CONSTRUCTION METHOD STATEMENT
and
BASEMENT IMPACT ASSESSMENT

FLAT 1, GILES BUILDING

UPPER HAMPSTEAD WALK

LONDON

NW3 1DE

METHOD STATEMENT PRODUCED BY:
Anderson Consulting Engineers
One Kingdom Road
Paddington
London
W2 6BD
Tel: 0203 755 5084

PROJECT No: S5577

CONTENTS

INTRODUCTION

This Construction Method Statement is produced for submission as part of a planning application for works to Flat 1, Giles Building, Upper Hampstead Walk, London, NW3 1DE and should not be used for any other purposes, e.g. construction or Party Wall Awards.

SCOPE OF WORKS

It is proposed to extend the existing sub-floor void to create a useable basement incorporating a study, media room, bathroom and additional bedroom.

DESCRIPTION OF FLAT 1, GILES BUILDING, UPPER HAMPSTEAD WALK.

Flat 1 is situated on the ground floor of a four storey block of residential apartments. The construction is loadbearing masonry external and internal walls supporting timber floors.

There is an existing void area beneath the ground floor joist level. This void area is bounded by the external walls to Flat 1 and sub-divided by the extension of the load bearing internal wall and additional walls.

The building is constructed on a sloping site and the external ground levels vary by 1.0m on the Upper Hampstead Road side. At the rear, Mansfield Place, the ground levels vary by 1.5m and then step down to the courtyard at the end of Flat 1 where ground levels are lower and match the internal floor level.

GEOLOGY AND HYDROLOGY CONDITIONS

The existing site geology from British Geological Survey information is Bagshot formation, sand and fine gravel, overlying London Clay. The trial holes carried out confirmed a very stiff silty clay with partings of silt and fine sand.

The depths we excavated to were into the very stiff clay and we can confirm that no groundwater was encountered. The new basement will be designed to limit ground bearing pressure to 250kN/m^2 in order to limit settlement.

No ground water was noted in the trial holes and the BGS boreholes show water table at depths of 15.0m and greater.

STRUCTURAL CALCULATIONS

See calculation sheets S5577/ 01 – 07 for calculations to each wall face, showing the estimated loadings and design of underpins. These calculations can be found in the Appendices. Assumptions that were made in these calculations were that the wall build-ups followed the London Building Acts of 1844, found in CIRIA Report 111.

CONSTRUCTION DRAWINGS

See drawing Nos S5577 / GA01, GA02 and D/01 in the Appendices for underpinning layout, sequencing and sections through the external walls and internal walls of the property.

See drawing Nos S5577 / MS01 and MS02 for underpinning methodology.

CONSTRUCTION SEQUENCE OF THE NEW BASEMENT

1. The existing property will be underpinned in a 'hit and miss' underpinning sequence as shwon on drawing No S5577/GA01.
2. See drawing Nos MS/01 & MS/02 for the construction methodology of a typical underpin, and Underpinning Specification in the Appendices.
3. As excavation progresses, any existing foundations discovered will be broken out and removed from site to make way for the new basement construction.
4. The existing ground floor joist will be permanently supported by steel beams in place of existing sleeper walls.
5. When all the underpins to the existing property have been completed, bulk excavation to the whole site will be carried out.
6. Horizontal propping across the site will be installed as Stage 6 on drawing No S5577/MS01. This will be via a proprietary propping system such as Mabey props or similar.
7. Excavation will then be carried out down to formation level.
8. The below – slab drainage for foul & ground water, sumps and pumps will then be installed. The pumps will discharge the foul / ground water into the existing sewer system to the front of the property.
9. The new basement RC slab (ground – bearing slab) will then be constructed.
10. Once the new basement slab has gained sufficient strength, the horizontal propping across the site will be removed.
11. After the new basement slab has cured, a drained – cavity layer will be laid to the slab and walls.
12. A layer of insulation will be placed on top of the drained – cavity layer on the slab, and in front of the drained – cavity layer on the walls.
13. Finally a layer of screed will be laid to form the finished basement floor.

POTENTIAL IMPACT ON FLAT 1, GILES BUILDING AND ADJOINING PROPERTIES

The proposed basement under the existing property will be formed using an underpinning method, constructed in sections each no wider than 1000mm, with no adjacent underpins constructed within a 48 hour period. This method of construction reduces the amount of potential ground movement and so minimises the effects of settlement.

Expected settlement is zero provided an experienced contractor is appointed who undertakes the works using good practice in accordance with the structural design and follows all agreed method statements, installing all necessary temporary vertical and lateral supports required. In practice some settlement is possible but this should be no worse than 'aesthetic', according to the BRE's definition. If these conditions are met, any settlement that occurs is likely to be minimal and is likely to be accommodated in the elasticity of the superstructure. This has been borne out in the vast majority of past projects on similar properties.

The design and construction methodology, as described above, deals with the potential risks and ensures that the excavation and construction of the proposed basement will not affect the structural integrity of this property and adjoining properties.

SLOPE STABILITY

The site is located on ground that is sloping and so slope instability can only be initiated in the temporary condition as the proposed basement is being built. This would be via a collapse of the partially formed underpinning.

This is highly unlikely due to the construction sequence and implementation of temporary works and is covered by the statement above on the impact on adjoining properties The underpins are also being formed to a level base and this reduces any potential for instability.

POTENTIAL IMPACT ON EXISTING AND SURROUNDING UTILITIES, INFRASTRUCTURE AND MAN – MADE CAVITIES

Any local services on the property's land will be maintained during construction and re – routed if necessary. The exact location of these services will not be known until the works commence. However the impact will be negligible as these services will be maintained. If it is necessary to relocate or divert any utilities, the Contractor and Design Team will be under a statutory obligation to notify the utility owner prior to any works. This will be so that they can assess the impact of the works and grant or refuse their approval. There are no known man – made cavities (e.g. tunnels) in the vicinity of the proposed basement.

POTENTIAL IMPACT ON DRAINAGE, SEWAGE, SURFACE AND GROUND WATER LEVELS AND FLOWS INCLUDING SUDS

All existing drainage and sewage connections will be maintained throughout the construction works so there will be no impact on these existing systems.

The proposed refurbishment will not alter the current state of the property, which will remain as part of a single residence within a block of residential apartments. Therefore there will be no significant change in discharge to the existing drainage and sewage systems and there will be little or no impact on the foul drainage.

Surface water will not be altered as the proposed works are underground and there will be no change to the external 'hard surfaces'.

POTENTIAL IMPACT ON EXISTING AND PROPOSED TREES

The property does not have a garden, therefore no existing trees will be felled during the construction of the proposed basement. In addition, there are no trees protected by Tree Preservation Orders in the vicinity of the proposed basement that will be damaged by the construction works.

Prepared By

John S Brown I.Eng A.M.I.StructE

June 2024

APPENDICES

The following appendices are included with this report.

Appendix A	-	Trial Hole Survey Report by SC Investigations Ltd
Appendix B	-	Calculation sheets S5577 / 1 - 7
Appendix C	-	Drawings S5577 GA01, GA02 & D01
Appendix D	-	Drawing S5577 MS01-02
Appendix E	-	Underpinning Specification

APPENDIX A

TRIAL HOLE REPORT BY S CHICK INVESTIGATIONS

S CHICK INVESTIGATIONS LTD

Factual Report of Investigation

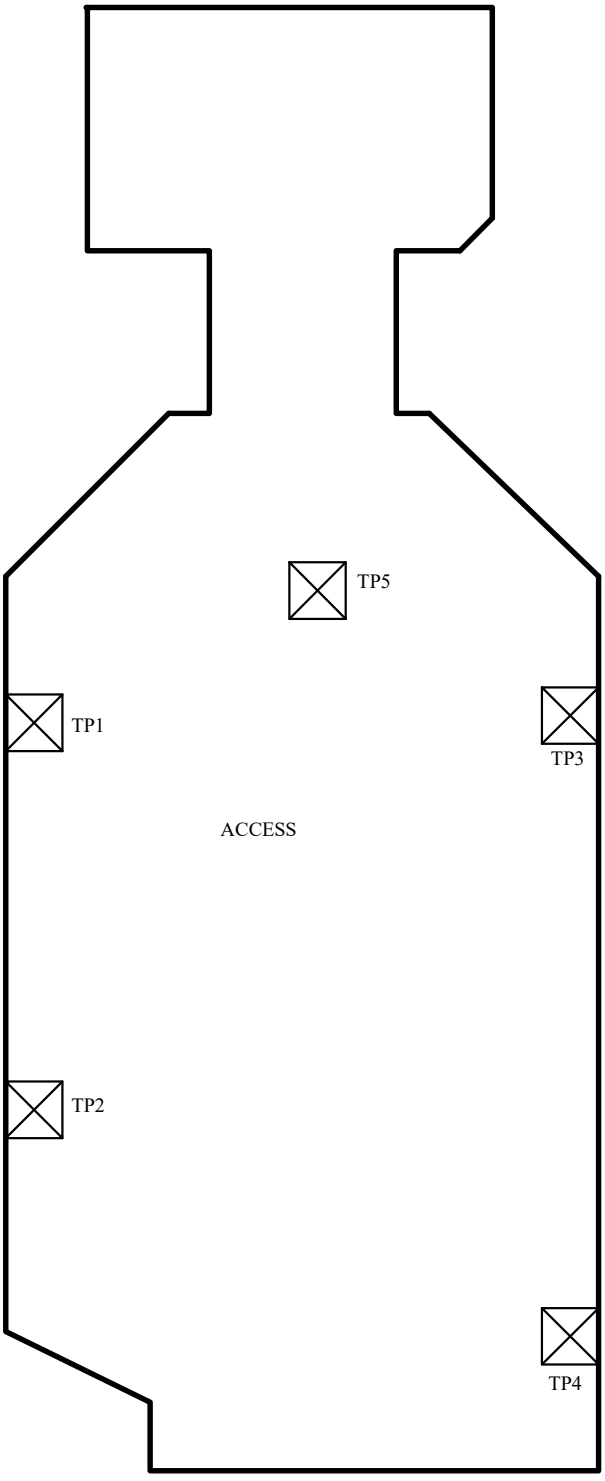
AT: Flat 1, Giles Building, NW3

ON: 09/05/23

FOR: Andersons

S CHICK INVESTIGATIONSLTD
26 FERRARO CLOSE
HESTON
TW5 0UL
07508358424

Site Plan	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



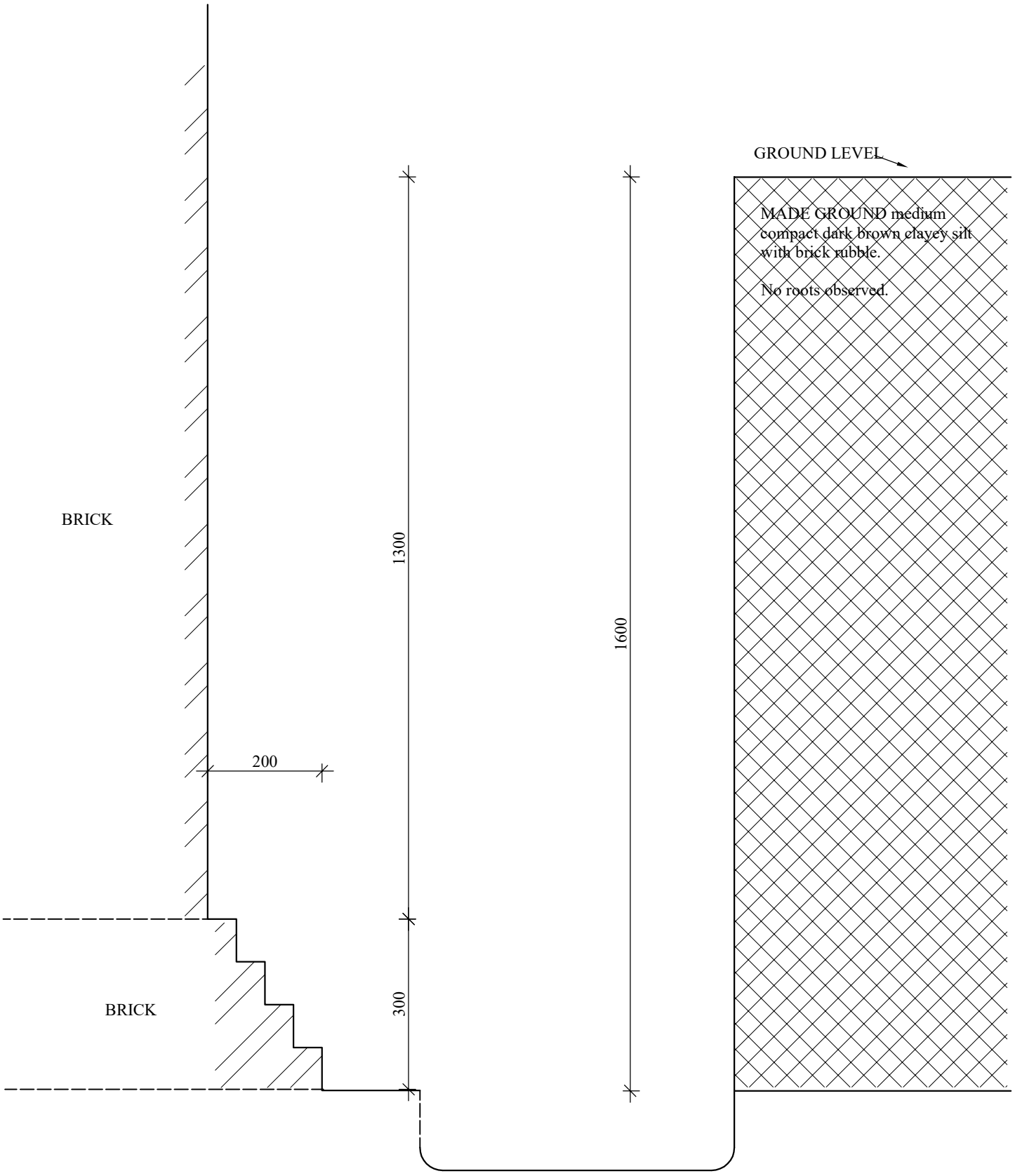
Remarks:

Tree identification not authenticated.

Key:

TP = Trial Pit
BH = Borehole
H = Approximate Height
G = Gulley
SVP = Soil vent pipe
IC = Inspection chamber
IL = Invert level
RWP = Rain water pipe

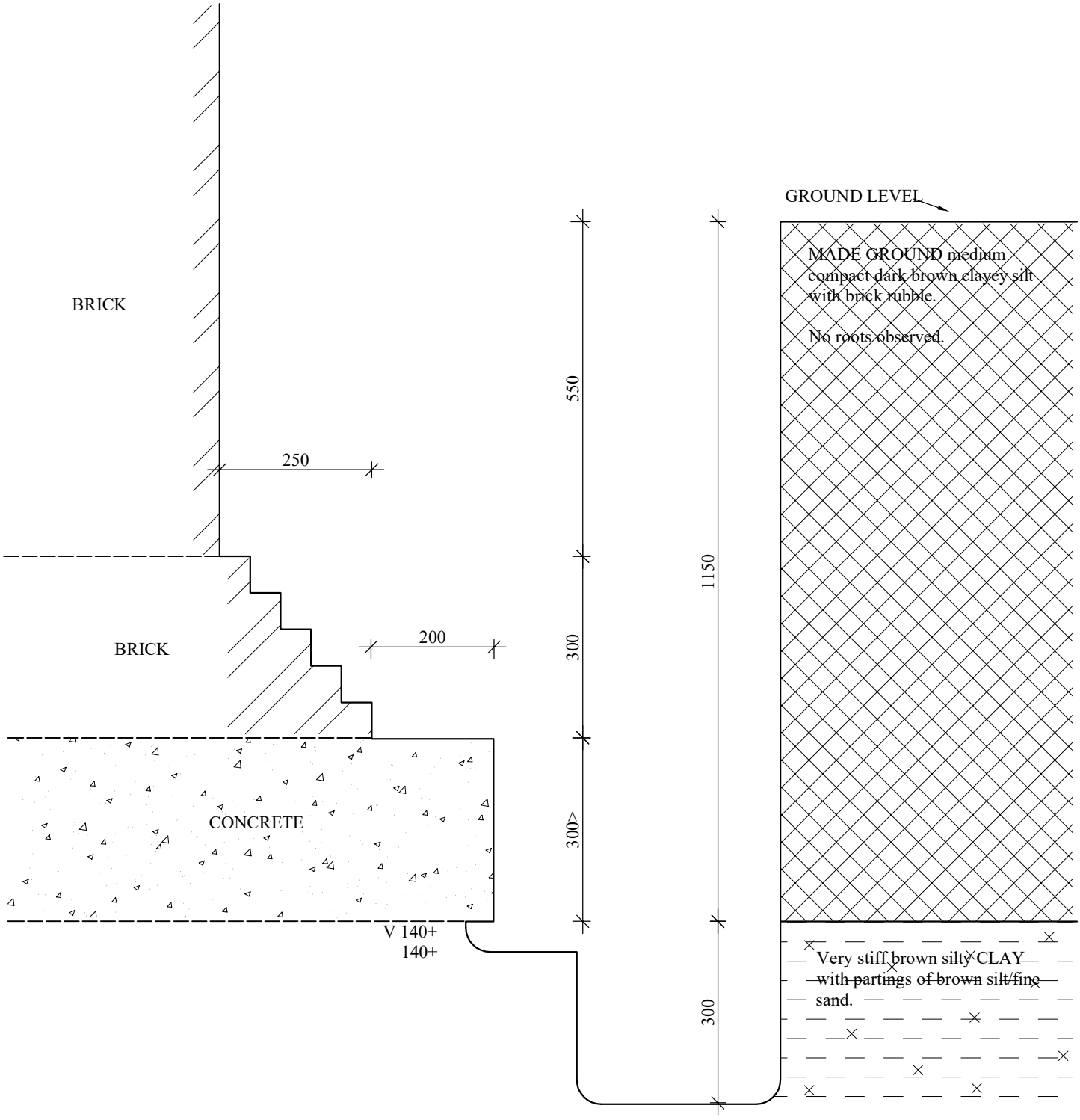
Trial Pit No: 1	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



TRIAL PIT ABANDONED AT 1600mm - UNABLE TO EXCAVATE FURTHER

Remarks:

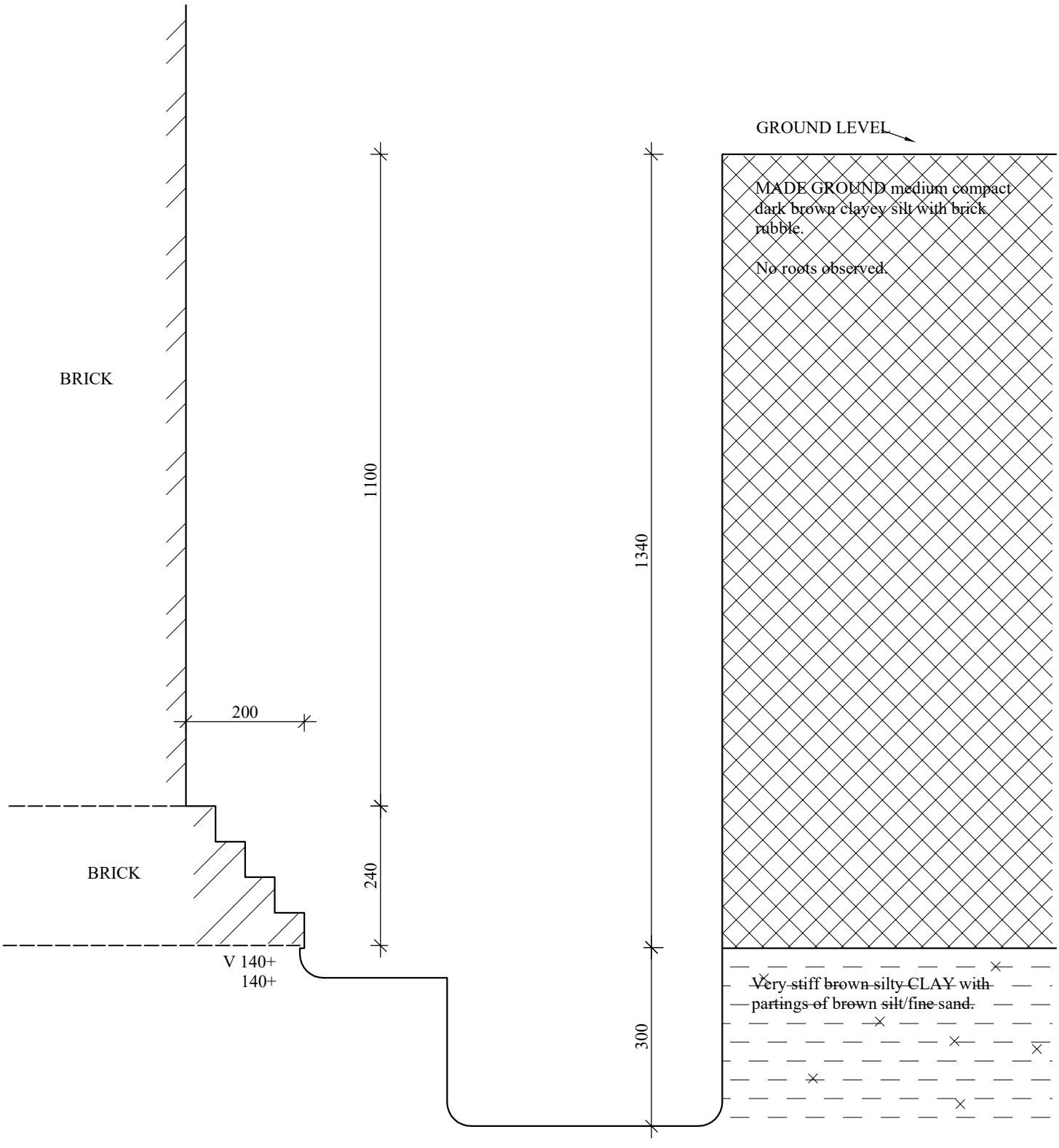
Trial Pit No: 2	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



TRIAL PIT ENDS AT 1450mm

Remarks:

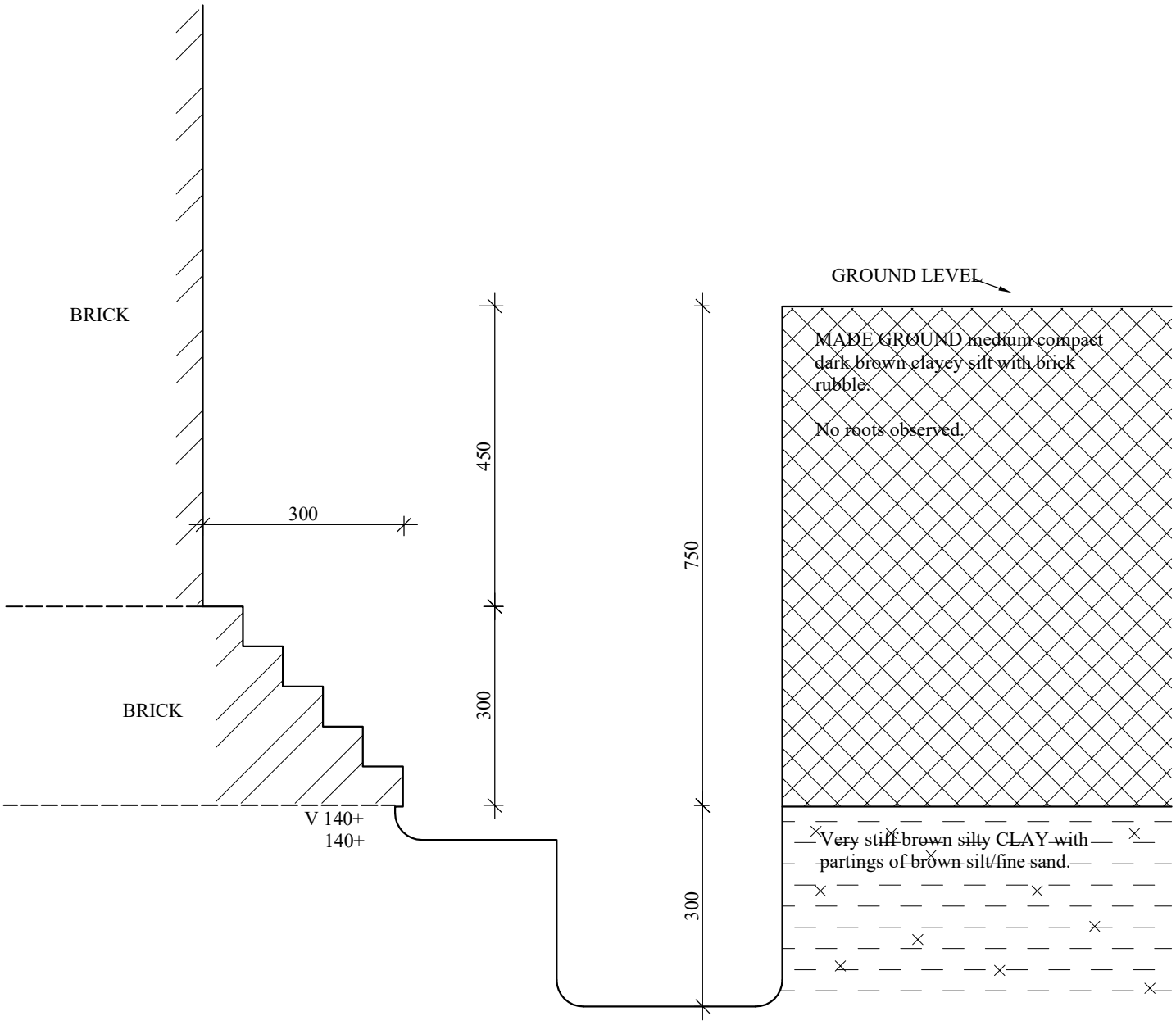
Trial Pit No: 3	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



TRIAL PIT ENDS AT 1640mm

Remarks:

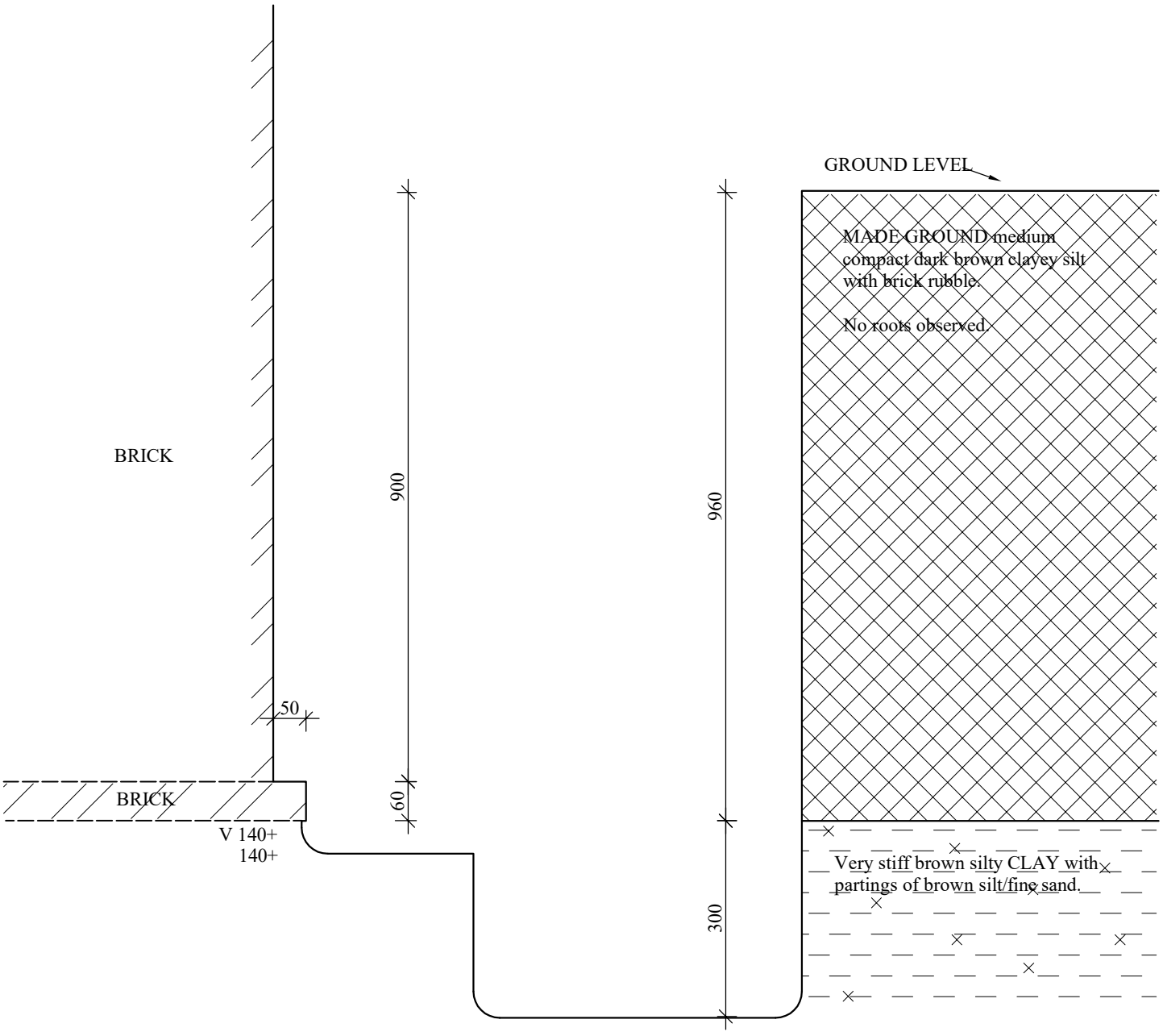
Trial Pit No: 4	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



TRIAL PIT ENDS AT 1050mm

Remarks:

Trial Pit No: 5	Sheet: 1 of 1	SCI
Client: Andersons	Date: 09.05.2023	Site: Flat 1, Giles Building, NW3 1DE



TRIAL PIT ENDS AT 1260mm

Remarks:

APPENDIX B

CALCULATION SHEETS

S5577 / 01 - 07

Structural Calculations

For

Proposed Structural Alterations
Flat 1, Giles Building
Upper Hampstead Walk
London
NW3 1DE

Anderson Consulting Engineers
20 Eastbourne Terrace
Paddington
W2 6LG

0203 008 8356

Project No S5577

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Project		Job Ref	
Flat 1, Giles Building, Upper Hampstead Walk, London, NW3 1DE Calcs		S5577	
Drawing Ref	Calculations by	Checked by	Sheet
	JSB		1
Part of Structure		Date	
Redevelopment of basement		27/05/24	

Loadings (Service Loads)

Flat roof

Dead Loads	
Felt and chippings	0.45 kN/m^2
Boards and joists	0.20 kN/m^2
Ceiling	0.20 kN/m^2
Services	0.15 kN/m^2
Total Dead Load	**1.00 kN/m^2**
Imposed Load	**0.75 kN/m^2**

Pitched Roof

Dead Loads	
Slate and felt	0.35 kN/m^2
Boards and joists	0.25 kN/m^2
Ceiling	0.25 kN/m^2
Services	0.15 kN/m^2
Total Dead Load	**1.00 kN/m^2**
Imposed Load Roof	0.75 kN/m^2
Imposed Load Ceiling	0.25 kN/m^2
Total Imposed Loading	**1.00 kN/m^2**

Timber Floors

Dead Loads	
Boards and joists	0.35 kN/m^2
Ceiling	0.25 kN/m^2
Services	0.20 kN/m^2
Total Dead Load	**0.80 kN/m^2**
Imposed Load	**1.50 kN/m^2**

Beam and Block Floors

Dead Loads	
Screed	2.10 kN/m^2
Floor swt	2.80 kN/m^2
Services	0.20 kN/m^2
Total Dead Load	**5.10 kN/m^2**
Imposed Load	**1.50 kN/m^2**

Partitions (to whole floor area) **0.50 kN/m^2**

Walls

105 Brickwork + plaster	**2.60 kN/m^2**
215 Brickwork + plaster	**5.10 kN/m^2**
330 Brickwork + Plaster	**7.20 kN/m^2**
Cavity brick / block (100/100)	**4.20 kN/m^2**

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Drawing Ref	Calculations by	Checked by	Sheet
	JSB		2
Part of Structure		Date	
Redevelopment of basement		27/05/24	

External Wall

Loading

Location	Dead load	Live load	Height/Dist	Dead Load	Live Load	Total load
	kN/m²	kN/m²		Gk	Qk	kN/m
Roof	1.00	0.75	2.0	2.0	1.5	3.5
Wall 1st-roof	7.20	0.00	12.5	90.0	0.0	90.0
Wall LG-1st	9.50	0.00	7.0	66.5	0.0	66.5
3rd Floor	1.30	1.50	2.0	2.6	3.0	5.6
2nd Floor	1.30	1.50	2.0	2.6	3.0	5.6
1st Floor	1.30	1.50	2.0	2.6	3.0	5.6
Grd Floor	1.30	1.50	2.0	2.6	3.0	5.6
		Total Service Load		**168.9**	**13.5**	**182.4**
		Total ULS Load		**236.5**	**21.6**	**258.1**

Existing foundation width estimated to be 850mm

Current GBP = 215 kN/m²

The retained height varies from 2.5m to 3.5m

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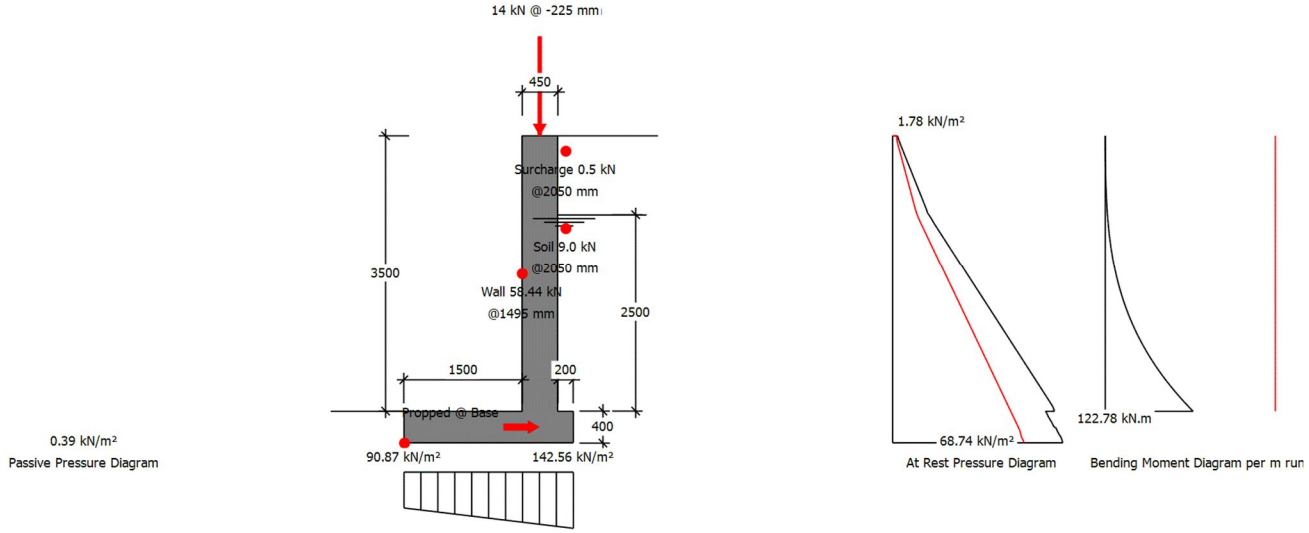
Drawing Ref	Calculations by	Checked by	Sheet
	JSB		3
Part of Structure		Date	
Redevelopment of basement		27/05/24	

C:\Users\Jackie Brown\Dropbox\Anderson\5 - Projects\Masterseries Files\Retaining Walls\S5577 RW1.MRW

MASTERKEY : RETAINING WALL DESIGN TO BS 8002 : 1994 AND BS 8110 : 1997

Basic RC Retaining Wall

Reinforced Concrete Retaining Wall with Reinforced Base



Summary of Design Data

Notes	All dimensions are in mm and all forces are per metre run
Material Densities (kN/m³)	Dry Soil 18.00, Saturated Soil 20.80, Submerged Soil 10., Concrete 24.00
Concrete grade	fcu 35 N/mm², Permissible tensile stress 0.250 N/mm²
Concrete covers (mm)	Wall inner cover 70 mm, Wall outer cover 40 mm, Base cover 50 mm
Reinforcement design	fy 500 N/mm² designed to BS 8110: 1997
Surcharge and Water Table	Surcharge 2.50 kN/m², Water table level 2500 mm
Unplanned excavation depth	Front of wall 390 mm

† The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

Additional Loads

Wall Propped at Base Level	Therefore no sliding check is required
Vertical Line Loads	169 kN/m @ X -225 mm and Y 0 mm - Load type Live 14 kN/m @ X -225 mm and Y 0 mm - Load type Live
† Dimensions	Ties, line loads and partial loads are measured from the inner top edge of the wall

Soil Properties

Bearing pressure	Premissable service pressure @ front 200.00 kN/m², @ back 200.00 kN/m²
Back Soil Friction and Cohesion	Φ = Atn(Tan(20)/1.2) = 16.87°
Base Friction and Cohesion	δ = Atn(0.75xTan(Atn(Tan(20)/1.2))) = 12.82°
Front Soil Friction and Cohesion	Φ = Atn(Tan(30)/1.2) = 25.69°

Loading Cases

G_{Soil} - Soil Self Weight, G_{Wall} - Wall & Base Self Weight, Fv_{Heel} - Vertical Loads over Heel,
P_a - Active Earth Pressure, $P_{surcharge}$ - Earth pressure from surcharge, P_p - Passive Earth Pressure

Case 1: Geotechnical Design	1.00 G_{Soil}+1.00 G_{Wall}+1.00 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p
Case 2: Structural Ultimate Design	1.40 G_{Soil}+1.40 G_{Wall}+1.60 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p

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Project		Job Ref	
Flat 1, Giles Building, Upper Hampstead Walk, London, NW3 1DE Calcs		S5577	
Drawing Ref	Calculations by	Checked by	Sheet
	JSB		4
Part of Structure		Date	
Redevelopment of basement		27/05/24	

Geotechnical Design

Wall Stability - Virtual Back Pressure

Case 1 Overturning/Stabilising	121.246/422.542	0.287	OK

Wall Sliding - Virtual Back Pressure

$Fx/(Rx_{Friction} + Rx_{Passive})$	0.000/(57.084+0.000)	0.000	OK
Prop Reaction Case 2 (Service)	97.7 kN @ Base		

Soil Pressure

Virtual Back (No uplift)	Max(75.783/200, 157.649/200) kN/m²	0.788	OK
Wall Back (No uplift)	Max(90.868/200, 142.564/200) kN/m²	0.713	OK

Structural Design

At Rest Earth Pressure

At rest earth pressures magnification	(1+Sin(Φ)) x √OCR = (1+Sin(16.87)x√1		1.29

Prop Reaction

Maximum Prop Reaction (Ultimate)	134.8 kN @ Base		

Wall Design (Inner Steel)

Critical Section	Critical @ 0 mm from base, Case 2		
Steel Provided (Cover)	Main H20@200 (70 mm) Dist. H10@125 (90 mm)	1571 mm²	OK
Compression Steel Provided (Cover)	Main H20@200 (40 mm) Dist. H10@300 (60 mm)	1571 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	370 mm, 1000 mm, 1571 mm², 500 N/mm², 35.0 N/mm²	348 mm	
Mr=fn(above,As',d',x,x/d)	1571 mm², 50 mm, 49 mm, 0.13	237.9 kN.m	
Moment Capacity Check (M/Mr)	M 122.8 kN.m, Mr 237.9 kN.m	0.516	OK
Wall Axial Design (N/Ncap)	N 345.7 kN, Ncap 6300.0 kN	0.055	OK
Wall Slenderness λ	Leff/tk =2.00x3500.0/450.0	15.6	OK
Kmin = (Nuz-N)/(Nuz-Nbal)	Min(1.0, 7000.0 - 345.7)/(7000.0 - 2511.4)	1.0	
M_{add} = N.Kmin.h.λ²/2000	345.7x1.0x450.0x15.6²/2000	18.7kN.m	
$(M+Madd)/Mr_{Axial}$	M+Madd 141.5 kN, Mr_{Axail} 296.8 kN.m	0.477	OK
Shear Capacity Check	F 108.7 kN, vc 0.542 N/mm², Fvr 200.5 kN	0.54	OK

Base Top Steel Design

Steel Provided (Cover)	Main H20@200 (50 mm) Dist. H10@150 (70 mm)	1571 mm²	OK
Compression Steel Provided (Cover)	Main H20@20 (50 mm) Dist. H10@150 (70 mm)	15708 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	340 mm, 1000 mm, 1571 mm², 500 N/mm², 35 N/mm²	318 mm	
Mr=fn(above,As',d',x,x/d)	15708 mm², 60 mm, 49 mm, 0.14	217.4 kN.m	
Moment Capacity Check (M/Mr)	M 0.0 kN.m, Mr 217.4 kN.m	0.000	OK
Shear Capacity Check	F 0.0 kN, vc 0.569 N/mm², Fvr 193.5 kN	0.00	OK

Base Bottom Steel Design

Steel Provided (Cover)	Main H20@20 (50 mm) Dist. H10@150 (70 mm)	15708 mm²	OK
Compression Steel Provided (Cover)	Main H20@200 (50 mm) Dist. H10@150 (70 mm)	1571 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	340 mm, 1000 mm, 15708 mm², 500 N/mm², 35 N/mm²	264 mm	
Mr=fn(above,As',d',x,x/d)	1571 mm², 60 mm, 170 mm, 0.50	818.5 kN.m	
Moment Capacity Check (M/Mr)	M 136.1 kN.m, Mr 818.5 kN.m	0.166	OK
Shear Capacity Check	F 211.5 kN, vc 1.062 N/mm², Fvr 361.1 kN	0.59	OK

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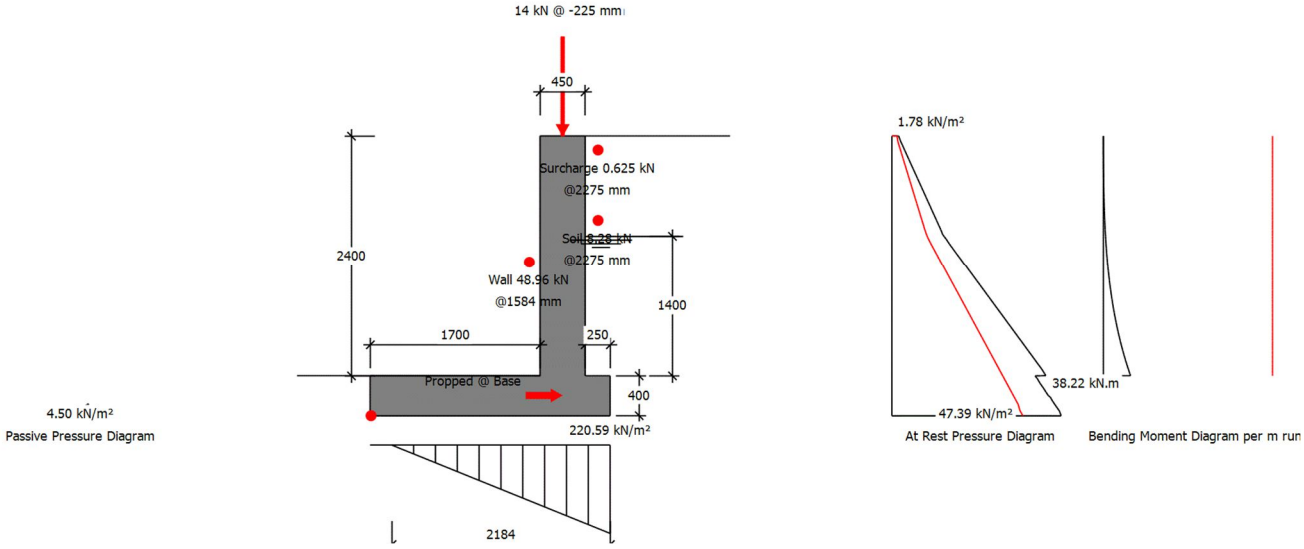
	JSB		5
Part of Structure		Date	
Redevelopment of basement		27/05/24	

MASTERKEY : RETAINING WALL DESIGN TO BS 8002 : 1994 AND BS 8110 : 1997
Basic RC Retaining Wall
Reinforced Concrete Retaining Wall with Reinforced Base



Summary of Design Data

Notes	All dimensions are in mm and all forces are per metre run
Material Densities (kN/m³)	Dry Soil 18.00, Saturated Soil 20.80, Submerged Soil 10., Concrete 24.00
Concrete grade	fcu 35 N/mm², Permissible tensile stress 0.250 N/mm²
Concrete covers (mm)	Wall inner cover 70 mm, Wall outer cover 40 mm, Base cover 50 mm
Reinforcement design	fy 500 N/mm² designed to BS 8110: 1997
Surcharge and Water Table	Surcharge 2.50 kN/m², Water table level 1400 mm
Unplanned excavation depth	Front of wall 280 mm

† The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

Additional Loads

Wall Propped at Base Level	Therefore no sliding check is required
Vertical Line Loads	169 kN/m @ X -225 mm and Y 0 mm - Load type Live 14 kN/m @ X -225 mm and Y 0 mm - Load type Live
† Dimensions	Ties, line loads and partial loads are measured from the inner top edge of the wall

Soil Properties

Bearing pressure	Premissable service pressure @ front 230.00 kN/m², @ back 230.00 kN/m²
Back Soil Friction and Cohesion	Φ = Atn(Tan(20)/1.2) = 16.87°
Base Friction and Cohesion	δ = Atn(0.75xTan(Atn(Tan(20)/1.2))) = 12.82°
Front Soil Friction and Cohesion	Φ = Atn(Tan(30)/1.2) = 25.69°

Loading Cases

G_{Soil} - Soil Self Weight, G_{Wall} - Wall & Base Self Weight, Fv_{Heel} - Vertical Loads over Heel,
P_a - Active Earth Pressure, $P_{surcharge}$ - Earth pressure from surcharge, P_p - Passive Earth Pressure

Case 1: Geotechnical Design	1.00 G_{Soil}+1.00 G_{Wall}+1.00 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p
Case 2: Structural Ultimate Design	1.40 G_{Soil}+1.40 G_{Wall}+1.60 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p

Geotechnical Design

Wall Stability - Virtual Back Pressure

Case 1 Overturning/Stabilising	42.696/450.078	0.095	OK

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20 Eastbourne Terrace
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Drawing Ref	Calculations by	Checked by	Sheet
	JSB		6
Part of Structure		Date	
Redevelopment of basement		27/05/24	

Wall Sliding - Virtual Back Pressure

$Fx/(Rx_{Friction} + Rx_{Passive})$	0.000/(54.792+0.272)	0.000	OK
Prop Reaction Case 2 (Service)	47.7 kN @ Base		

Soil Pressure

Virtual Back	226.588/230 kN/m², Length under pressure 2.126 m	0.985	OK
Wall Back	220.595/230 kN/m², Length under pressure 2.184 m	0.959	OK

Structural Design

At Rest Earth Pressure

At rest earth pressures magnification	(1+Sin(Φ)) x √OCR = (1+Sin(16.87)x√1		1.29

Prop Reaction

Maximum Prop Reaction (Ultimate)	66.1 kN @ Base		

Wall Design (Inner Steel)

Critical Section	Critical @ 0 mm from base, Case 2		
Steel Provided (Cover)	Main H20@200 (70 mm) Dist. H10@125 (90 mm)	1571 mm²	OK
Compression Steel Provided (Cover)	Main H20@200 (40 mm) Dist. H10@300 (60 mm)	1571 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	370 mm, 1000 mm, 1571 mm², 500 N/mm², 35.0 N/mm²	348 mm	
Mr=fn(above,As',d',x,x/d)	1571 mm², 50 mm, 49 mm, 0.13	237.9 kN.m	
Moment Capacity Check (M/Mr)	M 38.2 kN.m, Mr 237.9 kN.m	0.161	OK
Wall Axial Design (N/Ncap)	N 329.1 kN, Ncap 6300.0 kN	0.052	OK
Wall Slenderness λ	Leff/tk =2.00x2400.0/450.0	10.7	OK
Kmin = (Nuz-N)/(Nuz-Nbal)	Min(1.0, 7000.0 - 329.1)/(7000.0 - 2511.4)	1.0	
M_{add} = N.Kmin.h.λ²/2000	329.1x1.0x450.0x10.7²/2000	8.3kN.m	
$(M+Madd)/Mr_{Axial}$	M+Madd 46.5 kN, Mr_{Axail} 294.6 kN.m	0.158	OK
Shear Capacity Check	F 48.6 kN, vc 0.542 N/mm², Fvr 200.5 kN	0.24	OK

Base Top Steel Design

Steel Provided (Cover)	Main H20@200 (50 mm) Dist. H10@150 (70 mm)	1571 mm²	OK
Compression Steel Provided (Cover)	Main H20@20 (50 mm) Dist. H10@150 (70 mm)	15708 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	340 mm, 1000 mm, 1571 mm², 500 N/mm², 35 N/mm²	318 mm	
Mr=fn(above,As',d',x,x/d)	15708 mm², 60 mm, 49 mm, 0.14	217.4 kN.m	
Moment Capacity Check (M/Mr)	M 1.9 kN.m, Mr 217.4 kN.m	0.009	OK
Shear Capacity Check	F 12.0 kN, vc 0.569 N/mm², Fvr 193.5 kN	0.06	OK

Base Bottom Steel Design

Steel Provided (Cover)	Main H20@20 (50 mm) Dist. H10@150 (70 mm)	15708 mm²	OK
Compression Steel Provided (Cover)	Main H20@200 (50 mm) Dist. H10@150 (70 mm)	1571 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	340 mm, 1000 mm, 15708 mm², 500 N/mm², 35 N/mm²	264 mm	
Mr=fn(above,As',d',x,x/d)	1571 mm², 60 mm, 170 mm, 0.50	818.5 kN.m	
Moment Capacity Check (M/Mr)	M 55.1 kN.m, Mr 818.5 kN.m	0.067	OK
Shear Capacity Check	F 140.7 kN, vc 1.062 N/mm², Fvr 361.1 kN	0.39	OK

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Project		Job Ref	
Flat 1, Giles Building, Upper Hampstead Walk, London, NW3 1DE Calcs		S5577	
Drawing Ref	Calculations by	Checked by	Sheet
	JSB		7
Part of Structure		Date	
Redevelopment of basement		27/05/24	

External Walls to spare room

Loading

Location	Dead load	Live load	Height/Dist	Dead Load	Live Load	Total load
	kN/m^2	kN/m^2		Gk	Qk	kN/m
Roof	1.00	0.75	1.0	1.0	0.8	1.8
Wall 1st-roof	7.20	0.00	11.5	82.8	0.0	82.8
Wall LG-1st	9.50	0.00	7.0	66.5	0.0	66.5
3rd Floor	1.30	1.50	1.4	1.8	2.1	3.9
2nd Floor	1.30	1.50	1.4	1.8	2.1	3.9
1st Floor	1.30	1.50	1.4	1.8	2.1	3.9
Grd Floor	1.30	1.50	1.4	1.8	2.1	3.9
		Total Service Load		**157.6**	**9.2**	**166.7**
		Total ULS Load		**220.6**	**14.6**	**235.3**

Width of foundation required = 167/200 = 0.83m

Use 900 wide x 300 deep mass concrete foundation.

Internal load bearing wall

Loading

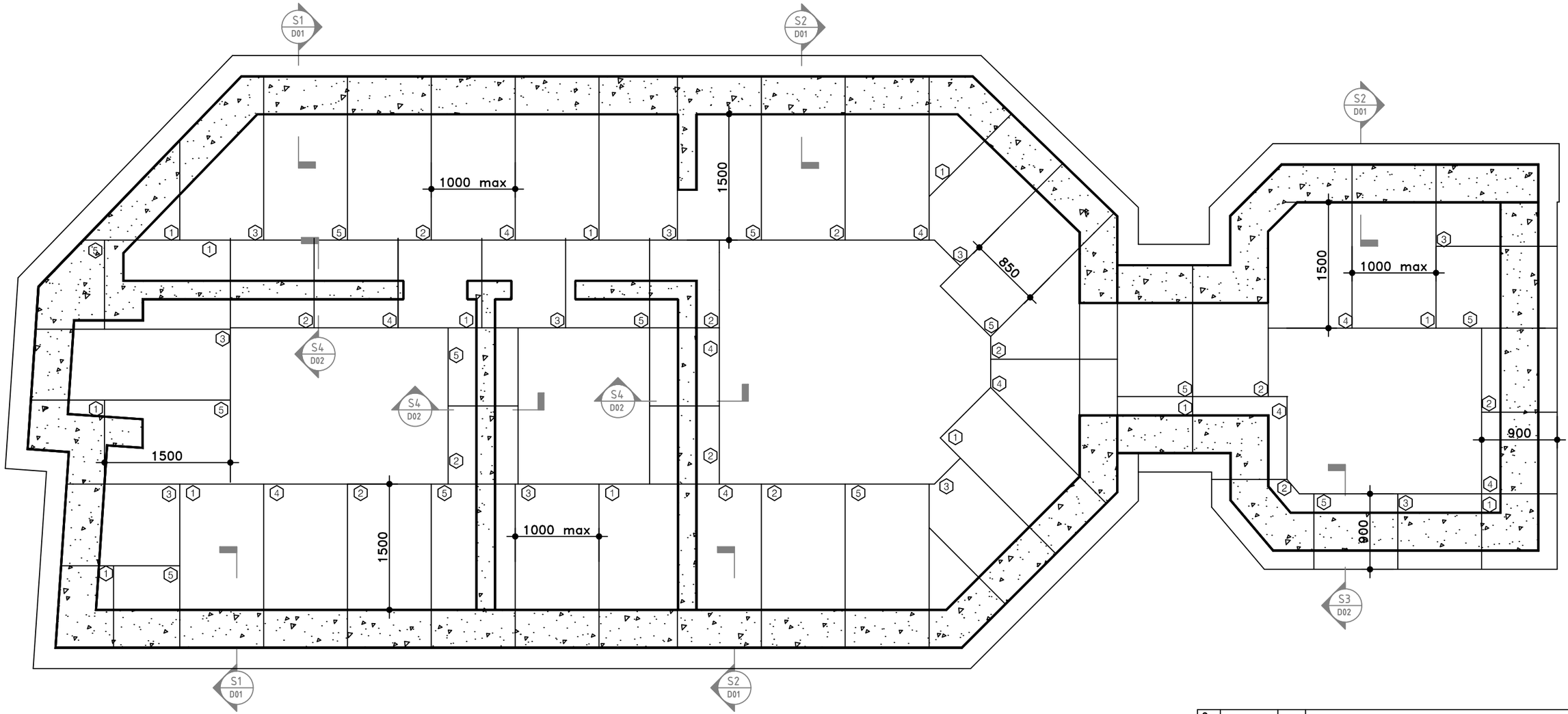
Location	Dead load	Live load	Height/Dist	Dead Load	Live Load	Total load
	kN/m^2	kN/m^2		Gk	Qk	kN/m
Roof	1.00	0.75	3.0	3.0	2.3	5.3
Wall Grd-roof	7.20	0.00	18.0	129.6	0.0	129.6
3rd Floor	1.30	1.50	3.0	3.9	4.5	8.4
2nd Floor	1.30	1.50	3.0	3.9	4.5	8.4
1st Floor	1.30	1.50	3.0	3.9	4.5	8.4
Grd Floor	1.30	1.50	3.0	3.9	4.5	8.4
		Total Service Load		**148.2**	**20.3**	**168.5**
		Total ULS Load		**207.5**	**32.4**	**239.9**

Width of foundation required = 168/200 = 0.84m

Use 900 wide x 300 deep mass concrete foundation.

APPENDIX C

DRAWINGS S5577 GA01, GA02 & D01



BASEMENT FOUNDATION LAYOUT
SCALE 1:50

0 1 2 3 4 5

REV	DATE	BY	DETAILS OF REVISION
C			
B			
A	-	-	-

PROJECT
Flat 1, Giles Building
Upper Hampstead Walk
London, NW3 1DE

PROJECT NO.
S5577

DRAWING NO.
GA01

REVISION
--

TITLE
Basement Foundation Layout

DRAWN BY
JW

DATE
June 2024

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1:50@A3

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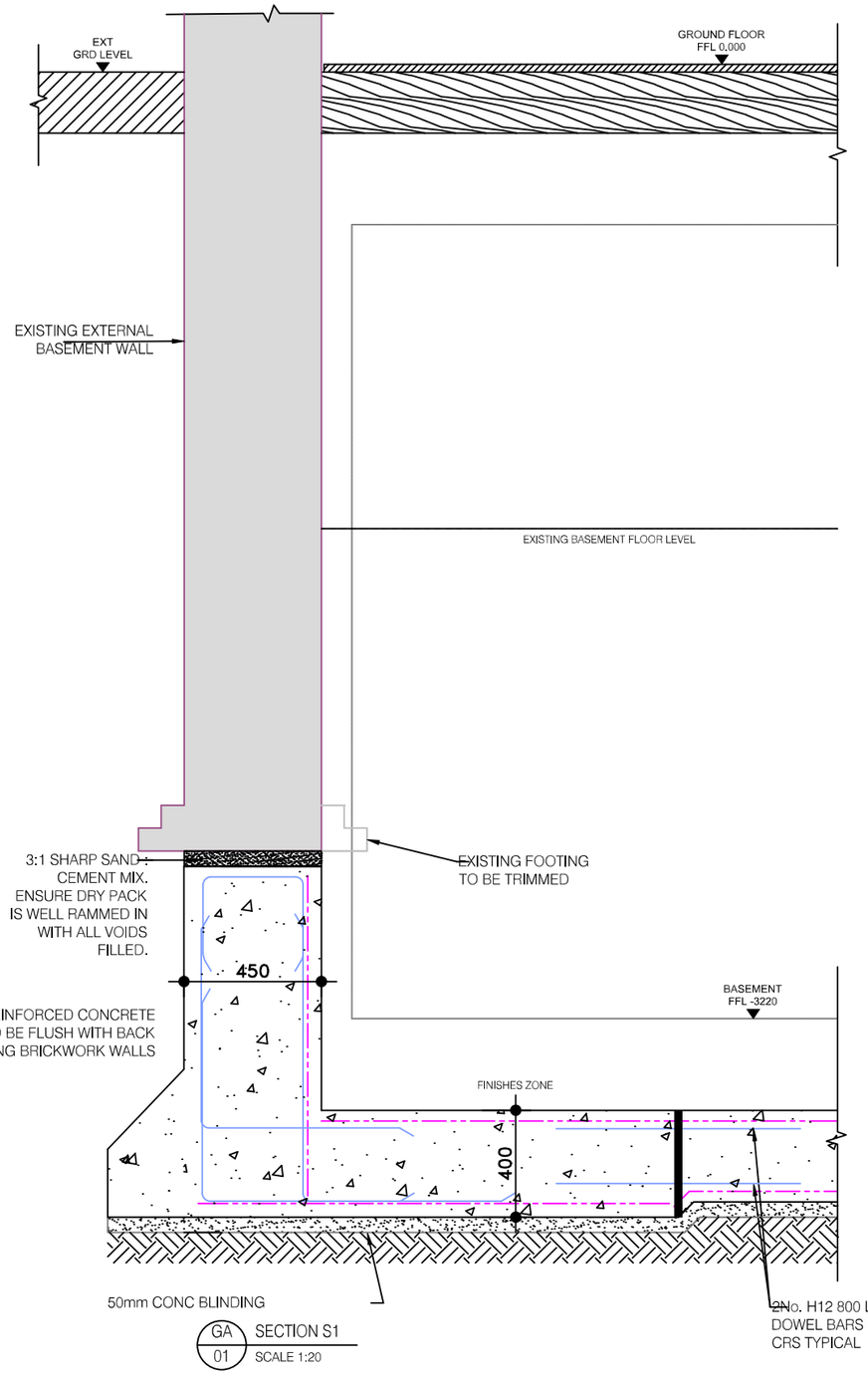
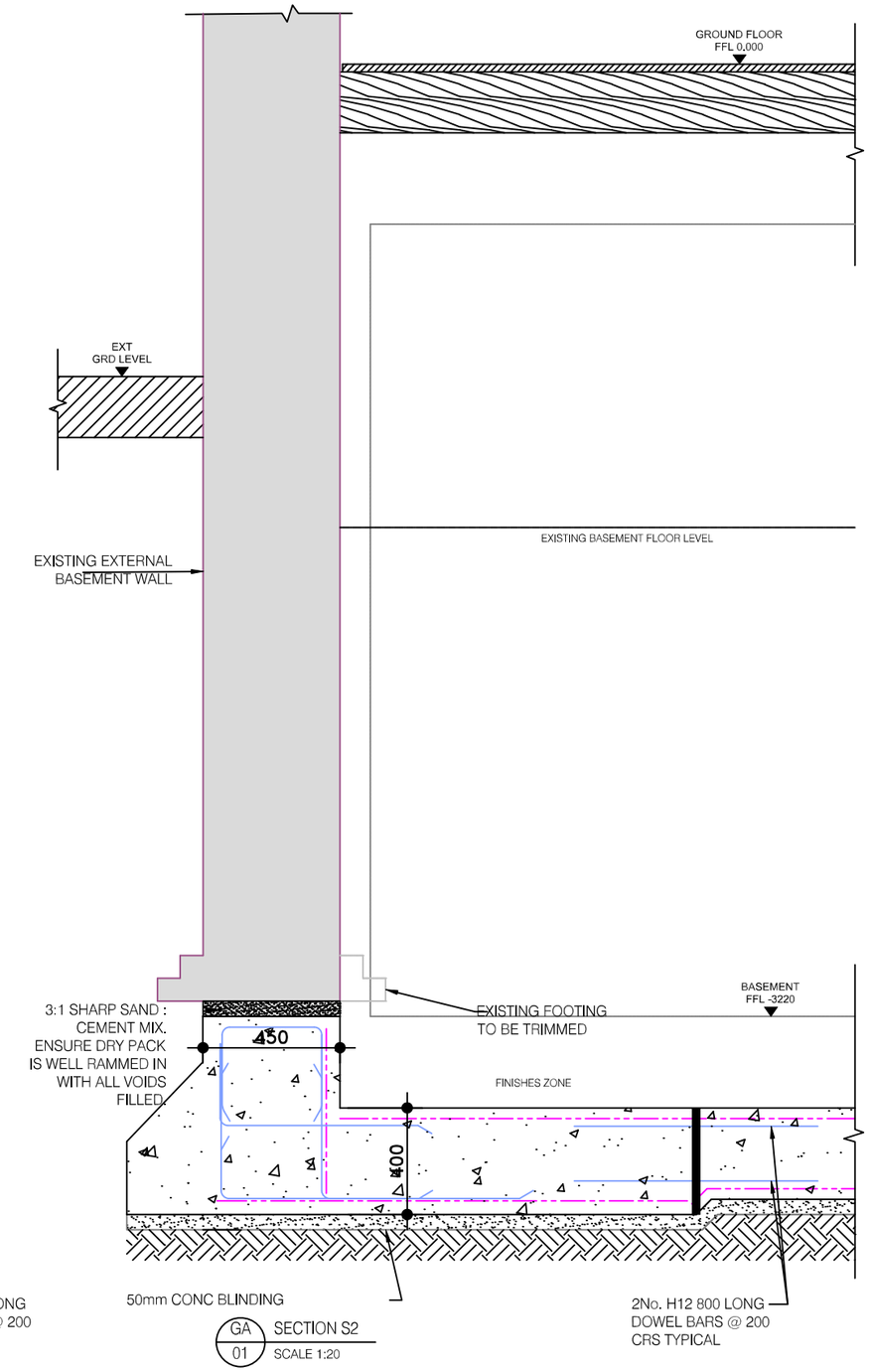


GA 01 SECTION S1
SCALE 1:20



GA 01 SECTION S2
SCALE 1:20

REV	DATE	BY	DETAILS OF REVISION
C			
B			
A	-	-	-

PROJECT
Flat 1, Giles Building
Upper Hampstead Walk
London, NW3 1DE

PROJECT NO.
S5577

DRAWING NO.
D01

REVISION
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TITLE
Structural Details Sheet 1 of 2

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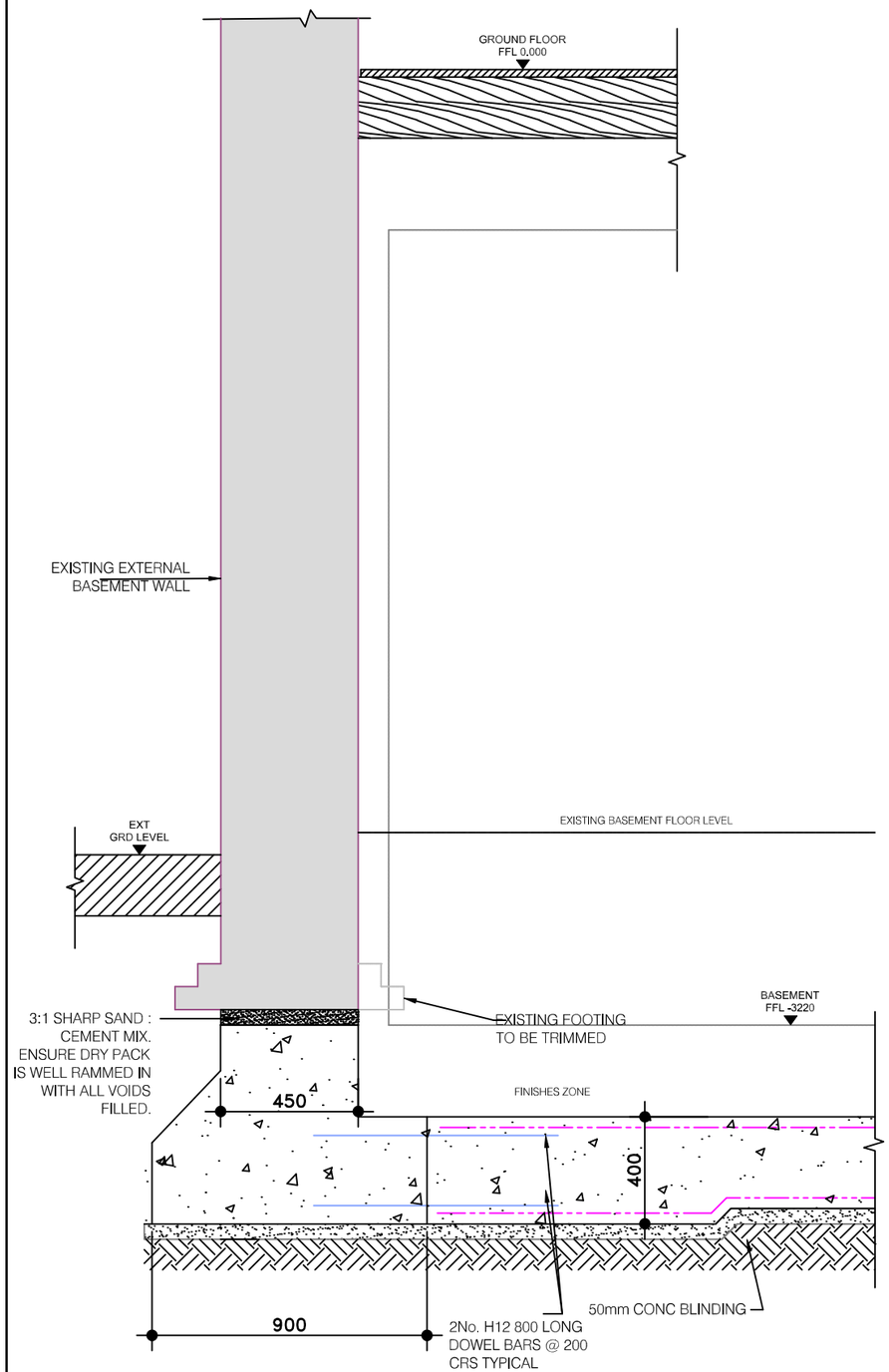
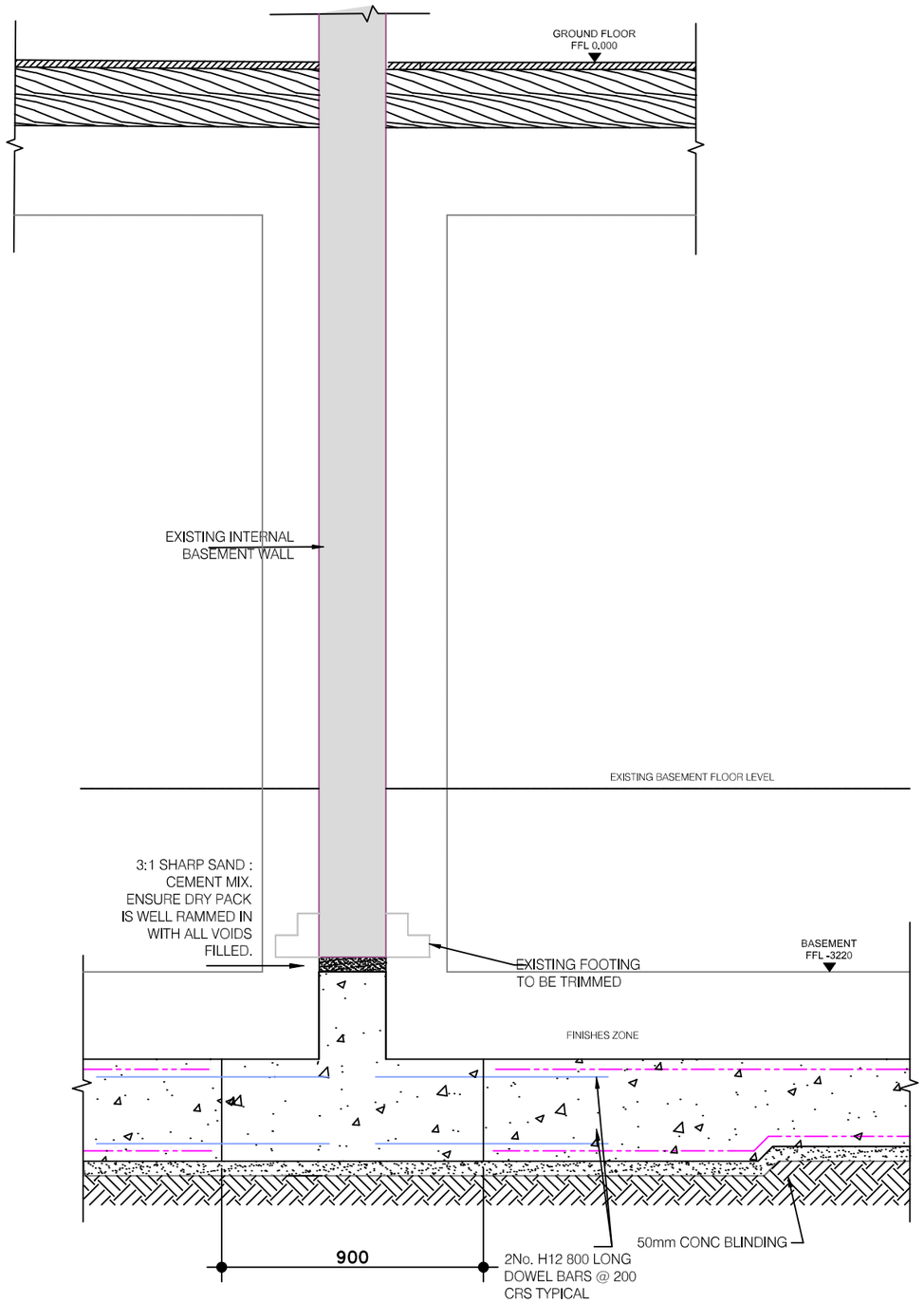


GA 02 SECTION S3
SCALE 1:20



GA 02 SECTION S4
SCALE 1:20

REV	DATE	BY	DETAILS OF REVISION
C			
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A	-	-	-

PROJECT
Flat 1, Giles Building
Upper Hampstead Walk
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PROJECT NO.
S5577

DRAWING NO.
D02

REVISION
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TITLE
Structural Details Sheet 2 of 2

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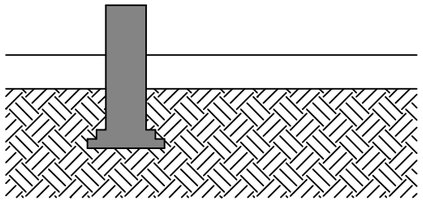
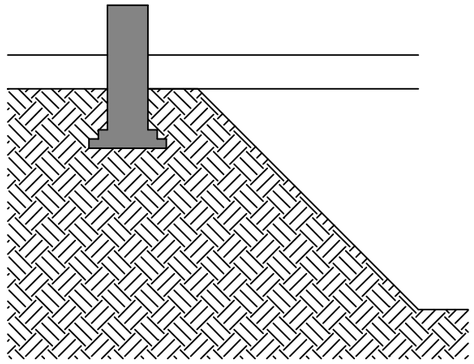
APPENDIX D

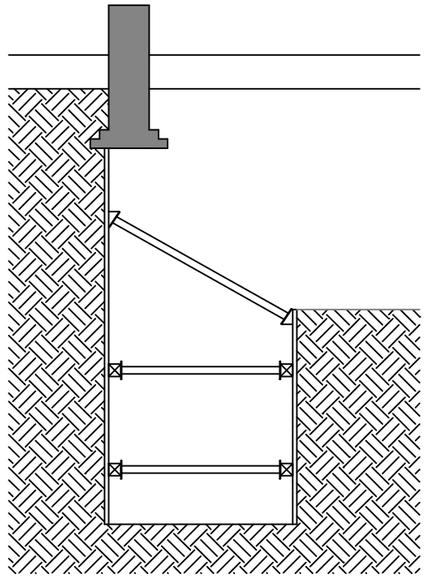
CONSTRUCTION SEQUENCE MS01 & 02



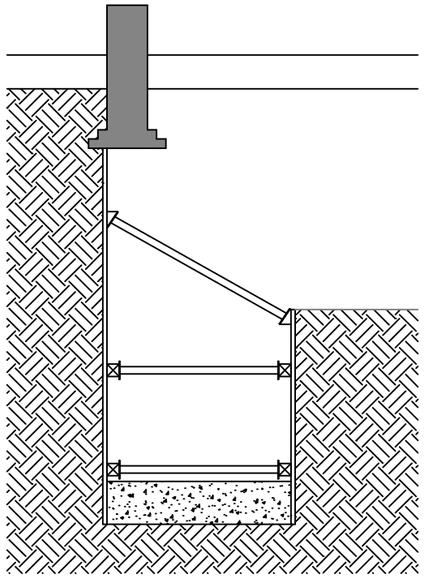
STAGE 0
EXISTING CONDITION



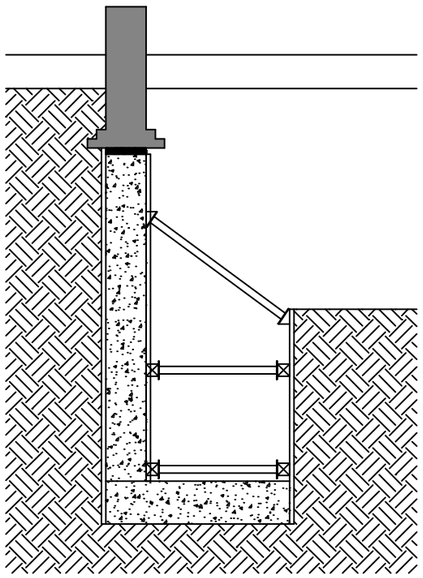
STAGE 1
GENERAL LEVEL REDUCTION



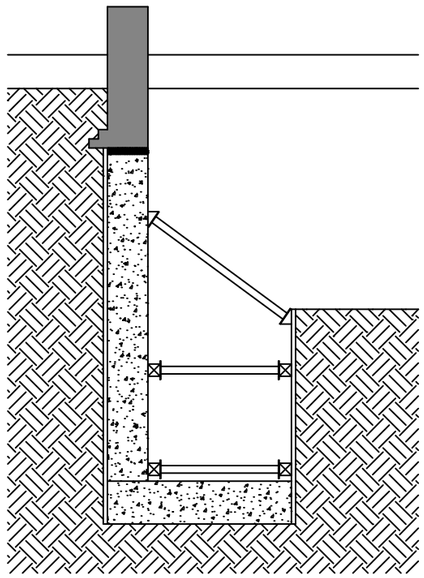
STAGE 2
EXCAVATE TO FORM UNDERPIN



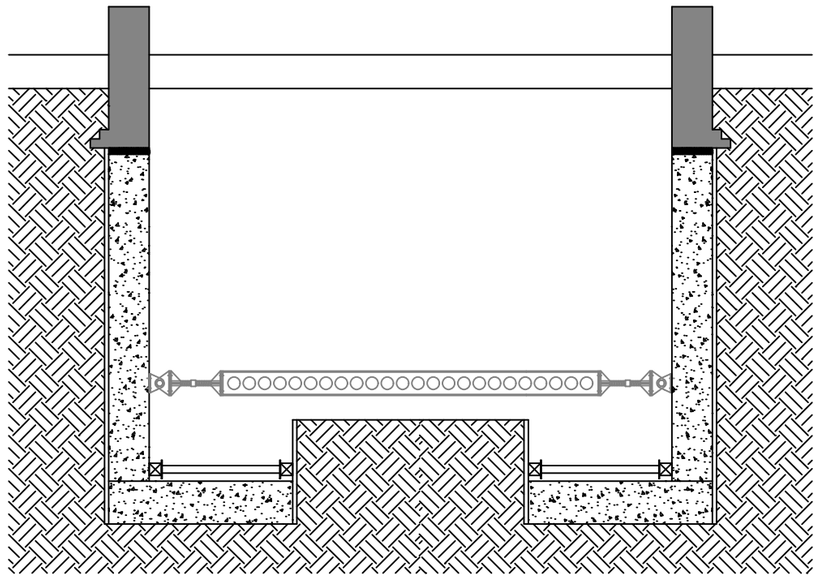
STAGE 3
CONCRETE BASE OF UNDERPIN



STAGE 4
ERECT SHUTTER
CONCRETE STEM OF UNDERPIN



STAGE 5
STRIKE SHUTTER WHEN CONCRETE HAS GAINED SUFFICIENT STRENGTH, DRYPACK, TRIM - OFF PROJECTING FOOTING, RE-PROP UNTIL BASEMENT SLAB IS CAST.



STAGE 6
COMMENCE EXCAVATION OF CENTRAL BERM.
ONCE EXCAVATION IS 500mm ABOVE FORMATION LEVEL
INSTALL PROPS ACROSS SITE AT LOW LEVEL.

TO BE READ IN CONJUCTION WITH
CONSTRUCTION METHOD STATEMENT

REV	DATE	BY	DETAILS OF REVISION
C			
B			
A	-	-	-

PROJECT
Flat 1, Giles Building
Upper Hampstead Walk
London, NW3 1DE

PROJECT NO.
S5577

DRAWING NO.
MS01

REVISION
-

TITLE
Underpinning Construction Methodology
Sheet 1 of 2

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JW

DATE
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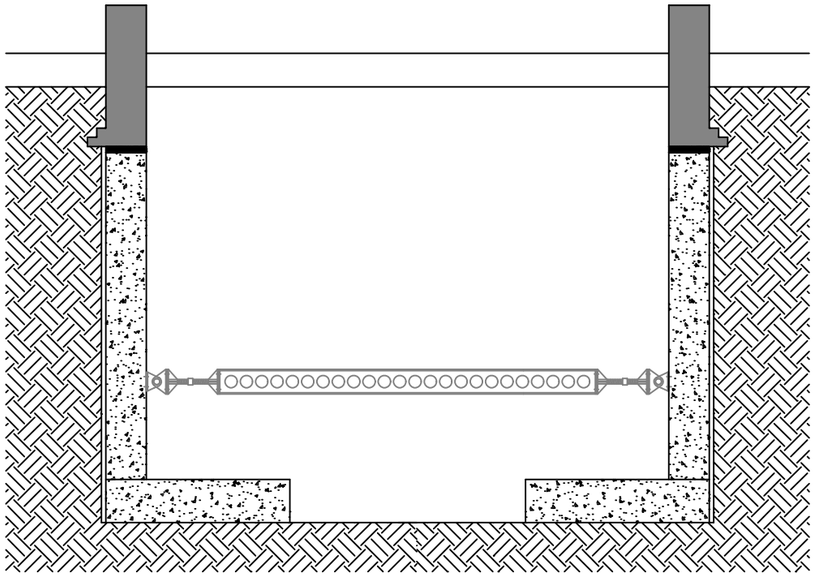
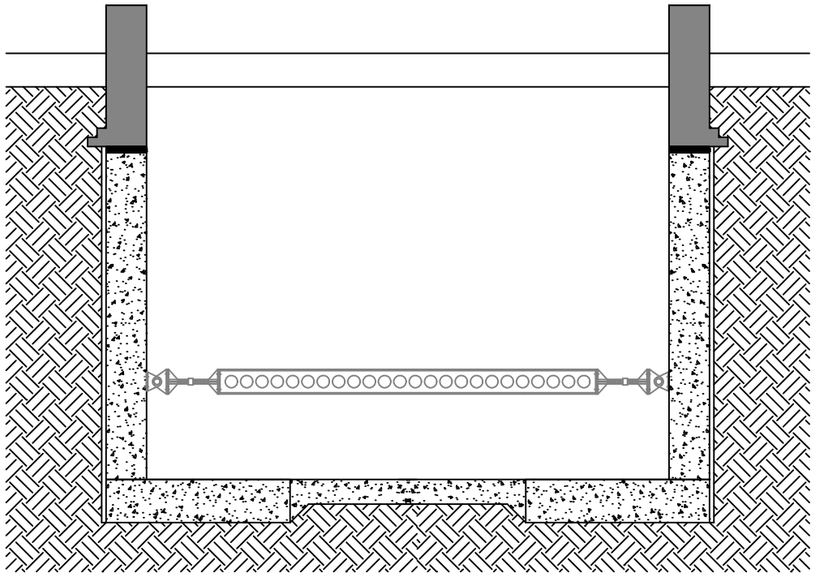
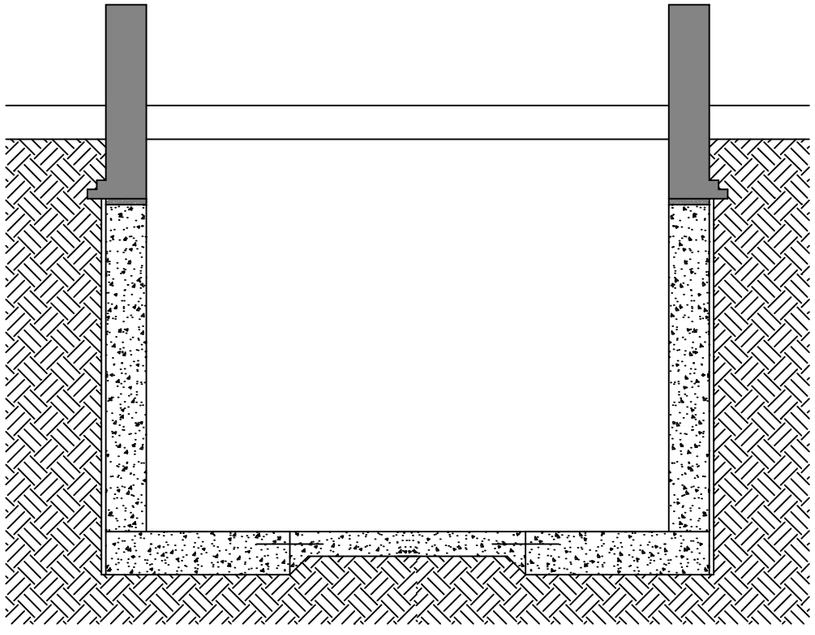


STAGE 7
COMPLETE EXCAVATION TO FORMATION LEVEL



STAGE 8
CAST BASEMENT SLAB AND LET CURE



STAGE 9
ALL PROPS REMOVED

TO BE READ IN CONJUCTION WITH
CONSTRUCTION METHOD STATEMENT

REV	DATE	BY	DETAILS OF REVISION
C			
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A	-	-	-

PROJECT
Flat 1, Giles Building
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PROJECT NO.
S5577

DRAWING NO.
MS01

REVISION
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TITLE
Underpinning Construction Methodology
Sheet 2 of 2

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APPENDIX E

UNDERPINNING SPECIFICATION

Specification:	**Underpinning**
Project:	**Flat 1, Giles Building, Upper Hampstead Road, NW3 1DE**
Date of issue:	**June 2024**
Prepared by:	**J S Brown**
Revision:	**-**

Underpinning Specification

1. The walls to the perimeter of the new basement shall be underpinned in reinforced concrete. The underpins shall take the vertical loads from the walls and horizontal loads from the earth.
2. Underpinning bases shall be excavated in short sections not exceeding 1000mm in width.
3. The sequence of the underpinning shall be such that any given underpin will be completed, dry-packed and a minimum period of 48 hours lapsed before an adjacent excavation commenced to form another underpin.
4. In the event that the existing foundations to the wall are found to be unstable, sacrificial steel jacks shall be installed underneath the foundation to prop the bottom few courses of bricks. These steel jacks shall be left in place and shall be incorporated into the concrete stem.
5. In the event that the ground is unstable, lateral propping shall be provided as required to the rear of the excavation and to the sides of the excavated working trench. The front and side faces of the excavation shall be propped using trench sheeting or plywood, timber boards and acrow props as appropriate. Sacrificial back – shutters shall be used to the rear face of the excavation (i.e. underneath the wall) if required. Cementitious grout will be poured behind the back – shutters to fill up the voids behind the back – shutters.
6. Excavation for an underpin section shall be dug in a day, and the concrete to the base shall be poured by the end of the same day.
7. The concrete to the stem of the underpin shall be poured the following day. This shall be poured up to within 50 – 75mm of the underside of the existing wall foundations.
8. On the following day, the gap between the concrete and the underside of the existing foundation shall be drypacked with Conbextra GP as manufactured by Fosroc Ltd.
9. Once the drypack has gained sufficient strength, any protrusions of the footings into our site shall be carefully trimmed back using hand tools to avoid causing any damage to the foundation. The protrusions shall be trimmed back to be flush in-line with the face of the wall above.
10. A minimum of 48 hours shall be allowed before adjacent sections are excavated to form a new underpin.
11. Adjacent underpins shall be connected using T12 dowel bars 800mm long, 400mm embedment each side, at 300mm vertical centres.
12. Concrete cover to reinforcement shall be 35mm for cast against shutter or the top surface of the basement slab, 50mm for cast against blinding and 75mm for cast against earth.
13. Grade of concrete shall be C35 with minimum cement content 300kg/m^3, maximum free water to cement ratio 0.60, slump 100mm.