021	JBA	JD

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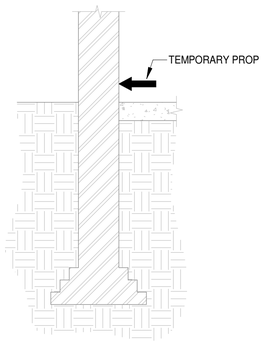
Client: MR. & MRS. THURLIN

Project Title: 32 CREDITON HILL

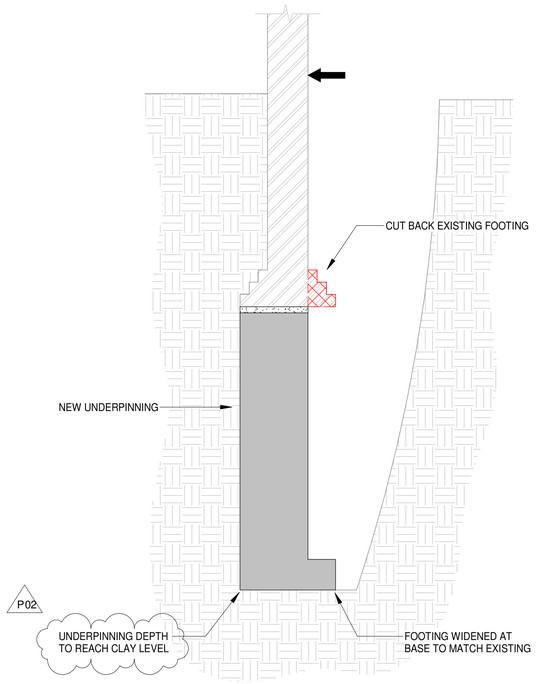
Drawing Title: PROPOSED SUBSTRUCTURE SECTIONS

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	1 : 25

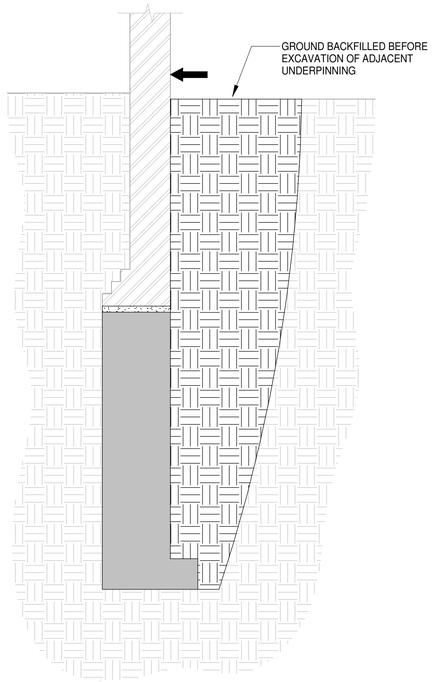
Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM-	00-	XX	DR-	S-	3210	P02



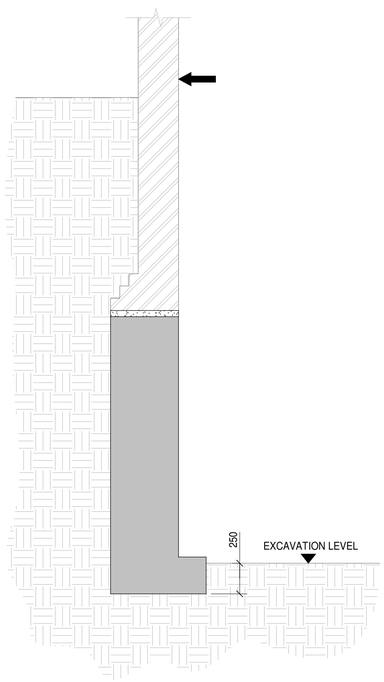
STAGE A



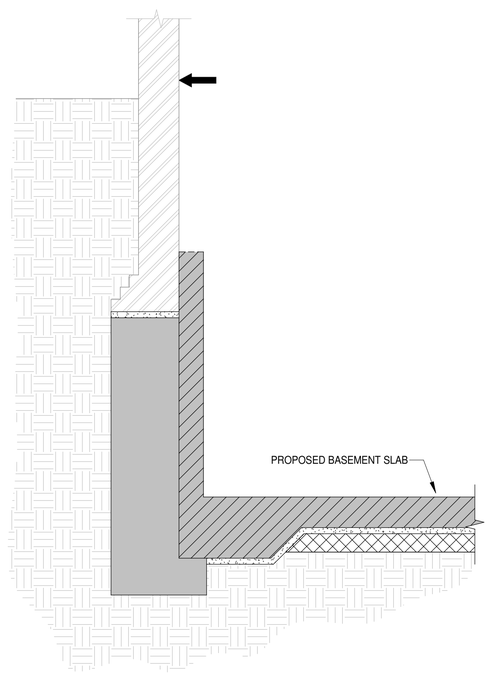
STAGE B



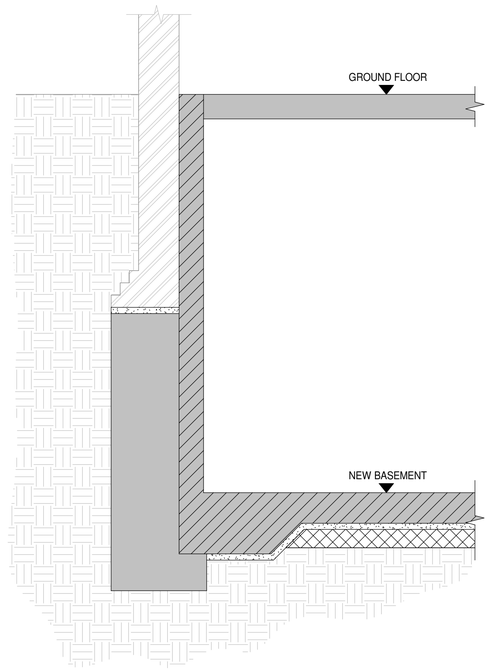
STAGE C



STAGE D



STAGE E



STAGE F

0m 0.25m 0.5m 1m 2m 2.5m

SCALE - 1:25 @ A1, 1:50 @ A3

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Rev	Description	Date	By	App
P02	UPDATED AS PER COMMENTS	27/10 2021	JBA	JD
P01	ISSUED FOR INFORMATION	22/10 2021	JBA	JD

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Client: MR. & MRS. THURLIN

Project Title: 32 CREDITON HILL

Drawing Title: PROPOSED UNDERPINNING CONSTRUCTION SEQUENCE

Drawn by:	Date Issued:	Scale @ A1:
JBA	OCT 2021	1 : 25

Project No.:	Originator	Zone	Level	Type	Role	Number	
21-64	DM-00-XX-DR-S-3310						P02