Hardman Structural Engineers

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Basement Impact Assessment

For

New Basement

To

59 Solent Road, London, NW6 1TY

Ref. 2298

Date. October 2016

Hardman Structural Engineers

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Contents

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Introduction

This report references and follows the Camden Planning Guidance document entitled "Basements and Lightwells CPG4" issued on July 2015. Reference has also been made to the "Camden Geological, Hydrogeological and Hydrological Study" by Arup.

The level of assessment that has been undertaken is considered to be appropriate for the size of the project.

1. Screening

1.1 *Background information*

The property forms a Victorian three storey terraced residential property with no basement. The roof space has been extended into a loft level rooms circa 2011. A site location plan and photographs are shown in Figures 1 and 2.

A Basement extension construction has been carried out to the adjoining property No. 57 Solent Road circa 2010.

There is no basement construction to No.61 Solent Road.

At the front of the property there is a concrete hard-standing. To the rear there is also a hard-standing with a half paved garden.

Historical maps show that the property dates back to between 1874 and 1894. The maps show that the site was not developed previous to this.

Geological maps indicate that the soil for the area is London Clay with no superficial deposits.

The National Grid reference for the property is 525108, 185135.

There are two small trees next to the rear garden wall within the adjacent Neighbours garden to No.16 Sumatra Road.

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Figure 1. Site location plan

Figure 2. Front elevation

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It is proposed to form a new basement extension to extend the full length of the existing building footprint and also to extend into the garden area. It is also proposed to form a new side and rear extension at ground floor level. Refer to Appendix B for existing and proposed drawings.

The new basement will be constructed by introducing reinforced concrete underpinned foundations to No. 61 Solent Road side. The excavation is to be carried out in 1m long sections below the main party wall and in 1.5m long sections below the party garden wall.

1.2 Groundwater flow

In relation to Figure 23 of the Camden Geological, Hydrogeological and Hydrological Study by Arup, the proposed basement will form a relatively small isolated obstruction in the ground to any groundwater flow as there is not a high density of basements in the local area. It is more significant that the underlying ground conditions (predicted on the geological maps and encountered in a borehole site investigation) is London Clay.

In relation to Figure 1 of the Camden Planning Guidance for Basements and Lightwells, the following are responses to the questions posed regarding subterranean ground water flow:

Question 1a:
No. According the Camden Aquifer Designation Map, the site located where London Clay does outcrop at the surface so the site is not directly above aquifer. In addition, from a site investigation carried out the borehole indicates that the site is not located directly above an aquifer.

Question 1b:
No. The borehole extended to 8m depth from ground level with no water table been found.

Question 2:
No. Hydrological and Geological maps indicate that the site is not within 100 m of a watercourse, well or spring line.

Question 3:
No. The site is not within the catchment of the ponds to Hampstead Heath.

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Question 4:
No. The new basement is to be located below the footprint of the existing ground floor and extend further into the garden. The existing section of hardstanding area to be replaced by the new extension. So there will not be an increase in hard surfaced paved areas.

Question 5:
No. There will be no increase in surface water discharge into the ground.

Question 6:
No. The site is not close to any ponds or springs.

1.3 Land Stability

In relation to Figure 2 of the Camden Planning Guidance for Basements and Light wells, the following are responses to the questions posed regarding slope stability:

Question 1:
No. A site walkover was undertaken. The topography of the site and surrounding area is fairly level with a slope of approximately 100mm from the boundary line to No. 61 Solent Road side to the boundary line to No. 57 Solent Road side, which is approximately 1 in 50.

Question 2:
No. There will be no re-profiling of the existing landscape greater than 7 degrees.

Question 3:
No. The basement does not neighbour land with a greater slope than 7 degrees, as indicated on the measured survey and ordnance survey of the area.

Question 4:
No. The site is not within a wider hillside setting in which the slope is greater than 7 degrees.

Question 5:
Yes. London Clay is the shallowest strata on site, as indicated on geological maps and site investigation of the site.

Question 6:

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No. It is not proposed to fell any trees. The area of the new basement is not within a tree protection area.

Question 7:
No. There is no sign of subsidence at the existing property and we are not aware of there being a history of seasonal shrink–swell subsidence in the local area.

Question 8:
No. Hydrological and Geological maps indicate that the site is not within 100 m of a watercourse, well or spring line.

Question 9:
No. Historical maps indicate that the area was a green field site before the existing property was constructed. The North Camden Geological map indicates worked areas within the borough. The site is not within one of these areas. The reading from a borehole carried out also indicates that the soil below the topsoil is virgin clay.

Question 10:
No. According the Camden Aquifer Designation Map, the site located where London Clay does outcrop at the surface so the site is not directly above aquifer. From a site investigation carried out the borehole indicates that the site is not located directly above an aquifer. The borehole extended to 8m depth from ground level with only London Clay being encountered.

Question 11:
No. The site is not within 50m of the Hampstead Heath ponds.

Question 12:
No. The basement is not within 5m of a highway or pedestrian right of way.

Question 13:
Yes. The proposed basement will increase the differential depth of foundations along the party wall line with the neighbouring property at No. 61.

Question 14:
No. According to Transport Infrastructure Map there is no underground tunnels nearby. The only railway line nearby is the Thameslink.

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1.4 *Surface flow and flooding*.

A flood risk assessment has been carried out across the borough identifying streets that have previously flooded and are at higher risk of surface water flooding.

In relation to Figure 3 of the Camden Planning Guidance for Basements and Lightwells, the following are responses to the questions posed regarding surface flow and flooding:

Question 1:
No. Hampstead Heath Surface Water Catchments and Drainage Map indicate that the property is not within the catchment of the pond chains on Hampstead Heath.

Question 2:
No. It is proposed for the new surface water flows from the new extension to be similar to the existing.

Question 3:
No. There will be no change in the proportion of hard standing / paved areas from the new rear extension and basement as the existing rear garden is already paved.

Question 4:
No. There will be no change in inflows of surface water being received by the adjacent buildings.

Question 5:
No. There will also be no change in the quality of surface water being received by the adjacent properties or downstream water courses.

Question 6:
No. The property is not within the areas with the potential to be at risk of surface water flooding. However, the site is close to areas that are at risk of surface water flooding. Therefore, a Flood Risk Assessment will be carried out.

2 Scoping

Where the answer was yes or unknown in the Land Stability section of the screening section our response is as follows:

Question 5:
The basement proposed beneath the property will be cast in London Clay.

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Question 13:
The new basement will significantly increase differential depth of foundations relative to neighbouring properties.

To address the above issues, a site investigation has been carried out to consider geotechnical soil properties and existing foundation details. The results of this investigation will be used to develop an appropriate structural solution for the proposed works.

3 Site Investigation and Study

3.1 Scope and Summary

A site investigation has been carried out by Chelmer Site Investigations Ltd in August 2016 (refer to Appendix A) to determine the following: soil conditions; existing footing details including to the to the party wall area; the presence of any groundwater.

Two 8m deep borehole were drilled at the front and rear of the property and two trial pits were carried out (one to No.61 Solent road side and one to front wall).

A factual report has been prepared by Chelmer Site Investigations Ltd. This is attached to the Basement Impact Assessment.

Both trial pits and boreholes encountered London Clay beneath the existing footing from approximately 0.7m depth.

The trial pits indicate that the party wall footing to No. 61 is sat on shallow concrete strip footings onto London Clay.

No water was encountered in the 8m deep bore holes.

Samples were taken and laboratory tested for moisture content and liquid limit.

Site testing was undertaken to record insitu shear strength.

3.2 Assessment of Site Investigation (to cover aspects of an Interpretative Report)

3.2.1 Discussion

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The site is underlain by London Clay at shallow depths. The footings to the existing parts of the building and to No.61 Solent Road party wall side are concrete strip footings onto firm London Clay at shallow depths.

Groundwater was not encountered in the site investigation.

It is noted from the boreholes that the clay strata is becoming considerably stiffer at 2m depth below ground level. This highlights the need to consider the effects of differential settlement with part of the property supported on deep foundations (ie. underpinning) and the remainder on shallow foundations as existing.

From the results of the shear vane tests the clay immediately below the existing footings has an allowable bearing capacity of at least 150 kN/m^2.

The liquid limit test results find that the soils are classified as "high" to "very high" on the plasticity chart. This is not unusual for London Clays.

Although the soils encountered were London Clay with very little made ground above it, precautionary contamination testing should be carried out prior to construction to verify the soils are inert. This will also be required for removal of spoil from site.

Trial pits dug indicate that the existing footings are approximately 500 mm wide bearing onto clay below. The existing bearing pressure below the existing footings to the property is around 150 kN/m^2. This is within the allowable bearing pressure for the underlying soils. There is no sign of subsidence or settlement of the existing foundations.

There is likely to be limited heave associated with a 3m deep excavation for the new basement. Consideration of this been taken into account in the design.

There is an absence of drainage features on the site. It would appear that any below ground drainage only serves the property itself. An intrusive investigation of below ground drainage will need to be carried out to verify this.

There are two small trees in the Neighbour's garden at No. 16 Sumatra Road which is approximately 5m from the rear edge of the basement. The trees have not been identified. However, considering that the new basement construction will deepen the foundations to approximately 3m below ground level, the proposed foundations will satisfy the NHBC guidelines on Building near to Trees.

3.2.2 Design Proposal

The party walls with adjacent properties at No. 61 Solent Road and rear half party wall at No.57 respectively will be underpinned. The underpinning will be formed using reinforced concrete and will also act as a retaining wall. The basement slab

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forms a ground bearing reinforced concrete slab and the ground floor level joists will be replaced by new timber joists.

Two 8m x 2m x 300mm deep void formers will be included below the basement slab to protect against heave pressures. The dead weight of the concrete will also help to act against heave pressures from the excavations.

Underpinning the party wall with No. 61 creates the potential for differential settlement between adjacent parts of the properties supported on shallow and deep foundations respectively. However, the bearing pressure on the existing party wall footings is some way below the allowable bearing capacity for the soil conditions. There is no sign of any cracking in the property to No. 61 Solent Road.

The wall loading has been applied along this line and onto the underlying soil for around a hundred years. The clay soils beneath the footing will therefore be well consolidated now. The underpinned wall will be founded on stiffer clay at greater depth with a relatively low bearing pressure. Therefore, the scope for differential settlement of the adjacent footings at differing depths is very limited.

With respect to the potential for heave, construction of the basement will be phased to allow some relaxation of the ground (heave) to take place as the excavation proceeds.

Further measures should be taken against heave by initially reducing site levels in the area of the proposed basement extension to a safe level to avoid undermining existing perimeter wall footings. Void formers will also be used beneath parts of the new basement slab.

An internal tanking system will be employed in order to waterproof the basement.

It would be prudent to undertake monitoring of the properties at No. 61 Solent Road respectively during the underpinning works.

4. Impact Assessment

4.1 *Overall assessment*

The party walls with adjacent properties at No. 61 Solent Road and rear half party wall at No.57 respectively will be underpinned. Underpinning the party wall with No. 61 creates the potential for differential settlement between adjacent parts of the properties supported on shallow and deep foundations respectively. However, the underpinned wall will be founded on stiffer clay at greater depth with a relatively low bearing pressure. Therefore, the scope for differential settlement of the adjacent footings at differing depths is very limited.

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There is likely to be limited heave associated with a 3m deep excavation for the new basement. Consideration of this been taken into account in the design.

Considering that the new basement construction will deepen the foundations to approximately 3m below ground level, the proposed foundations will satisfy the NHBC guidelines on Building near to Trees.

4.2 Sequence of works

Below is a sequence of works to mitigate movement of the property or adjoining property. Sketches are also attached to illustrate this in Appendix C.

The construction sequence will be as follows:

Stage 1

- Underpin the main party walls to No. 61 Solent Road side by casting reinforced concrete retaining wall in sections.
- Create two sections of reinforced concrete retaining wall to form a base for the proposed steel frame between ground and first floor level.

Stage 2

- Install main proposed steel structures at first floor level.

Stage 3

- Carry on the underpinning process to the rest of the perimeter walls to both No. 57 and No. 61 Solent Road sides by casting reinforced concrete retaining wall in sections.

Stage 4

- Carefully demolish the existing internal walls at ground floor level and carry out excavation for the footprint of the basement area. The excavation work to carry out in stages.

Stage 5

- Install proposed structures at basement floor and ground floor levels.

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4.3 *Monitoring*

During the period of formation of the new basement areas beneath to the existing property, monitoring of the adjacent properties to No. 61 Solent Road, No. 57 Solent Road and No. 16 Sumatra Road will be carried out respectively. This is intended to monitor the impact of the works at No. 59 Solent Road on the adjacent properties to ensure they are not adversely affected by the works.

Monitoring will be a carried out by forming fixed points as references on the front, rear and side of the property to No. 59 Solent Road in conjunction with targets placed on the walls of No. 61 Solent Road, No. 57 Solent Road and No. 16 Sumatra Road respectively.

Independent reference points will be established in total so that a comparison among the displacements measured at the fixed points and displacements measured at the other points can then be made. The monitoring points will cover elevations to the surrounding properties and the perimeter of No. 59 Solent Road. Refer to the Appendix D for details of these positions.

The points may be summarised as follows:

P1: on front elevation to No.61 Solent Road main building
P2: on front elevation to No.61 Solent Road main building
P3: on front elevation to No.57 Solent Road main building
P4: on front elevation to No.57 Solent Road main building
P5: on rear elevation to No.59 Solent Road rear extension
P6: on rear elevation to No.59 Solent Road main building
P7: on rear elevation to No.59 Solent Road main building
P9: on rear elevation to No.61 Solent Road main building
P10: on rear elevation to No.61 Solent Road main building
P11: on rear elevation to No.61 Solent Road main building
P12: on rear elevation to No.57 Solent Road main building
P13: on rear elevation to No.57 Solent Road main building
P14: on side elevation to No.61 Solent Road rear extension
P15: on side elevation to No.61 Solent Road rear extension
P16: on boundary garden wall with No.57 Solent Road
P17: on boundary garden wall with No. 16 Sumatra Road
P18: on rear elevation to No.16 Sumatra Road
P19: on front elevation to No.59 Solent Road main building
P20: on front elevation to No.59 Solent Road main building
P21: on front elevation to No.59 Solent Road main building

Initially, at the start of the basement works, readings will be taken on a weekly basis. Assuming no significant movement is identified, the intervening period will be increased after approximately three months. As the basement works progress further the frequency of the readings will be reviewed.

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After each round of readings, a review will take place to compare those taken and to determine whether any significant movement has taken place. A summary report would be prepared each month for issue to the Party Wall Surveyor.

For the purposes of this exercise any movement recorded of between 3-5mm would be immediately declared to the Party Wall Surveyor. Any movement recorded of greater than 5mm would lead to works ceasing immediately whilst an assessment was made of the cause of any such movement.

Paul Hardman CEng MICE MIStructE

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APPENDICES

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A Site investigation report

Chelmer
Site Investigations
'Groundbreaking Services'

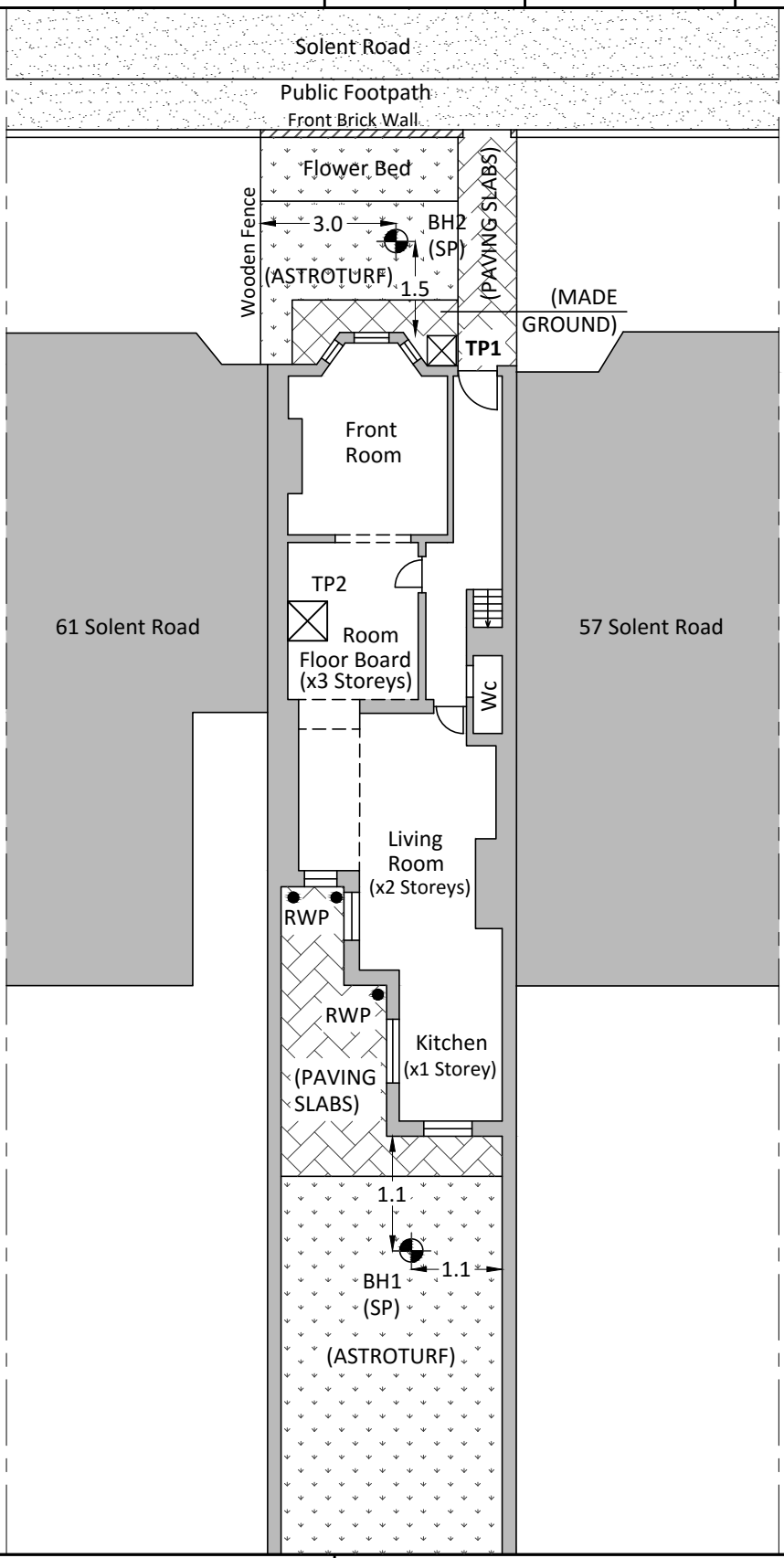
Factual Report

Site	59 Solent Road London NW6 1TY
Client	Mahesh Varia
Date	31st August 2016
Our Ref	FACT/7543

Chelmer Site Investigation Laboratories Ltd
Unit 15 East Hanningfield Industrial Estate, Old Church Road, East Hanningfield, Essex CM3 8AB
Essex: 01245 400930 | London: 020 36409136 | info@siteinvestigations.co.uk | www.siteinvestigations.com

FACTUAL REPORT CONTENT

Client: Mahesh Varia	**Scale:** N.T.S.	**Sheet:** 1 of 1	**Date:** 31.08.16	
Location: 59 Solent Road, London NW6 1TY	**Job No:** 7543	**Weather:** Fine	**Drawn by:** TP	**Checked by:** JH



Notes: All dimensions in metres.

Key:

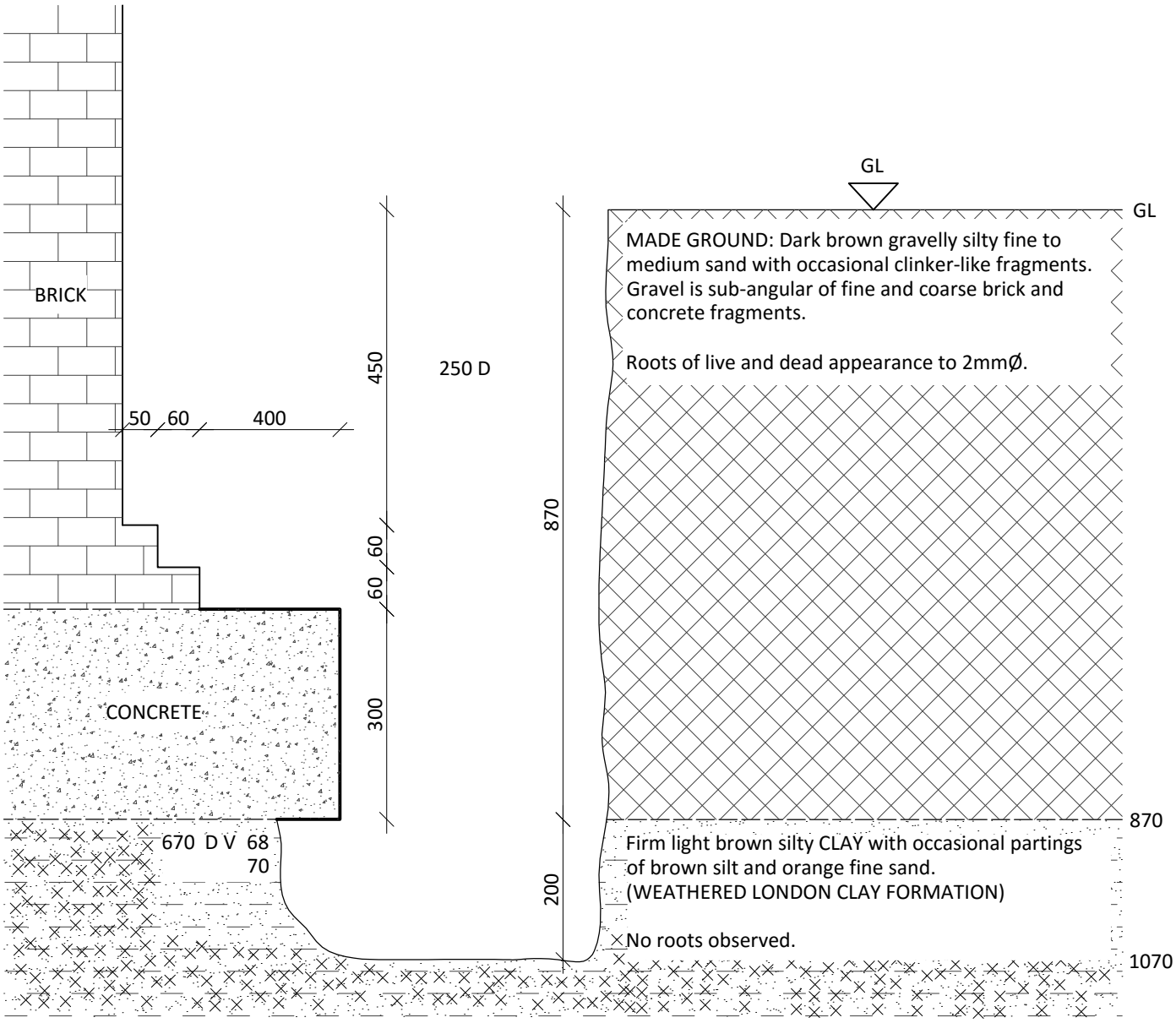
BH — Borehole

TP — Trial pit

RWP — Rainwater pipe

Chelmer Site Investigations
'Groundbreaking Services'

Client: Mahesh Varia	**Scale:** N.T.S.	**Sheet No:** 1 of 1	**Date:** 31.08.16
Location: 59 Solent Road, London NW6 1TY	**Job No:** 7541	**Trial pit No:** 1	**Weather:** Internal
Excavation method: Hand Tools		**Drawn by:** TP	**Checked by:** JH

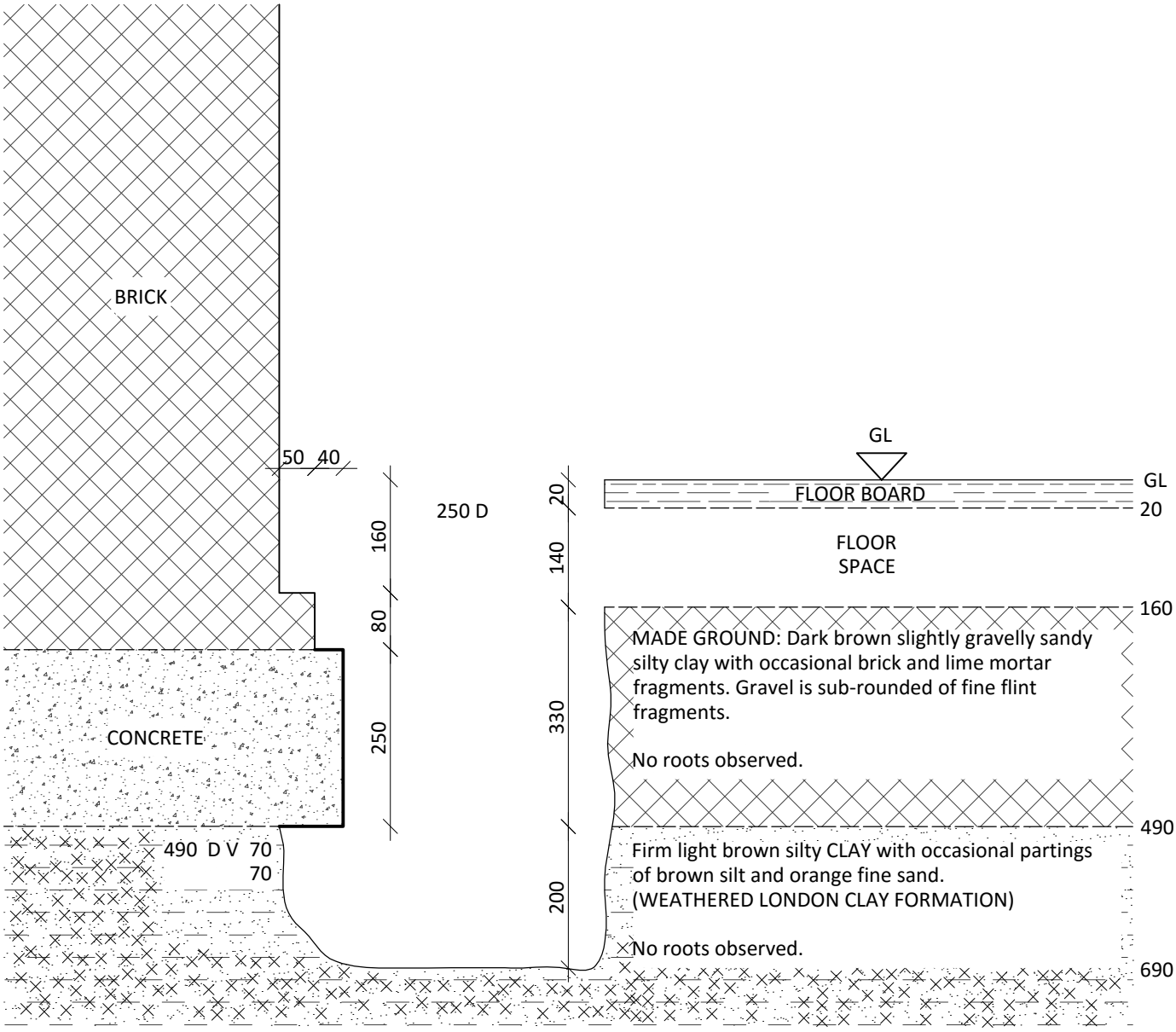


TRIAL PIT 1 TERMINATES AT 1070mm

Remarks: All dimensions in millimetres.

Key: GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

Client: Mahesh Varia	**Scale:** N.T.S.	**Sheet No:** 1 of 1	**Date:** 31.08.16
Location: 59 Solent Road, London NW6 1TY	**Job No:** 7541	**Trial pit No:** 2	**Weather:** Internal
Excavation method: Hand Tools		**Drawn by:** TP	**Checked by:** JH



TRIAL PIT 2 TERMINATES AT 690mm

Remarks: All dimensions in millimetres.
Unrepresentative sample.

Key: GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

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Client: Mahesh Varia	Scale: N.T.S.	Sheet No: 1 of 1	Weather: Fine	Date: 26.08.16
Location: 59 Solent Road, London NW6 1TY	Job No: 7543	Borehole No: 1	Boring method: CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
GL	ASTROTURF	0.01							
0.01	MADE GROUND: Dark brown slightly gravelly sandy silt with rare tile and clinker-like fragments. Gravel is sub-angular of fine to coarse brick and concrete fragments.	0.09		D			No roots observed.		0.25
				D					0.5
0.1	MADE GROUND: Dark brown silty clay with occasional gravel. Gravel is sub-angular of brick fragments.	0.6		D	V	68 70			1.0
0.7	Firm orange-brown silty CLAY with occasional partings of brown silt and orange fine sand. (WEATHERED LONDON CLAY FORMATION)			D					1.5
	.....becoming stiff from 2.0m.			D	V	76 76			2.0
				D					2.5
	.....becoming dark brown from 3.3m.			D	V	80 82			3.0
				D					3.5
				D	V	88 90			4.0
		7.4		D					4.5
				D	V	100 102			5.0
				D					5.5
	.....becoming very stiff from 6.0m.			D	V	120+ 120+			6.0
				D	V	120+ 120+			7.0
8.1				D	V	120+ 120+			8.0
	BOREHOLE TERMINATED at 8.1m								

Drawn by: TP **Approved by:** JH

Remarks: Borehole dry and open on completion. 75mmØ plastic standpipe installed to 8.0m (2.0m plain pipe, 6.0m slotted pipe, 2.0m bentonite sealing, 6.0m shingle surrounding, bung, valve and square plastic cover).

Key: CFA Continuous Flight Auger
GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

Chelmer Site Investigations 'Groundbreaking Services'

Client: Mahesh Varia	Scale: N.T.S.	Sheet No: 1 of 1	Weather: Fine	Date: 26.08.16
Location: 59 Solent Road, London NW6 1TY	Job No: 7543	Borehole No: 2	Boring method: CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
GL	ASTROTURF	0.01							
0.01	MADE GROUND: Dark brown slightly gravelly sandy silt with occasional brick fragments. Gravel is sub-angular of fine to coarse concrete fragments.	0.09		D			No roots observed.		0.25
				D					0.5
0.1	MADE GROUND: Dark brown silty clay with occasional gravel. Gravel is sub-angular of brick fragments.	0.6		D	V	70 70			1.0
0.7	Firm dark brown silty CLAY with occasional partings of brown silt and orange fine sand. (WEATHERED LONDON CLAY FORMATION)			D					1.5
	.....becoming stiff from 2.0m.			D	V	74 76			2.0
				D					2.5
				D	V	82 80			3.0
				D					3.5
				D	V	86 86			4.0
		7.4		D					4.5
				D	V	74 78			5.0
				D					5.5
				D	V	112 120+			6.0
	.....becoming very stiff from 7.0m.			D	V	120+ 120+			7.0
8.1				D	V	120+ 120+			8.0
	BOREHOLE TERMINATED at 8.1m								

Drawn by: TP **Approved by:** JH

Remarks: 75mmØ plastic standpipe installed to 8.0m (2.0m plain pipe, 6.0m slotted pipe, 2.0m bentonite sealing, 6.0m shingle surrounding, bung, valve and square plastic cover).

Key: CFA Continuous Flight Auger
GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

Mahesh Varia
59 Solent Road, London NW6 1TY
31.08.16
TRIAL PIT 1 PHOTOGRAPH

Mahesh Varia
59 Solent Road, London NW6 1TY
31.08.16
TRIAL PIT 2 PHOTOGRAPH

UKAS TESTING
8284

Chelmer
Geotechnical Laboratories
'Groundbreaking Services'

Laboratory Report

Site	**59 Solent Road, London. NW6 1TY**
Client	**Mahesh Varia**
Date	**20-Sep-16**
Our Ref	**CSI7543**
CGL Ref	**CGL7543**

Chelmer Site Investigation Laboratories Ltd
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Essex: 01245 400930 | London: 0203 6409136 |info@siteinvestigations.co.uk | www.siteinvestigations.com

UKAS TESTING
8284

Chelmer Geotechnical Laboratories
'Groundbreaking Services'

Content Summary

This report contains all test results as indicated on the test instruction/summary.

CGL Reference : CGL7543
Client Reference : CSI7543
For the attention of : Mahesh Varia
This report comprises of the following :

Notes :

General

Please refer to report summary notes for details pertaining to methods undertaken and their subsequent accreditations

Samples were supplied by Chelmer Site Investigations

All tests performed in-house unless otherwise stated

Deviant Samples

Samples were received in suitable containers	Yes
A date and time of sampling was provided	Yes
Arrived damaged and/or denatured	No

Laboratory Testing Results

BS 1377 : 1990

Chelmer Geotechnical Laboratories "Groundbreaking Services"

Job Number : CGL7543
Client : Mahesh Varia
Client Reference : CSI7543
Site Name : 59 Solent Road, London. NW6 1TY

Date Received : 08/09/2016
Date Testing Started : 15/09/2016
Date Testing Completed : 20/09/2016
Laboratory Used : Chelmer Geotechnical, CM3 8AB

Sample Ref			Sample Type	*Moisture Content (%) [1]	*Soil Faction > 0.425mm (%) [2]	*Liquid Limit (%) [3]	*Plastic Limit (%) [4]	*Plasticity Index (%) [5]	*Liquidity Index (%) [5]	*Modified Plasticity Index (%) [6]	*Soil Class [7]	Filter Paper Contact Time (h) [8]	*Soil Sample Suction (kPa)	Insitu Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	*pH Value [11]	*Sulphate Content (g/l)		
BH/TP/WS	Depth (m)	UID															SO_3 [12]	SO_4 [13]	Class [14]
BH1	1.50	78146	D	34	<5	74	23	51	0.22	48	CV								
BH1	3.00	78147	D	29	<5	67	23	44	0.13	42	CH			81					
BH1	4.00	78148	D	29	<5	68	24	44	0.11	42	CH			89					
BH1	8.00	78149	D	29	<5	70	25	45	0.10	43	CH			120+					

Notes :- *UKAS Accredited Tests

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils
[8] In-house method S9a adapted from BRE IP 4/93
[9] Values of shear strength were determined in situ by Chelmer Site Investigations using a Pilcon hand vane or Geonor vane (GV).
[10] BS 1377 : Part 3 : 1990, Test No 4
[11] BS 1377 : Part 2 : 1990, Test No 9
[12] BS 1377 : Part 3 : 1990, Test No 5.6
[13] $SO_4 = 1.2 \times SO_3$
[14] BRE Special Digest One (Concrete in Aggressive Ground) 2005

Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

Key

D - Disturbed sample
B - Bulk sample
U - U100 (undisturbed sample)
W - Water sample
ENP - Essentially Non-Plastic
U/S - Underside Foundation

UKAS TESTING 8284

Comments :-

Technician :- HS/SW
Checked By :- HS
Date Checked :- 21-Sep-16

Laboratory Testing Results

BS 1377 : 1990

Chelmer Geotechnical Laboratories "Groundbreaking Services"

Job Number : CGL7543
Client : Mahesh Varia
Client Reference : CSI7543
Site Name : 59 Solent Road, London. NW6 1TY

Date Received : 08/09/2016
Date Testing Started : 15/09/2016
Date Testing Completed : 20/09/2016
Laboratory Used : Chelmer Geotechnical, CM3 8AB

Sample Ref			Sample Type	*Moisture Content (%) [1]	*Soil Faction > 0.425mm (%) [2]	*Liquid Limit (%) [3]	*Plastic Limit (%) [4]	*Plasticity Index (%) [5]	*Liquidity Index (%) [5]	*Modified Plasticity Index (%) [6]	*Soil Class [7]	Filter Paper Contact Time (h) [8]	*Soil Sample Suction (kPa)	Insitu Shear Vane Strength (kPa) [9]	Organic Content (%) [10]	*pH Value [11]	*Sulphate Content (g/l)		
BH/TP/WS	Depth (m)	UID															SO_3 [12]	SO_4 [13]	Class [14]
BH2	1.00	78150	D	33	<5	77	25	52	0.14	50	CV			70					
BH2	2.50	78151	D	31	<5	67	24	43	0.16	41	CH								
BH2	3.50	78153	D	33	<5	69	23	46	0.21	44	CH								
BH2	6.00	78154	D	37	<5	68	24	44	0.29	42	CH			116					

Notes :- *UKAS Accredited Tests

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils
[8] In-house method S9a adapted from BRE IP 4/93
[9] Values of shear strength were determined in situ by Chelmer Site Investigations using a Pilcon hand vane or Geonor vane (GV).
[10] BS 1377 : Part 3 : 1990, Test No 4
[11] BS 1377 : Part 2 : 1990, Test No 9
[12] BS 1377 : Part 3 : 1990, Test No 5.6
[13] $SO_4 = 1.2 \times SO_3$
[14] BRE Special Digest One (Concrete in Aggressive Ground) 2005

Note that if the SO_4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

Key

D - Disturbed sample
B - Bulk sample
U - U100 (undisturbed sample)
W - Water sample
ENP - Essentially Non-Plastic
U/S - Underside Foundation

UKAS TESTING 8284

Comments :-

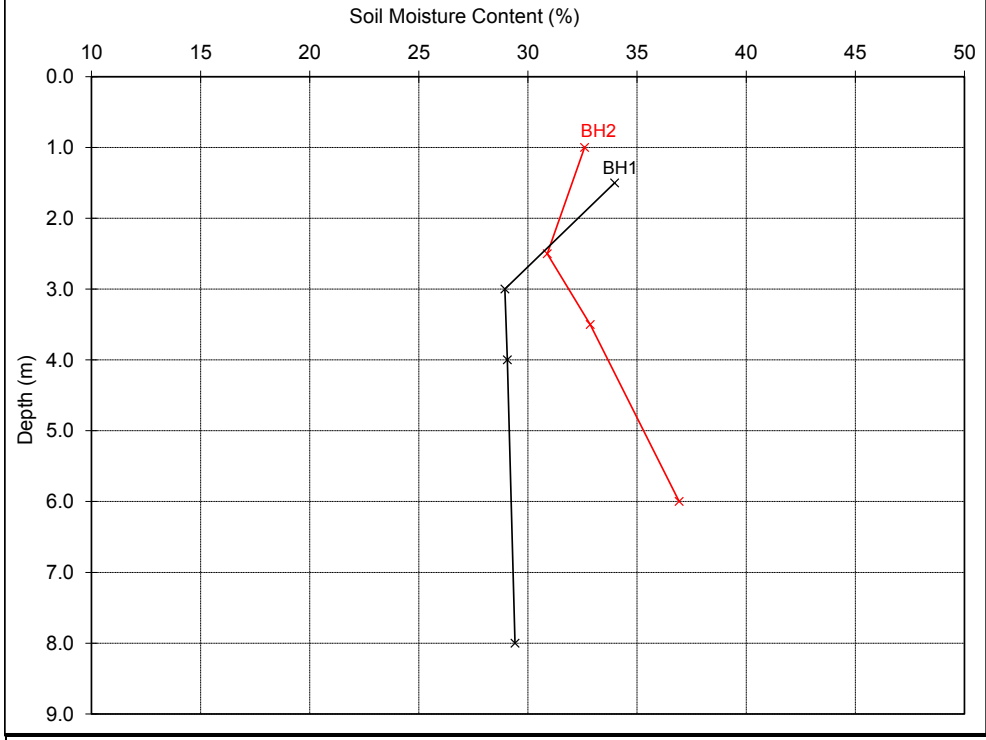
Technician :- HS/SW
Checked By :- HS
Date Checked :- 21-Sep-16

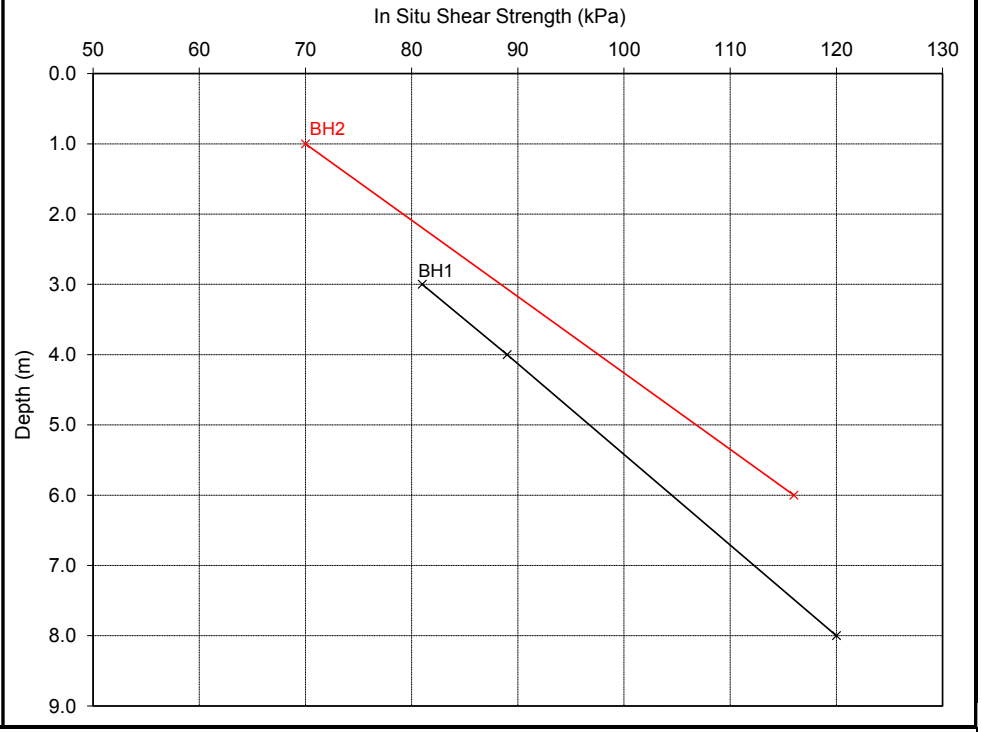
Laboratory Testing Results

Moisture Content/Shear Strength Profile

Chelmer Geotechnical Laboratories 'Groundbreaking Services'

Job Number :	CGL7543	Date Received :	08/09/2016
Client :	Mahesh Varia	Date Testing Started :	15/09/2016
Client Reference :	CSI7543	Date Testing Completed :	20/09/2016
Site Name :	59 Solent Road, London. NW6 1TY	Laboratory :	Chelmer Geotechnical Laboratories, CM3 8AB





Notes :-

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder (calculated in accordance with BS 1377: Part 2 : 1990, cl.3.2.4 note 1) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly over consolidated clays) at shallow depths.

Unless otherwise stated, values of Shear Strength were determined in situ by Chelmer Site Investigations using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa. (Not UKAS accredited)

UKAS TESTING 8284

Comments :-

Checked By :- HS Date Checked :- 21-Sep-16

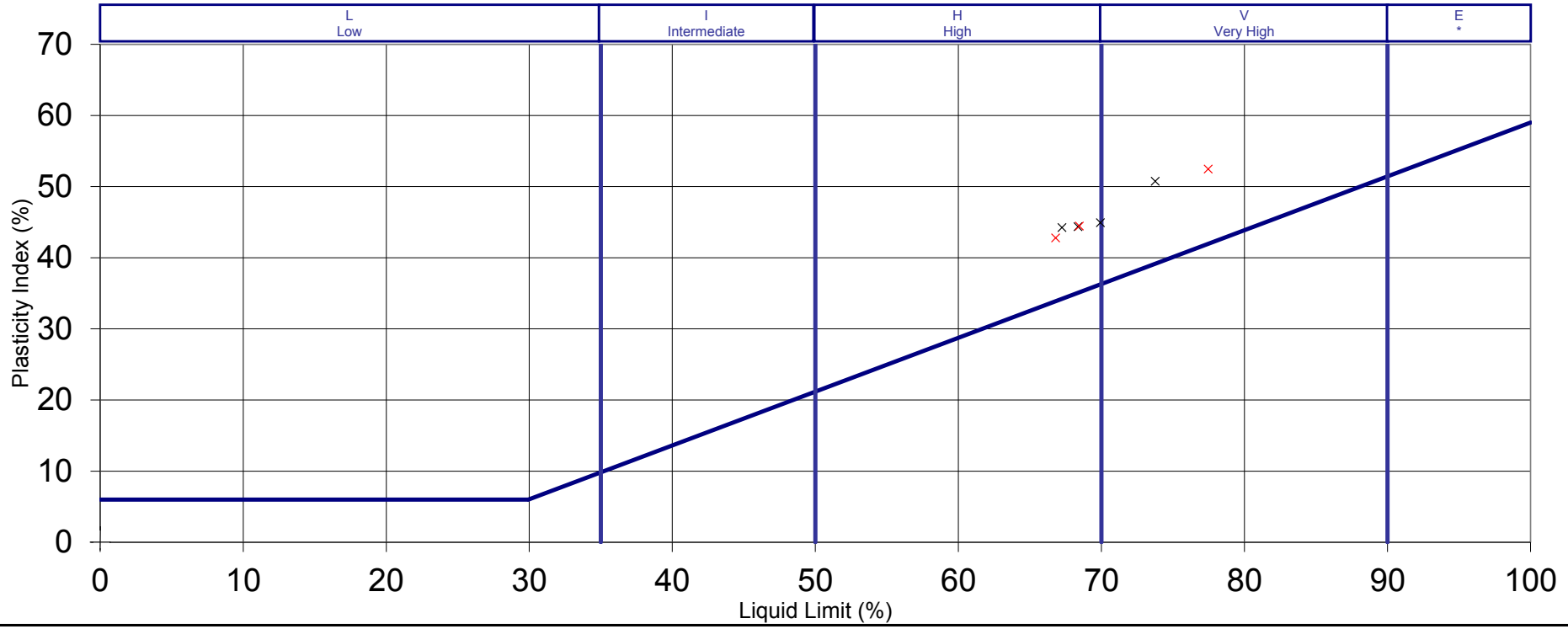
Laboratory Testing Results

Plasticity Chart for the classification of fine soils and the finer part of coarse soils
In Compliance with BS5930 : 1999

Chelmer Geotechnical Laboratories 'Groundbreaking Services'

Job Number : CGL7543
Client : Mahesh Varia
Client Reference : CSI7543
Site Name : 59 Solent Road, London. NW6 1TY

Date Received : 08/09/2016
Date Testing Started : 15/09/2016
Date Testing Completed : 20/09/2016
Laboratory : Chelmer Geotechnical Laboratories, CM3 8AB



Notes :-
SILT (M-SOIL), M, plots below A-Line
CLAY, C, plots above A-Line }M and C may be combined as FINE SOIL, F.

Key :- BH1
BH2

UKAS TESTING
8284

Comments :-

Checked By :- HS

Date Checked :- 21-Sep-16

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QTS Environmental Report No: 16-49034

Site Reference:	Solent Road
Project / Job Ref:	CGL7543
Order No:	7113
Sample Receipt Date:	09/09/2016
Sample Scheduled Date:	12/09/2016
Report Issue Number:	1
Reporting Date:	19/09/2016

Authorised by:

Kevin Old
Associate Director of Laboratory

Authorised by:

Russell Jarvis
Associate Director of Client Services

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4480

Soil Analysis Certificate						
QTS Environmental Report No: 16-49034	**Date Sampled**	08/09/16	08/09/16	08/09/16	08/09/16	
Chelmer Site Investigation Laboratories Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Solent Road	**TP / BH No**	78146	78149	78152	78155	
Project / Job Ref: CGL7543	**Additional Refs**	BH1	BH1	BH2	TP2	
Order No: 7113	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 19/09/2016	**QTSE Sample No**	227082	227083	227084	227085	

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	**MCERTS**	7.7	7.8	7.3	7.0	
Total Sulphate as SO_4	mg/kg	< 200	NONE	393	5879	558	10200	
Total Sulphate as SO_4	%	< 0.02	NONE	0.04	0.59	0.06	1.02	
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	140	1870	1230	1590	
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.14	1.87	1.23	1.59	
Total Sulphur	%	< 0.02	NONE	< 0.02	0.28	< 0.02	0.53	
Ammonium as NH_4	mg/kg	< 0.5	NONE	3	6.5	3.4	18.1	
Ammonium as NH_4	mg/l	< 0.05	NONE	0.30	0.65	0.34	1.81	
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	17	58	349	600	
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	8.3	28.8	175	300	
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**	4	< 3	5280	7570	
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**	2.1	< 1.5	2640	3790	
W/S Magnesium	mg/l	< 0.1	NONE	9.1	140	120	140	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content
Subcontracted analysis $^{(S)}$

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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-49034	
Chelmer Site Investigation Laboratories Ltd	
Site Reference: Solent Road	
Project / Job Ref: CGL7543	
Order No: 7113	
Reporting Date: 19/09/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
227082	78146	BH1	None Supplied	22.4	Light brown clay
227083	78149	BH1	None Supplied	20.2	Light brown clay
227084	78152	BH2	None Supplied	21.9	Light brown gravelly clay
227085	78155	TP2	None Supplied	10.1	Light brown gravelly clay with rubble and stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-49034
Chelmer Site Investigation Laboratories Ltd
Site Reference: Solent Road
Project / Job Ref: CGL7543
Order No: 7113
Reporting Date: 19/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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8284

Chelmer Geotechnical Laboratories
'Groundbreaking Services'

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Where our involvement consists exclusively of testing samples, the results and comments (if provided) relate only to the samples tested.

Any samples that are deemed to be subject to deviation will be recorded as such within the test summary.

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russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-49035

Site Reference:	59 Solent Road, London, NW6 1TY
Project / Job Ref:	CGL7543-C
Order No:	7114
Sample Receipt Date:	09/09/2016
Sample Scheduled Date:	12/09/2016
Report Issue Number:	1
Reporting Date:	19/09/2016

Authorised by:

Kevin Old
Associate Director of Laboratory

Authorised by:

Russell Jarvis
Associate Director of Client Services

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Soil Analysis Certificate						
QTS Environmental Report No: 16-49035	**Date Sampled**	08/09/16	08/09/16	08/09/16		
Chelmer Site Investigation Laboratories Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: 59 Solent Road, London, NW6 1TY	**TP / BH No**	78156	78158	78159		
Project / Job Ref: CGL7543-C	**Additional Refs**	BH1	TP1	TP2		
Order No: 7114	**Depth (m)**	0.25	0.25	0.25		
Reporting Date: 19/09/2016	**QTSE Sample No**	227086	227088	227089		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	8.0	7.6	7.9		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	2001	1859	20810		
Total Sulphate as SO_4	%	< 0.02	NONE	0.20	0.19	2.08		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	330	132	1140		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.33	0.13	1.14		
Elemental Sulphur	mg/kg	< 10	NONE	< 10	< 10	< 10		
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5		
Arsenic (As)	mg/kg	< 2	MCERTS	17	19	13		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	0.7	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	25	36	20		
Copper (Cu)	mg/kg	< 4	MCERTS	54	54	35		
Lead (Pb)	mg/kg	< 3	MCERTS	482	1900	260		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	15	17	12		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Zinc (Zn)	mg/kg	< 3	MCERTS	96	678	97		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content
Subcontracted analysis $^{(S)}$

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4480

Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 16-49035	**Date Sampled**	08/09/16	08/09/16	08/09/16		
Chelmer Site Investigation Laboratories Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: 59 Solent Road, London, NW6 1TY	**TP / BH No**	78156	78158	78159		
Project / Job Ref: CGL7543-C	**Additional Refs**	BH1	TP1	TP2		
Order No: 7114	**Depth (m)**	0.25	0.25	0.25		
Reporting Date: 19/09/2016	**QTSE Sample No**	227086	227088	227089		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	1.17	0.16		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.27	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	3.85	0.37		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	3.24	0.34		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	1.59	0.18		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	1.62	0.25		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	2.44	0.36		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.91	0.17		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.64	0.14		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.28	0.16		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.71	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	18.7	2.1		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 16-49035	**Date Sampled**	08/09/16	08/09/16	08/09/16		
Chelmer Site Investigation Laboratories Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: 59 Solent Road, London, NW6 1TY	**TP / BH No**	78156	78158	78159		
Project / Job Ref: CGL7543-C	**Additional Refs**	BH1	TP1	TP2		
Order No: 7114	**Depth (m)**	0.25	0.25	0.25		
Reporting Date: 19/09/2016	**QTSE Sample No**	227086	227088	227089		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	8	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	28	15		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	35	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 16-49035	Date Sampled	08/09/16	08/09/16	08/09/16		
Chelmer Site Investigation Laboratories Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 59 Solent Road, London, NW6 1TY	TP / BH No	78156	78158	78159		
Project / Job Ref: CGL7543-C	Additional Refs	BH1	TP1	TP2		
Order No: 7114	Depth (m)	0.25	0.25	0.25		
Reporting Date: 19/09/2016	QTSE Sample No	227086	227088	227089		

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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4480

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

					Landfill Waste Acceptance Criteria Limits		
QTS Environmental Report No: 16-49035	**Date Sampled**	08/09/16					
Chelmer Site Investigation Laboratories Ltd	**Time Sampled**	None Supplied			**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Site Reference: 59 Solent Road, London, NW6 1TY	**TP / BH No**	78157					
Project / Job Ref: CGL7543-C	**Additional Refs**	BH2					
Order No: 7114	**Depth (m)**	0.50					
Reporting Date: 19/09/2016	**QTSE Sample No**	227087					

Determinand	**Unit**	**MDL**					
TOC[MU]	%	< 0.1	1.7			3%	5%	6%
Loss on Ignition	%	< 0.01	7			--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05			6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1			1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10			500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7			100	--	--
pH[MU]	pH Units	N/a	7.9			--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1			--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	0.05	< 0.02		0.2	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.005	< 0.005		< 0.01	0.01	0.2	2
Molybdenum[U]	0.025	0.007		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	0.049	0.024		0.25	**0.06**	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.1	0.1	0.5	7
Zinc[U]	< 0.005	< 0.005		< 0.2	4	50	200
Chloride[U]	4	2		16	800	15000	25000
Fluoride[U]	0.8	0.6		6	10	150	500
Sulphate[U]	13	2		24	1000	20000	50000
TDS	148	73		775	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	15.1	9.8		101	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.22						
Dry Matter (%)	79.7						
Moisture (%)	25.6						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.11						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and QTS Environmental cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-49035	
Chelmer Site Investigation Laboratories Ltd	
Site Reference: 59 Solent Road, London, NW6 1TY	
Project / Job Ref: CGL7543-C	
Order No: 7114	
Reporting Date: 19/09/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
227086	78156	BH1	0.25	22.1	Light brown gravelly clay
227087	78157	BH2	0.50	20.3	Light brown gravelly clay
227088	78158	TP1	0.25	13.3	Brown gravelly clay
227089	78159	TP2	0.25	8.4	Light brown gravelly clay with rubble and stones

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 16-49035
Chelmer Site Investigation Laboratories Ltd
Site Reference: 59 Solent Road, London, NW6 1TY
Project / Job Ref: CGL7543-C
Order No: 7114
Reporting Date: 19/09/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Chelmer
Site Investigations
'Groundbreaking Services'

REPORT NOTES

Equipment Used

Hand tools, Mechanical Concrete Breaker and Spade, Hand Augers, 100mm/150mm diameter Mechanical Flight Auger Rig, GEO205 Flight Auger Rig, Window Sampling Rig, and Large or Limited Access Shell & Auger Rig upon request and/or access permitting.

On Site Tests

By Pilcon Shear-Vane Tester (kN/m^2) in clay soils, and/or Mackintosh Probe in granular soils or made ground and/or upon request Continuous Dynamic Probe Testing and Standard Penetration Testing.

Note:

Details reported in trial-pits and boreholes relate to positions investigated only as instructed by the client or engineer on the date shown.

We are therefore unable to accept any responsibility for changes in soil conditions not investigated i.e. variations due to climate, season, vegetation and varying ground water levels.

Full terms and conditions are available upon request.

Hardman Structural Engineers

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B Existing and Outline Proposed Drawings

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:1250 @A3	job № 2298	
client Mahesh Varia	drafted by AU	drawing № 01	
title Existing Site Location Plan	date Oct 2016		
	status Prelim	revision	

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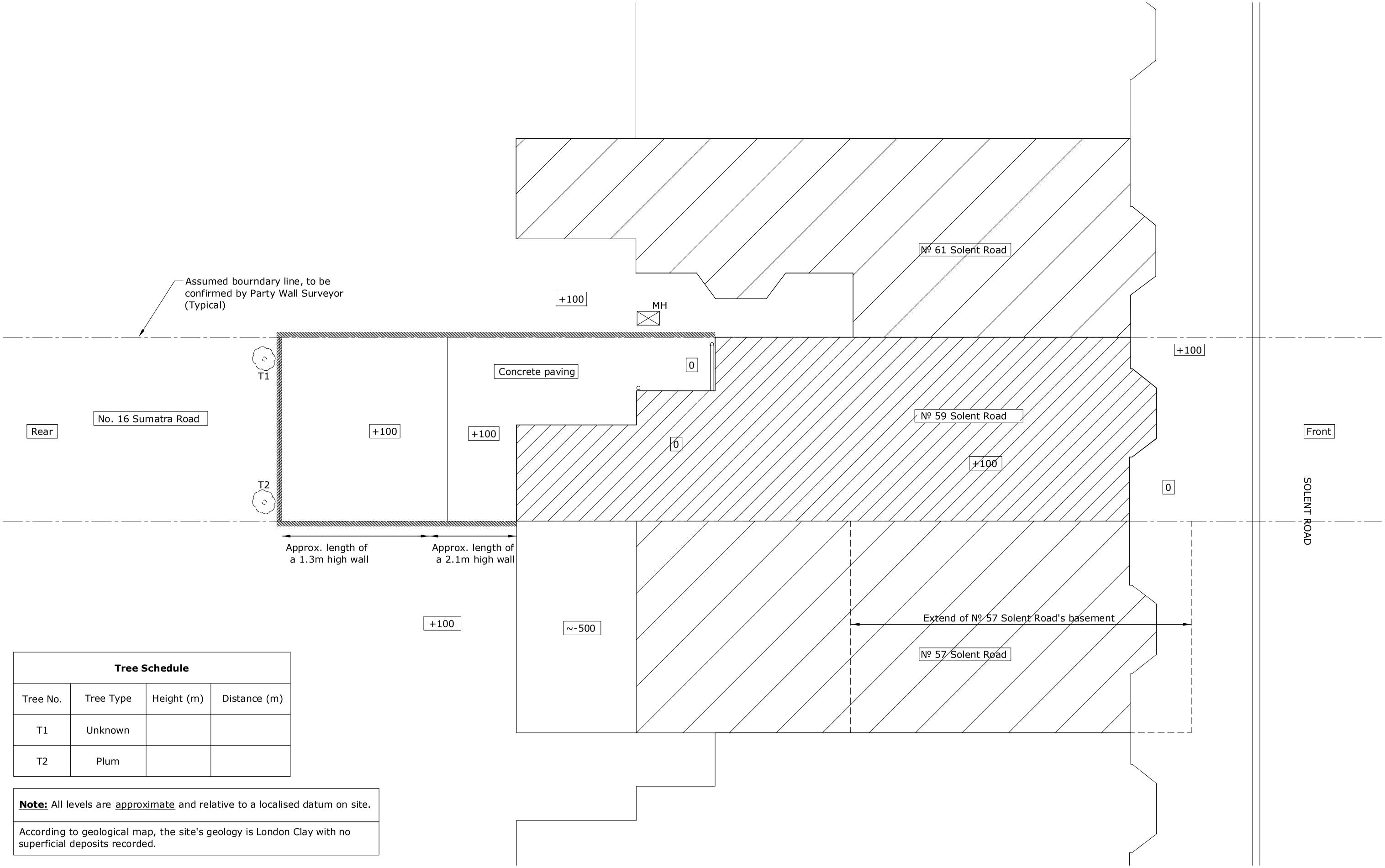

Tree Schedule			
Tree No.	Tree Type	Height (m)	Distance (m)
T1	Unknown		
T2	Plum		

Note: All levels are approximate and relative to a localised datum on site.

According to geological map, the site's geology is London Clay with no superficial deposits recorded.

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road NW6 1TY	scale 1:100 @ A3	Job № 2298	
client Mahesh Varia	drafted by AU	drawing № 02	
title Existing Site Plan	date Oct 2016		
	status Prelim	revision	

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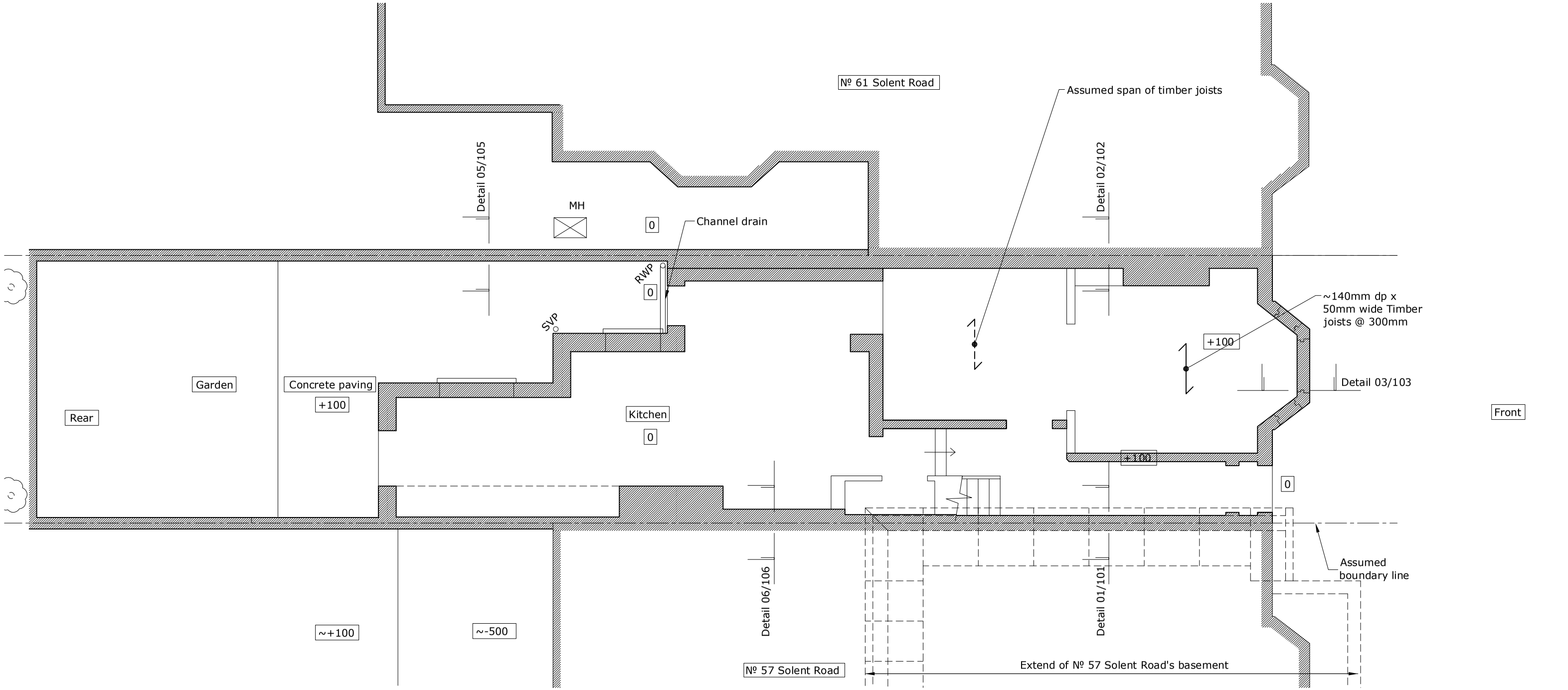

Note:
1. All levels are approximate and relative to a localised datum on site.

2. Survey has been carried out on ground floor only. Information also obtained from archived drawings hold by Building Control and Party Wall Award drawings to No.57 Solent Road.

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY		scale: 1:75 @ A3	job №: 2298
client: Mahesh Varia		drafted by: AU	drawing №: 03
title: Existing Ground Floor Plan		date: Oct 2016	
		status: Prelim	revision

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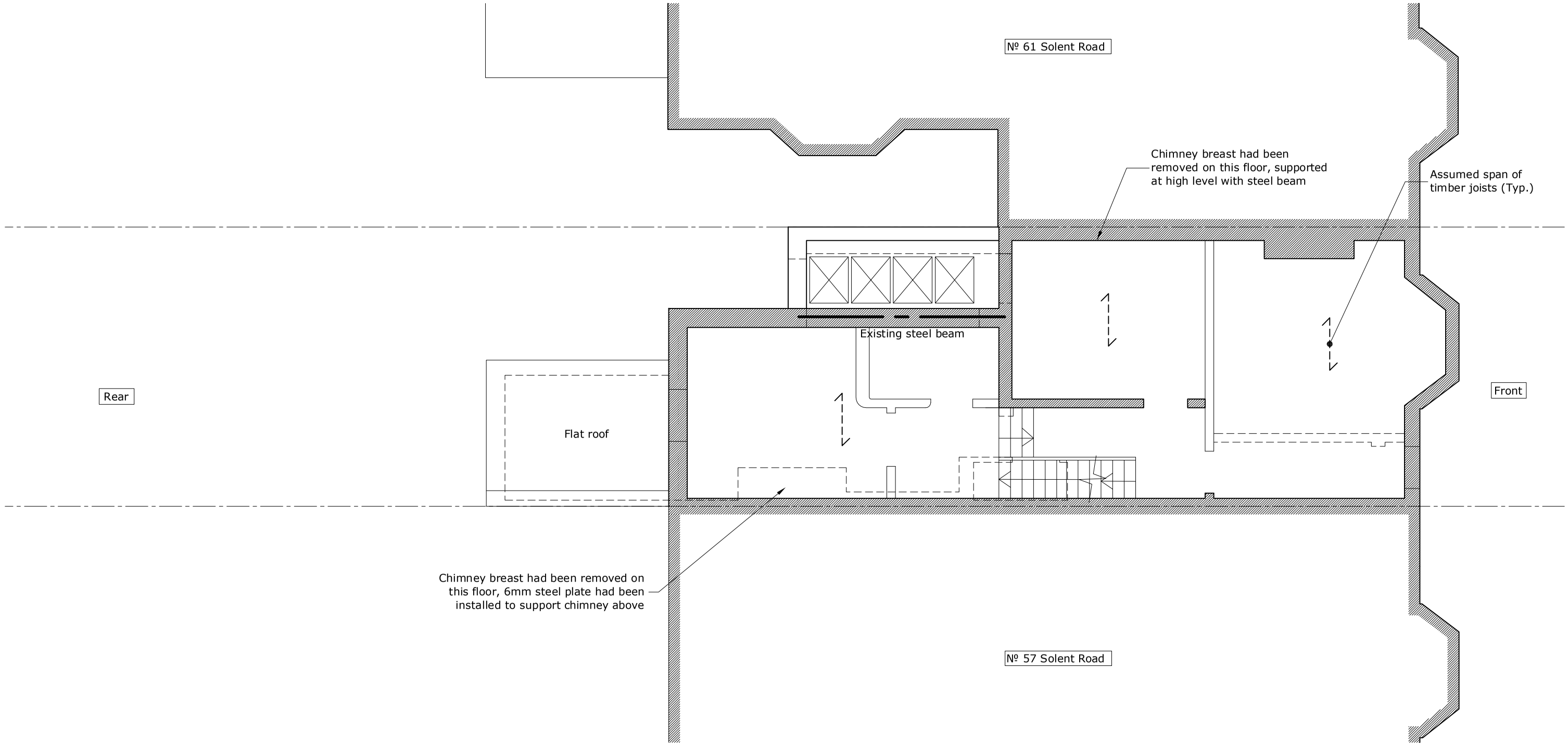

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:75 @ A3	job №: 2298	
client: Mahesh Varia	drafted by: AU	drawing №: 04	
title: Existing First Floor Plan	date: Oct 2016		
	status: Prelim	revision	

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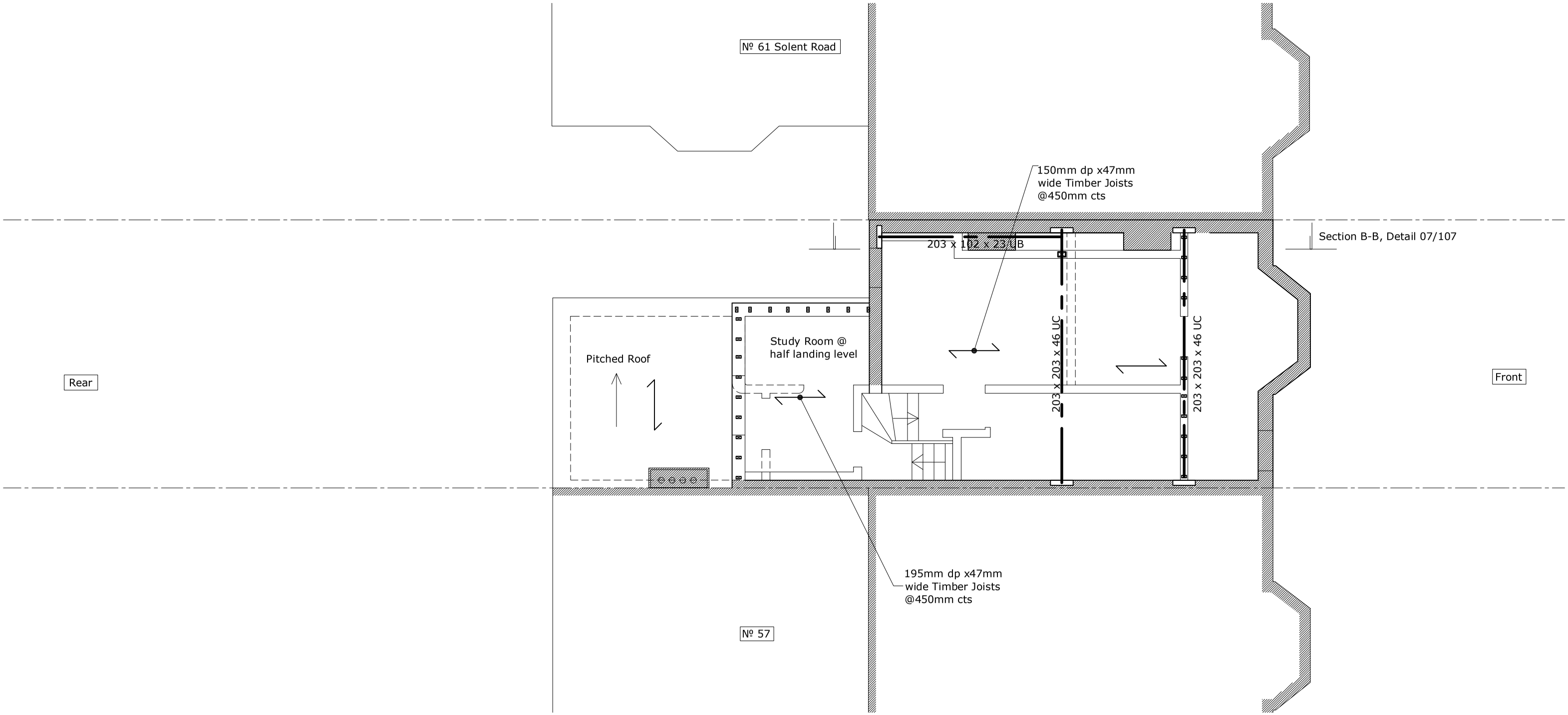

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:75 @ A3	job №: 2298	
client: Mahesh Varia	drafted by: AU	drawing №: 05	
title: Existing Second Floor Plan	date: Oct 2016		
	status: Prelim	revision	

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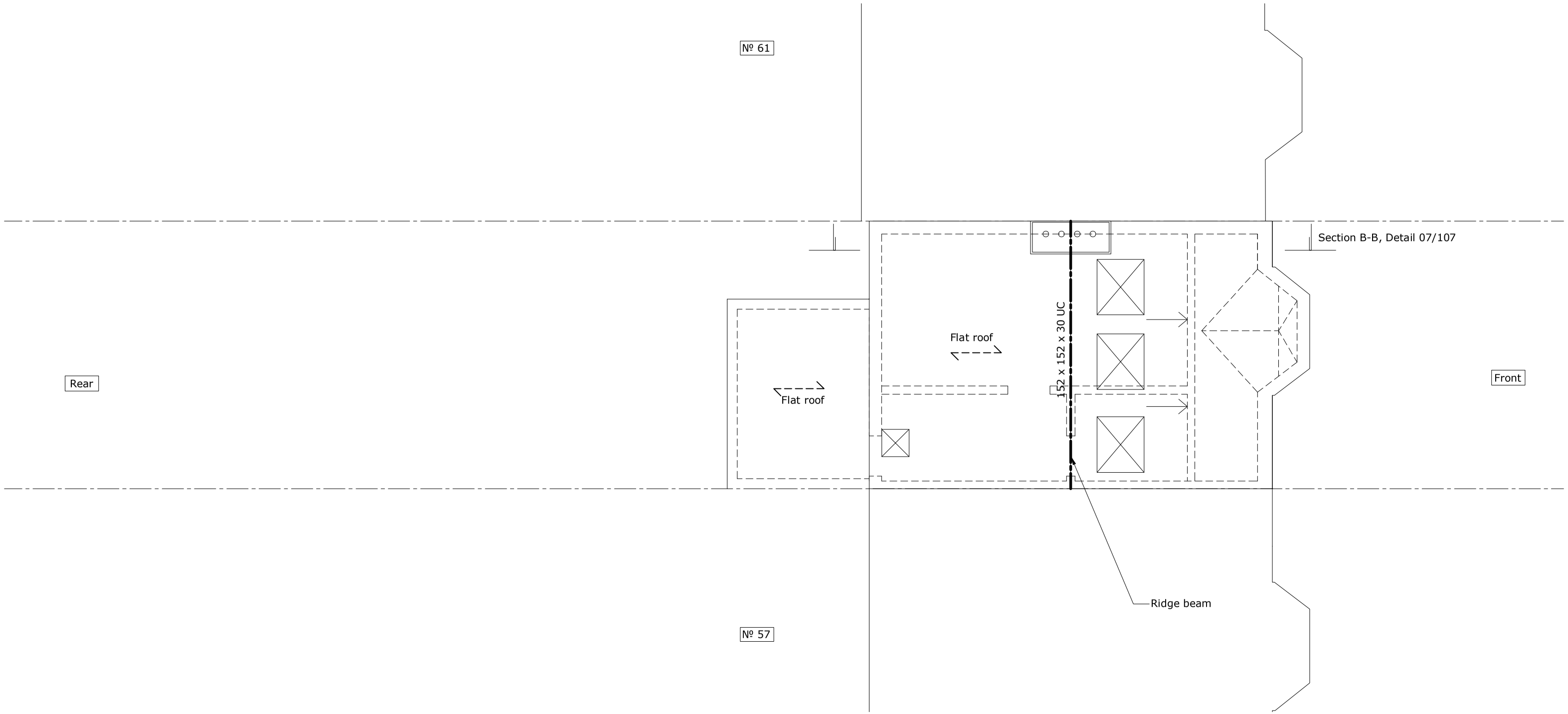

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job № 2298
client Mahesh Varia		drafted by AU	drawing № 06
title Existing Roof Plan		date Oct 2016	
		status Prelim	revision

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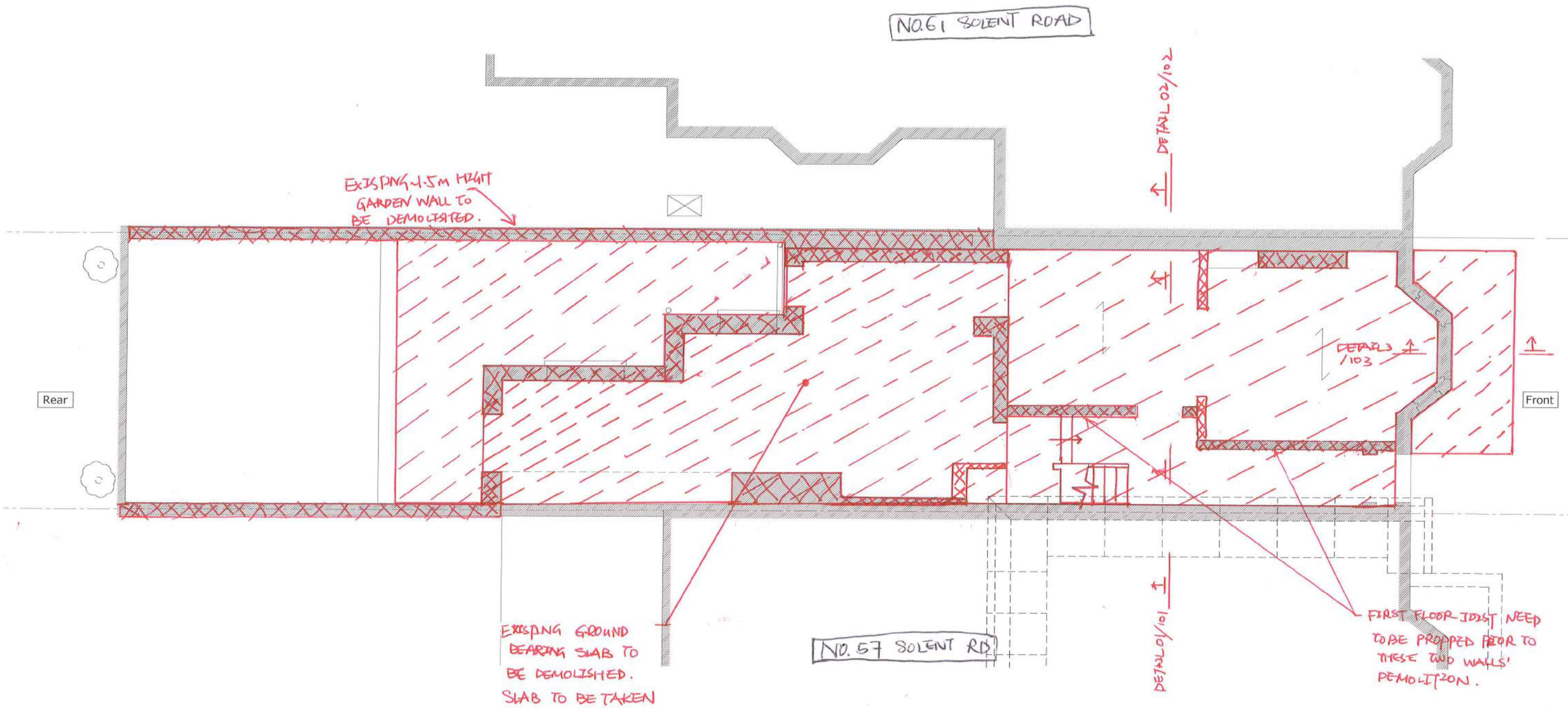

Health and Safety Legends:

- **CAUTION:** Warning of significant design risks and site hazards
- **DO THIS:** Encourage a particular action
- **DON'T DO THIS:** Avoid or prevent a particular action

⚠ NOTE: SUBSTANTIAL TEMPORARY PROPPING IS REQUIRED FOR THE DEMOLITION WORK AT THIS FLOOR. CONTRACTOR TO CARRY OUT TEMPORARY PROPPING DESIGN AND INFORM THE ENGINEER FOR APPROVAL.

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY		scale: 1:75 @ A3	Job N°: 2298
client: Mahesh Varia		drafted by: AU	drawing N°: 401
title: Demolition Ground Floor Plan		date: Oct 2016	
		status: Prelim	revision

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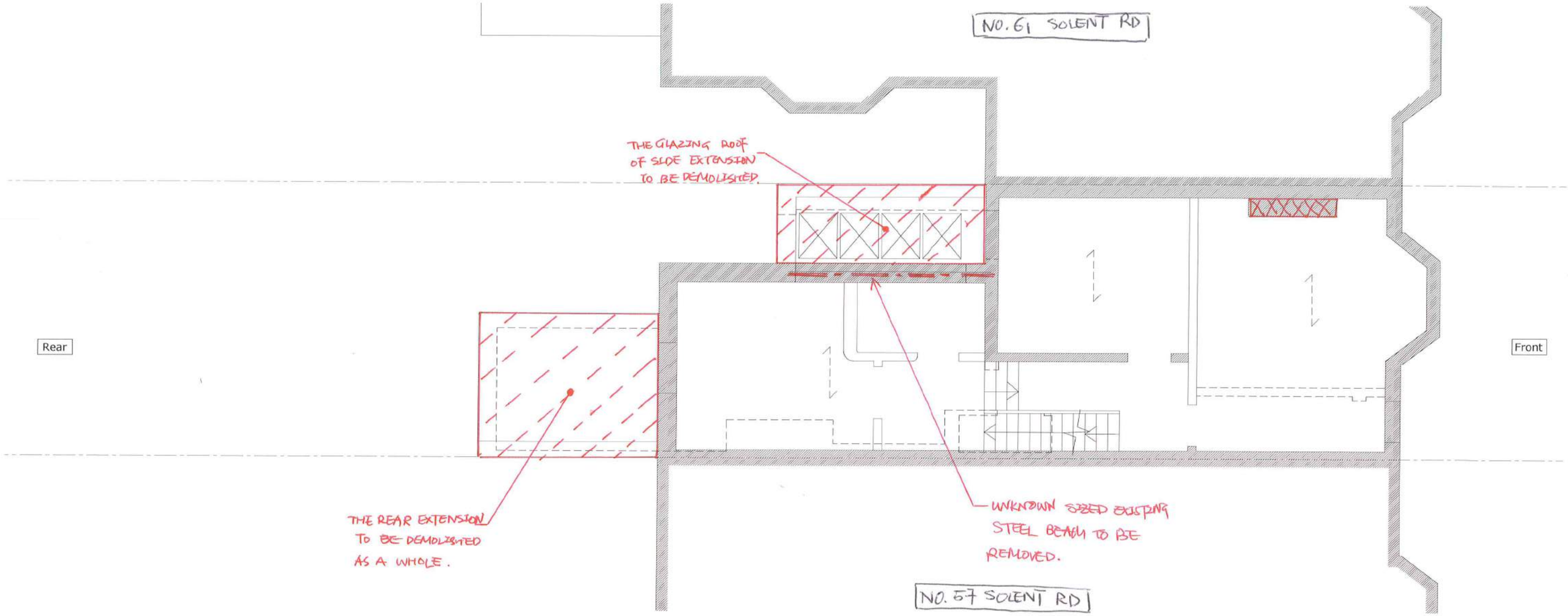

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:75 @ A3	job №: 2298	**Hardman** Structural Engineers
client: Mahesh Varia	drafted by: AU	drawing №: 402	Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707 Email info@hardmanengineers.com www.hardmanengineers.com
title: Demolition First Floor Plan	date: Oct 2016	revision	
	status: Prelim		

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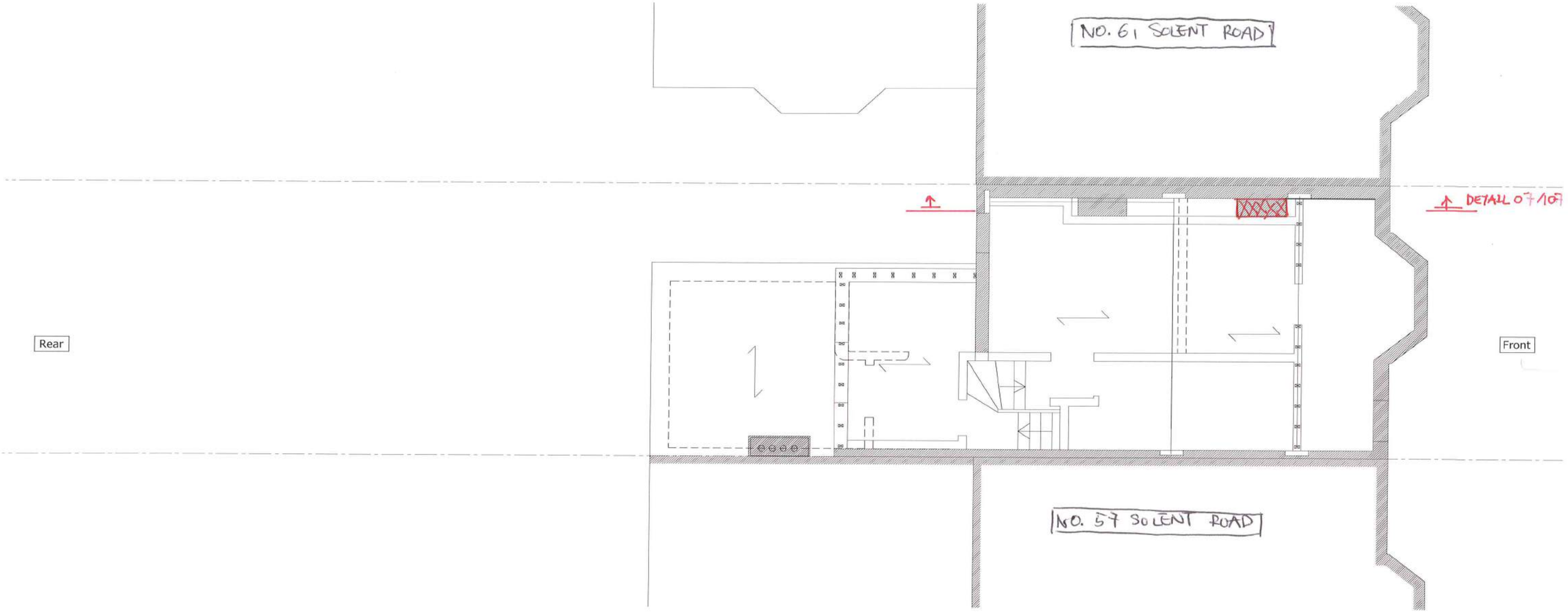

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:75 @ A3	job № 2298	
client Mahesh Varia	drafted by AU	drawing № 403	
title Demolition Second Floor Plan	date Oct 2016		
	status Prelim	revision	

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NO. 61. SOLENT ROAD

DETAIL 05/105

DETAIL 02/102

RC RETAINING WALL TO BE LOCALLY THICKEN TO 500mm WIDTH TO SUPPORT COLUMN ABOVE.

HOLLOW-BLOCK RETAINING WALL, REFER TO DETAIL 06/106. ALTERNATIVELY, RC RETAINING WALL CAN BE USED.

EDGE OF 250mm thk SLAB. REFER TO DETAIL 03/103

DETAIL 03/103

Rear

DETAIL 04/104

Front

1M

EXCAVATION THE SOIL TO 300mm BELOW THE BOTTOM OF THE SLAB OVER THIS AREA. THIS IS DESIGNED TO PROTECT THE SLAB FROM SOIL HEAVE. (TYPICAL)

DETAIL 06/106

DETAIL 01/101

150mm thk RC SLAB WITH 2 LAYERS A393 MESH. ON TOP OF 1200 GAUGE DPM, LAPPING ON 50mm thk BLINDING

NO. 57 SOLENT ROAD

NOTE: BELOWGROUND DRAINAGE DESIGN TO ARCHITECTS DETAILS

Health and Safety Legends:

⚠ **CAUTION:** Warning of significant design risks and site hazards

● **DO THIS:** Encourage a particular action

⊘ **DON'T DO THIS:** Avoid or prevent a particular action

Rev.	Date	Comment	By
A	21.07.16	CHANGED SECTIONS OF UNDERPINNING	TC

General Notes

1. Do not scale from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and specifications.
3. Report any discrepancies between this drawing and on site to the Engineer.
4. Contractor is responsible for temporary propping.

project 59 Solent Road, NW6 1TY	scale 1:75 @ A3	job № 2298	
client Mahesh Varia	drafted by AU	drawing № 11	
title Proposed Basement Floor Plan	date Oct 2016		
	status Prelim	revision A	

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Health and Safety Legends:

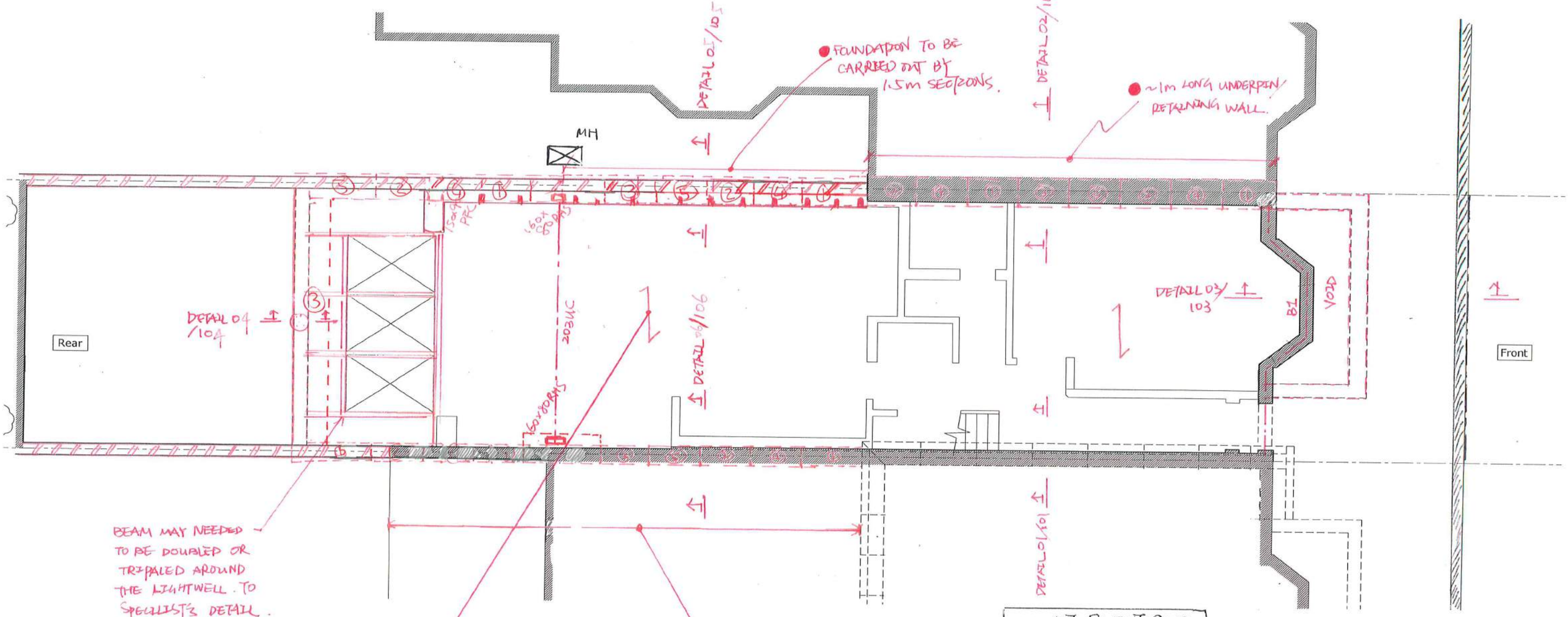
⚠ **CAUTION:** Warning of significant design risks and site harzards

● **DO THIS:** Encourage a particular action

⊘ **DON'T DO THIS:** Avoid or prevent a particular action

DO NOT CONSTRUCT FROM THIS DRAWING

NO. 61 SOLENT RD.



B1	120SHS WITH 150x150UKA, TWO BEAM TO BE PRE-WELD IN PROJECTION SHAPE AND BOLTED TOGETHER BY M16. GRADE 8.8 HOLLO-BOLT @ 400mm cts. (GAVANISED ALL STEEL WORK HERE)

Rev.	Date	Comment	By
A	21.Oct16.	CHANGED SECTIONS OF UNDERPINNING TO	

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:75 @ A3	Job No: 2298	
client: Mahesh Varia	drafted by: AU	drawing No: 12	
title: Proposed Ground Floor Plan	date: Oct 2016		
	status: Prelim	revision: A	

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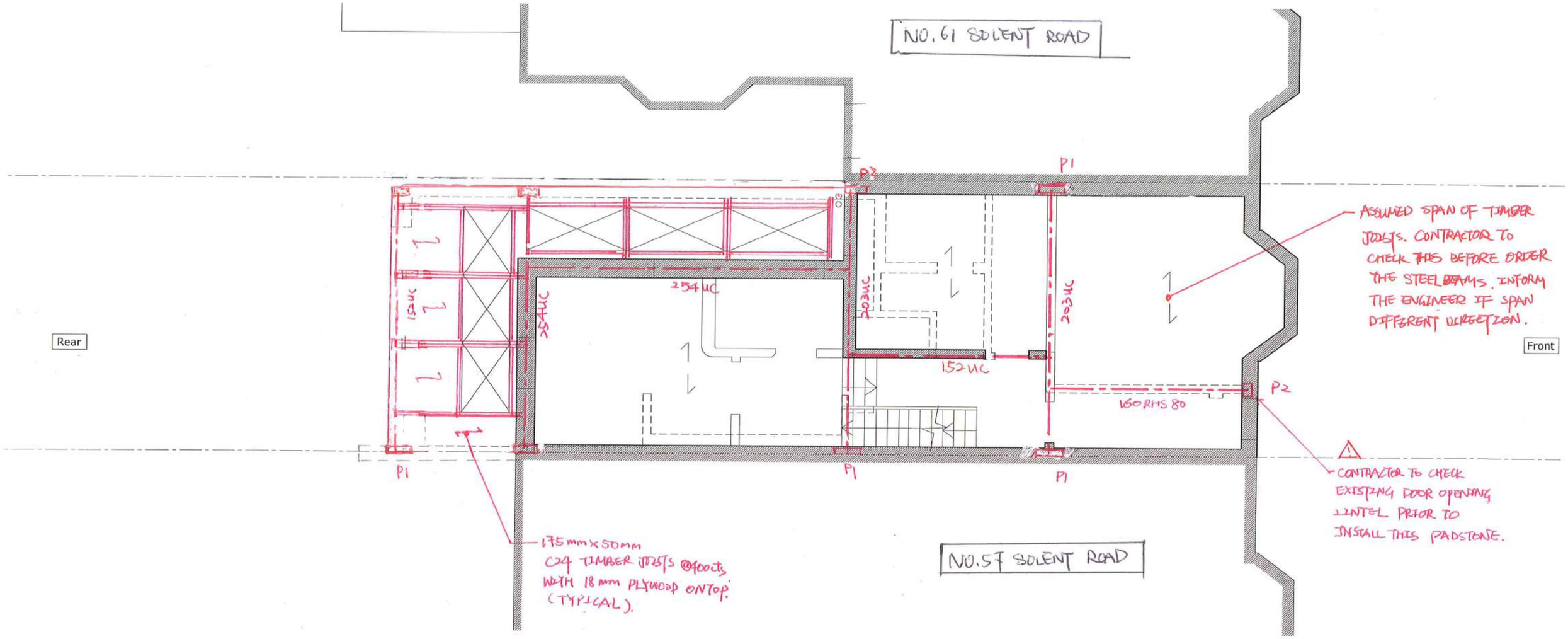

Health and Safety Legends:

⚠ **CAUTION:** Warning of significant design risks and site hazards

● **DO THIS:** Encourage a particular action

⊘ **DON'T DO THIS:** Avoid or prevent a particular action

P1 :	100 x 550 x 213 dp CONCRETE PADSTONE
P2 :	100 x 330 x 140 dp CONCRETE PADSTONE

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:75 @ A3	job №: 2298	
client: Mahesh Varia	drafted by: AU	drawing №: 13	
title: Proposed First Floor Plan	date: Oct 2016		
	status: Prelim	revision	

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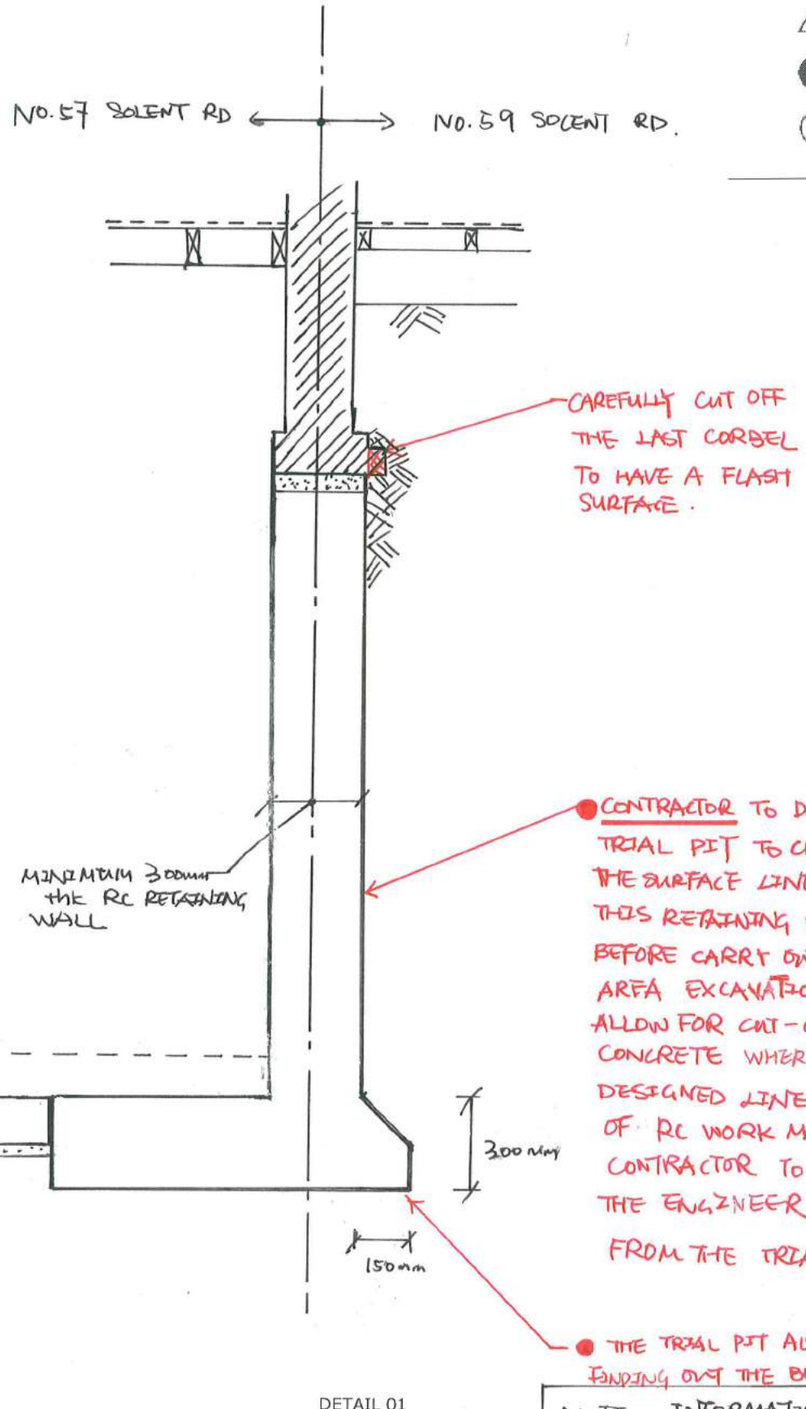
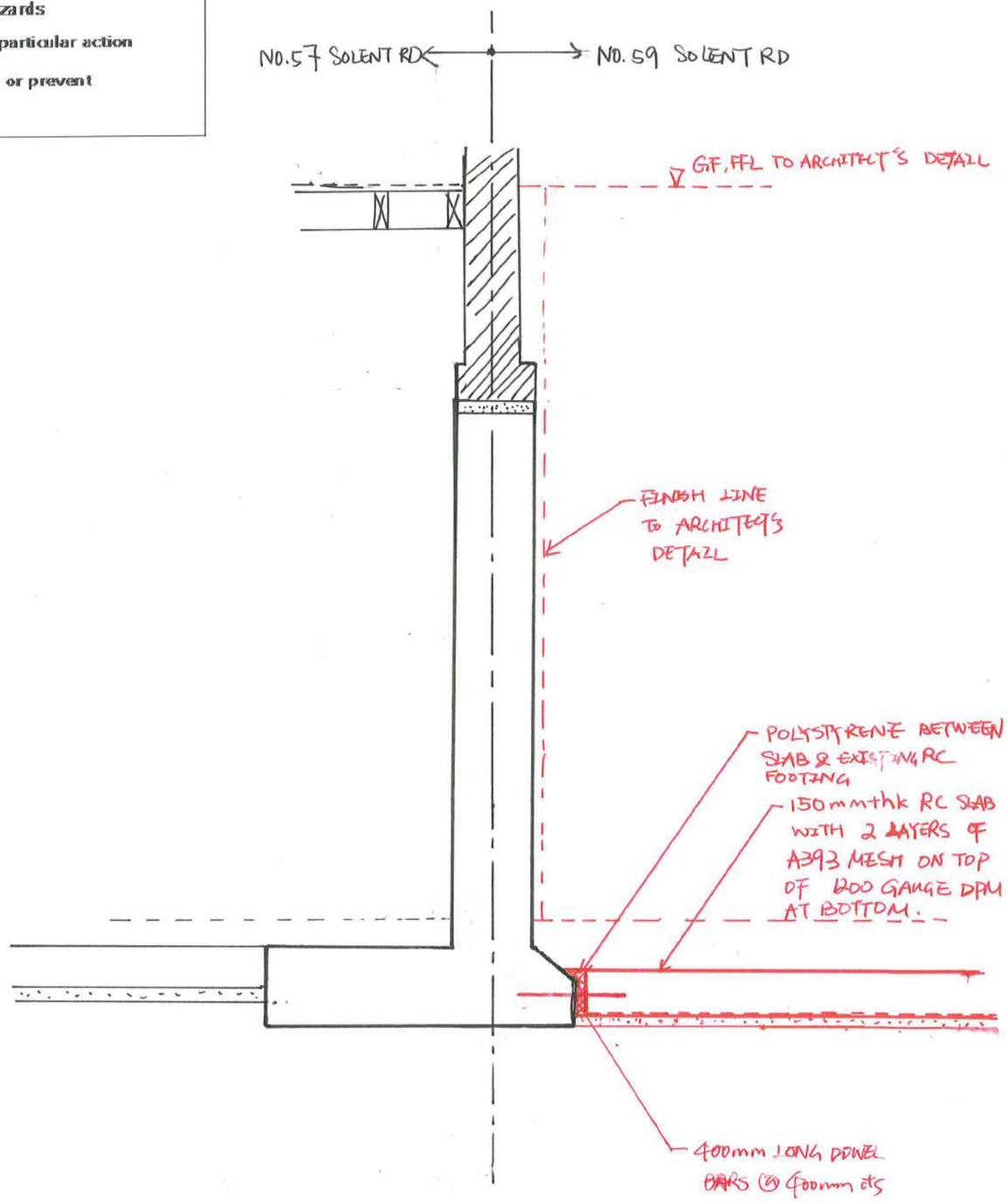
Health and Safety Legends:

- ⚠ **CAUTION:** Warning of significant design risks and site hazards
- ● **DO THIS:** Encourage a particular action
- ⊘ **DON'T DO THIS:** Avoid or prevent a particular action



DETAIL 01
EXISTING SECTION
& DEMOLITION

NOTE: INFORMATION OBTAINED FROM ARCHIVED PARTY WALL AWARD DRAWING CARRIED OUT 2011.



DETAIL 01
PROPOSED SECTION

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 SOLENT ROAD	scale: 1:20 @ A3	job №: 2298	
client: Mahesh Varia	drafted by: TC	drawing №: 101	
title: Detail 01 Existing and Proposed	date: Oct 16	revision:	
	status: Prelim		

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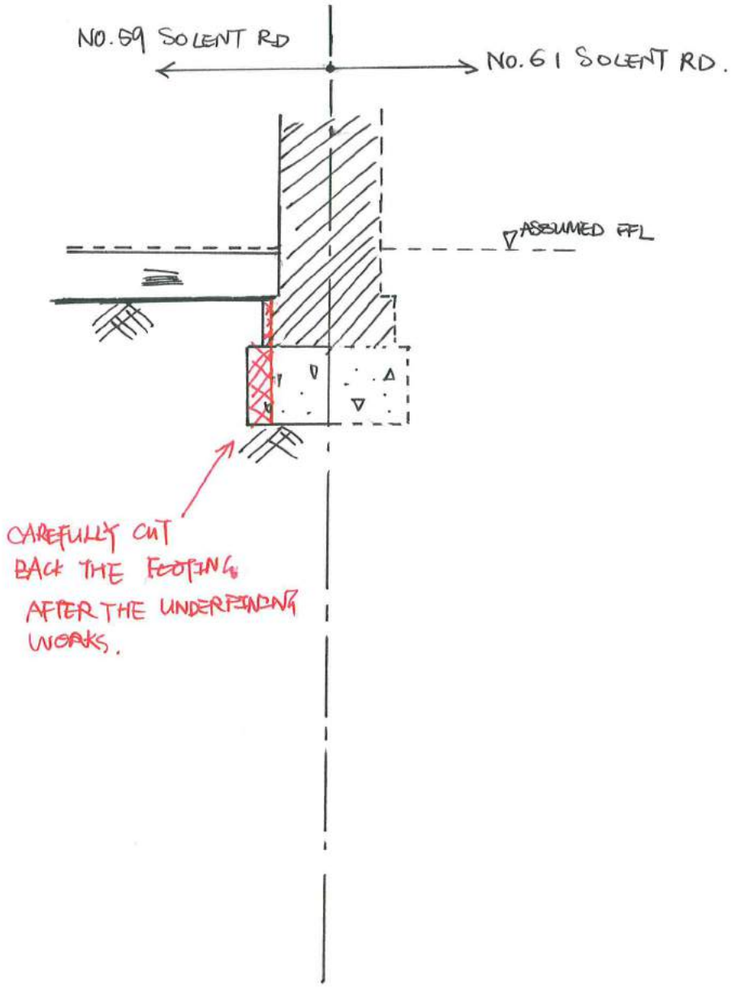
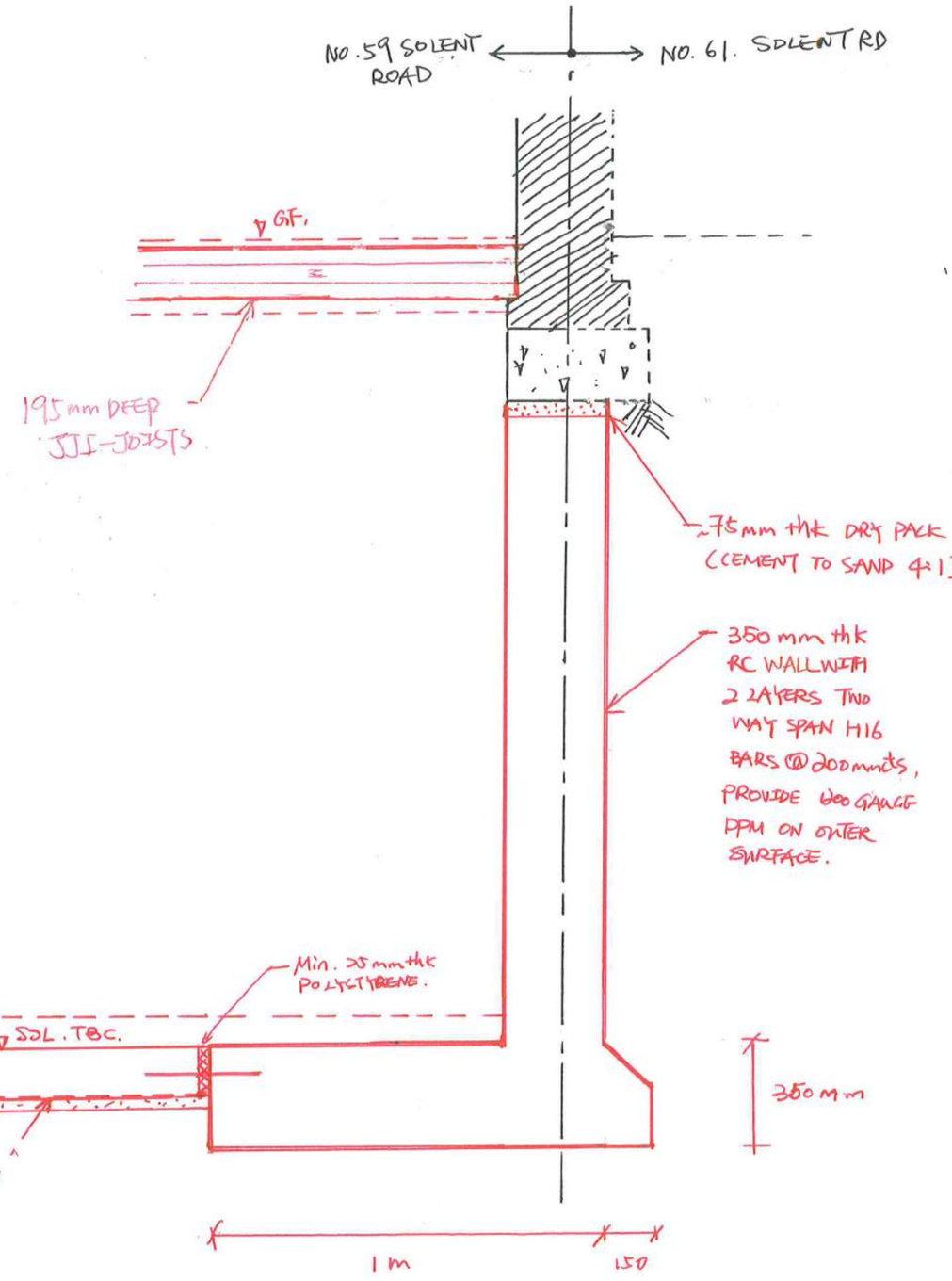


EXISTING & DEMOLITION
DETAIL 02



PROPOSED SECTION.
DETAIL 02

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:20 @ A3	job №: 2298	
client: Mahesh Varia	drafted by: TC	drawing №: 102	
title: Detail 02 Existing and Proposed	date: OCT 16	revision:	
	status: Prelim		

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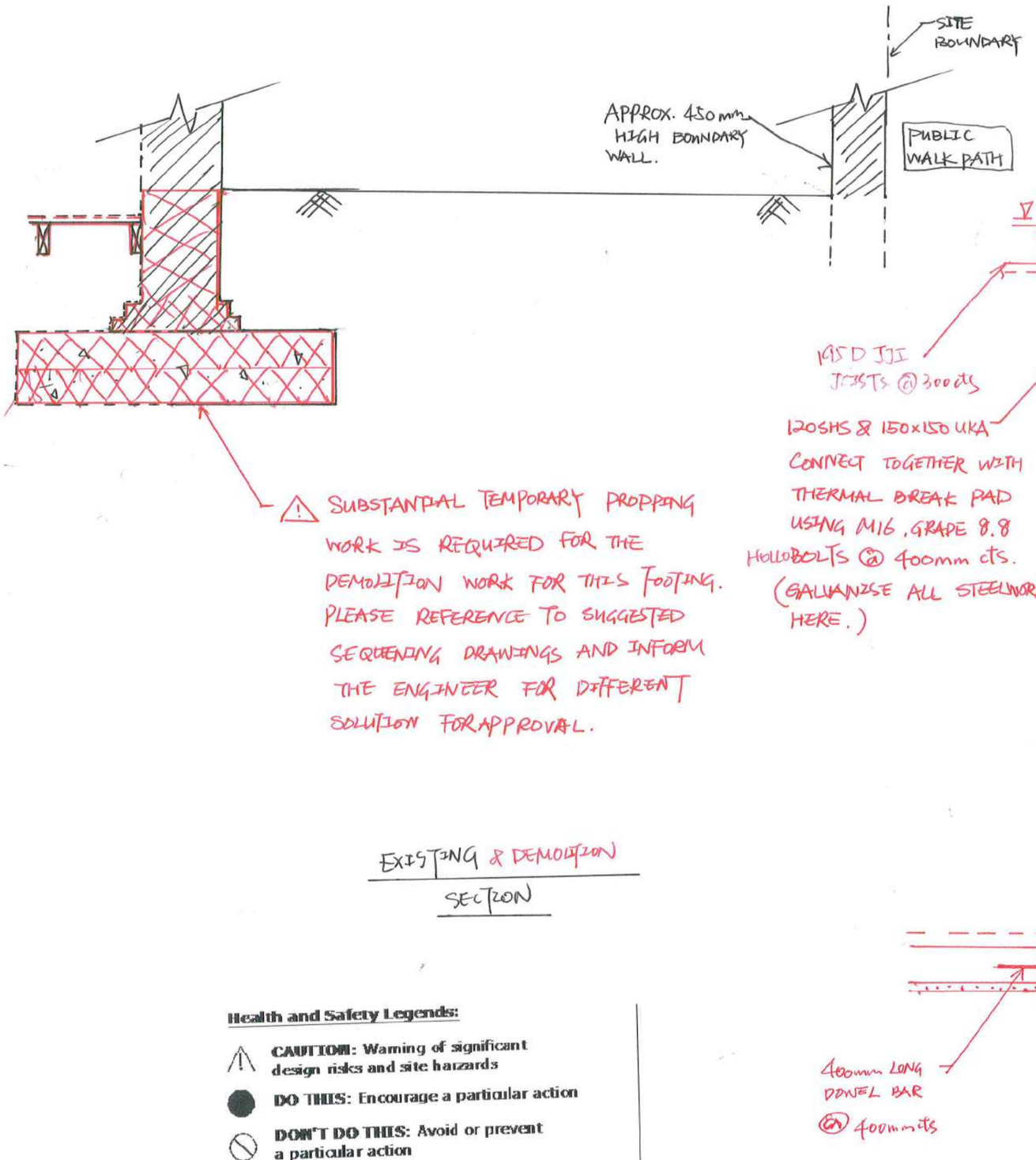
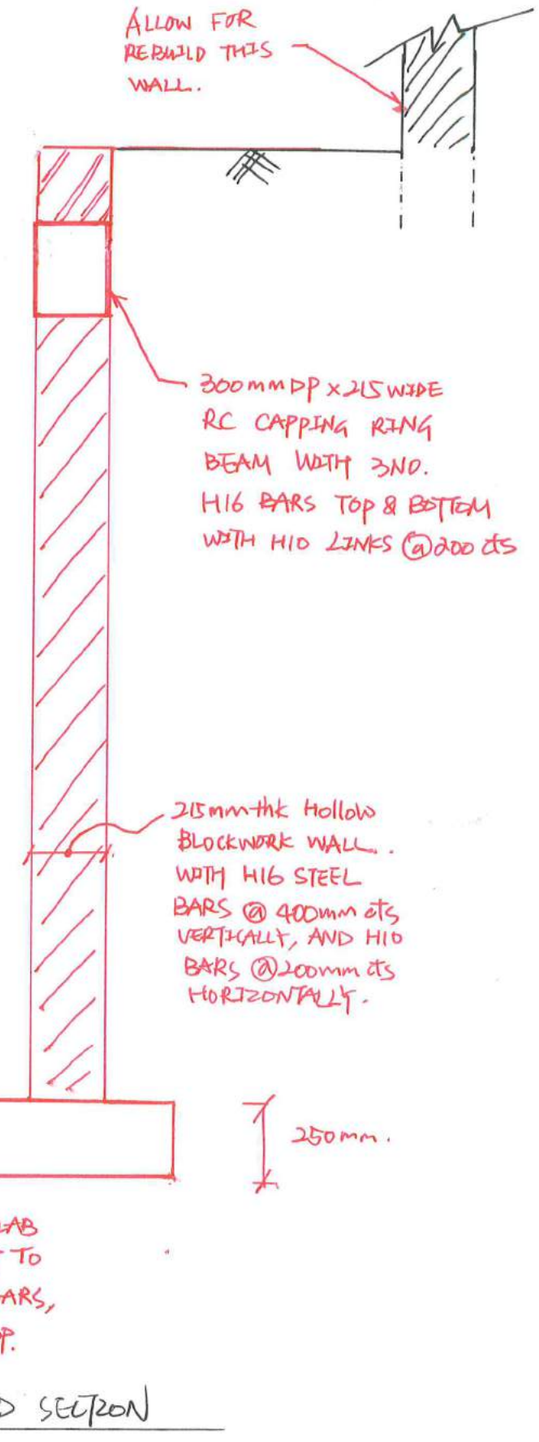


EXISTING & DEMOLITION SECTION



PROPOSED SECTION

Health and Safety Legends:

- ⚠ **CAUTION:** Warning of significant design risks and site hazards
- ● **DO THIS:** Encourage a particular action
- ⊘ **DON'T DO THIS:** Avoid or prevent a particular action

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project: 59 Solent Road, NW6 1TY	scale: 1:20 @ A3	job No: 2298	
client: Mahesh Varia	drafted by: TL	drawing No: 103	
title: Detail 03 Existing and Proposed	date: OCT 16		
	status: prelim	revision	

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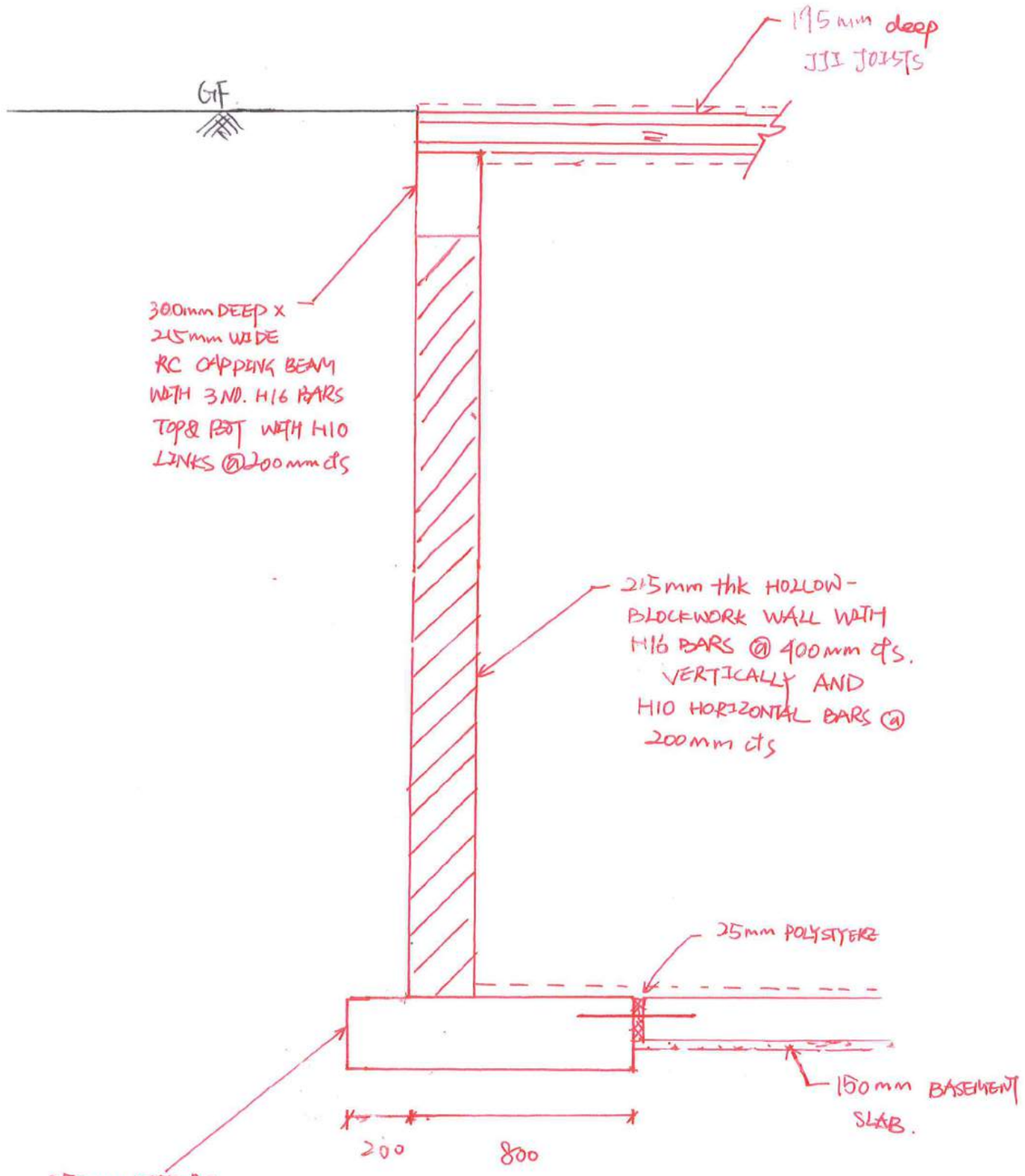


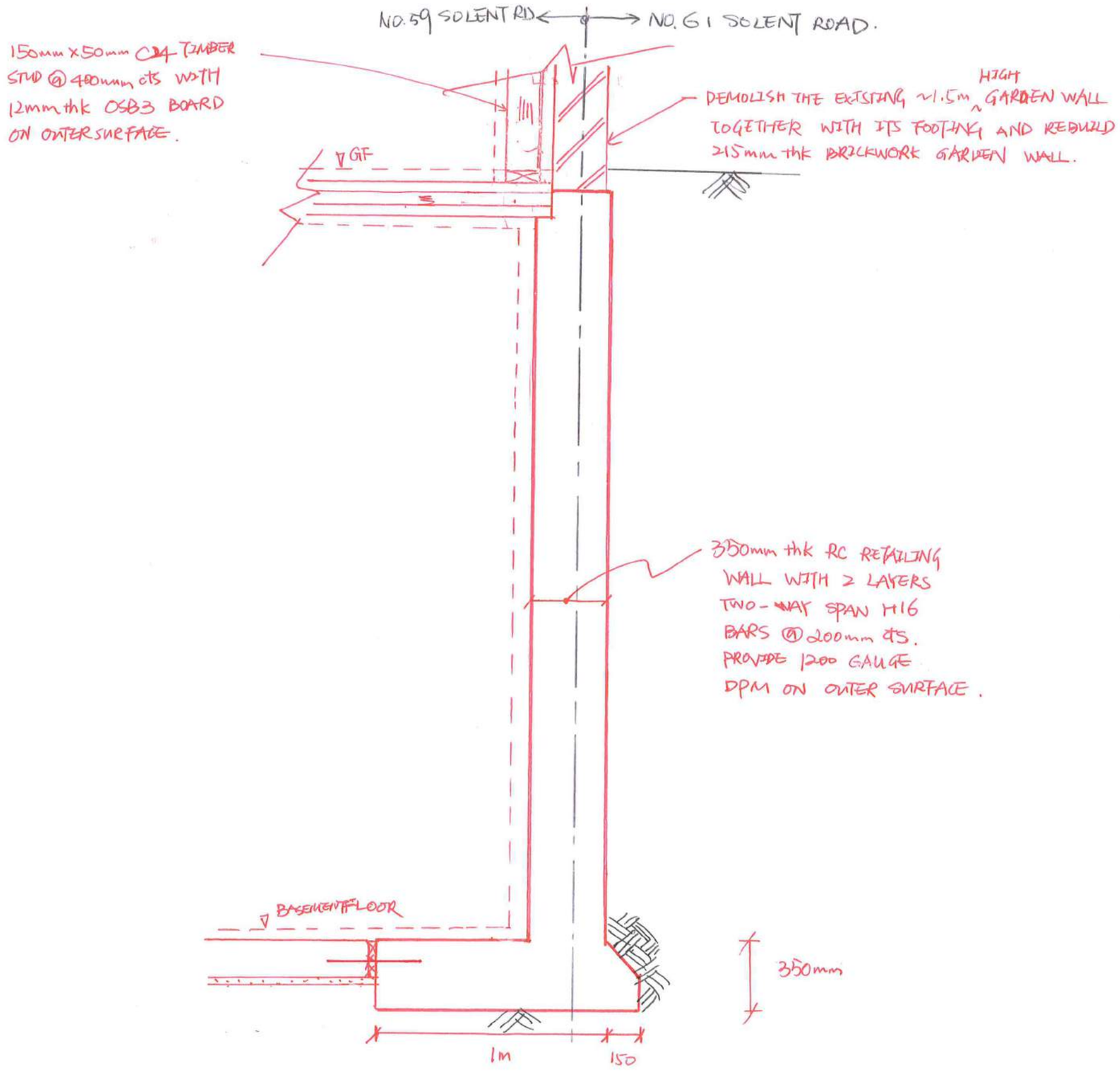
PROPOSED SECTION

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:20 @ A3	job № 2298	**Hardman** Structural Engineers
client Mahesh Varia	drafted by TC	drawing №	Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707 Email info@hardmanengineers.com www.hardmanengineers.com
title Detail 04	date Oct 16	104	Hardman Structural Engineers Ltd. © 2007 Registered in England & Wales. Company №: 5861593
	status Prelim	revision	



PROPOSED SECTION.

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:20 @ A3	Job № 2298
client Mahesh Varia		drafted by TC	drawing № 105
title Detail 05		date Oct 16	revision
		status Prelim	

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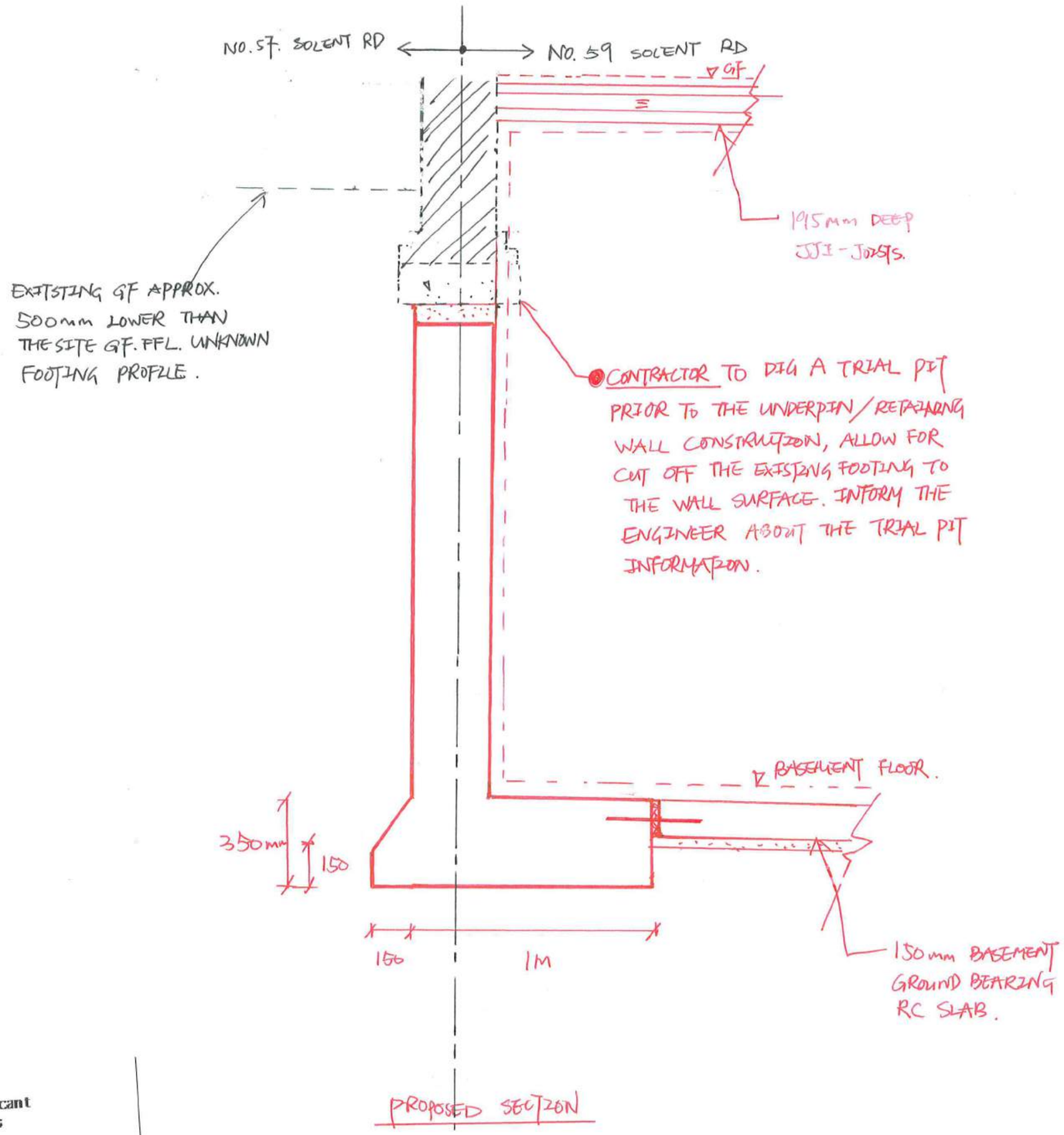

PROPOSED SECTION

Health and Safety Legends:

⚠ **CAUTION:** Warning of significant design risks and site hazards

● **DO THIS:** Encourage a particular action

⊘ **DON'T DO THIS:** Avoid or prevent a particular action

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:20 @ A3	job № 2298	**Hardman** Structural Engineers
client Mahesh Varia	drafted by TC	drawing № 106	Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707 Email info@hardmanengineers.com www.hardmanengineers.com
title Detail 06	date Oct 16		Hardman Structural Engineers Ltd. © 2007 Registered in England & Wales. Company №: 5861593
	status Prelim	revision	

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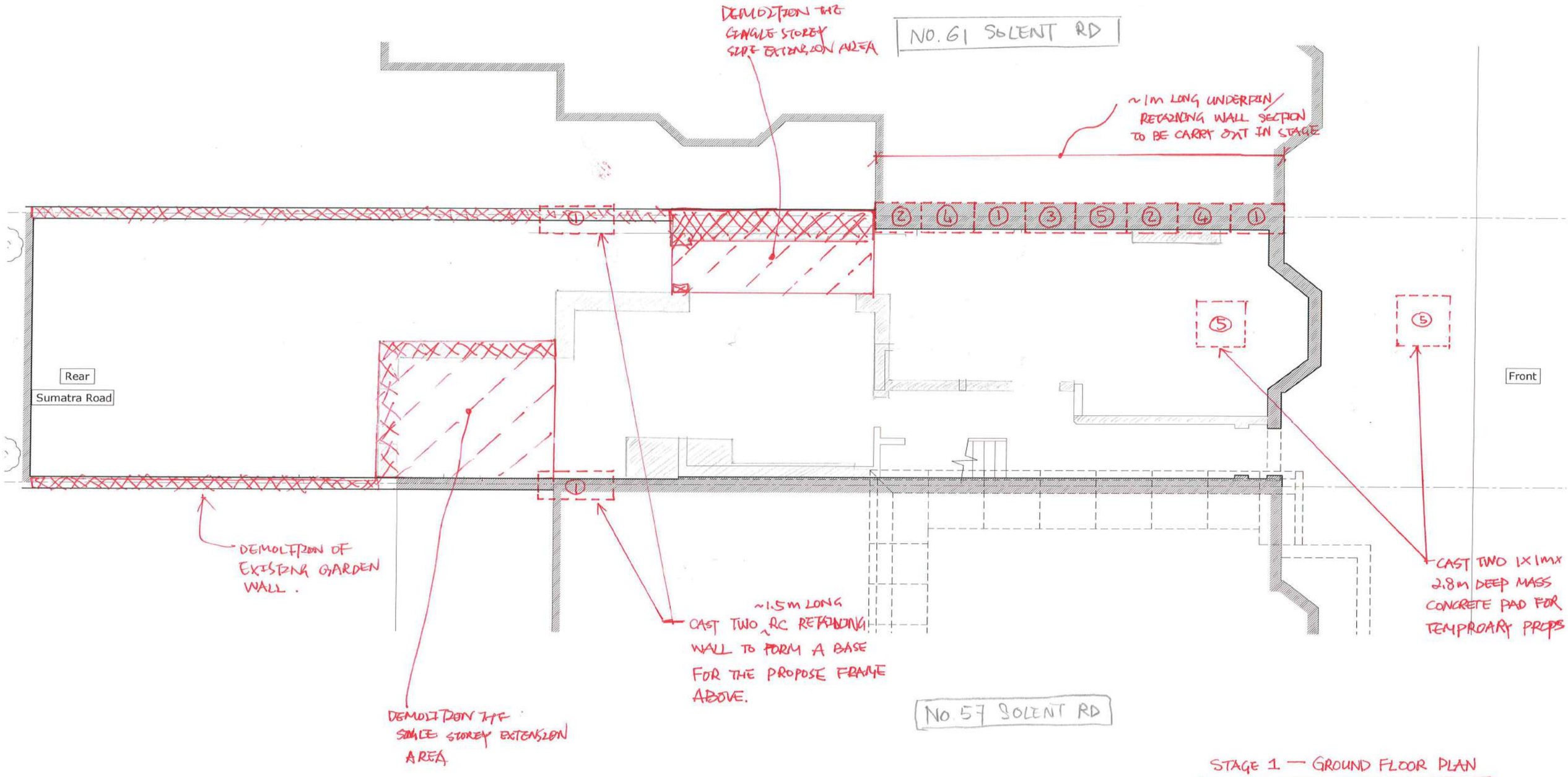
C Sequencing drawings



STAGE 1 — GROUND FLOOR PLAN

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:75 @ A3	Job № 2298	
client Mahesh Varia	drafted by AU	drawing № SK04	
title Ground Floor Plan – SUGGESTED SEQUENCING	date Oct 2016		
	status Prelim	revision	

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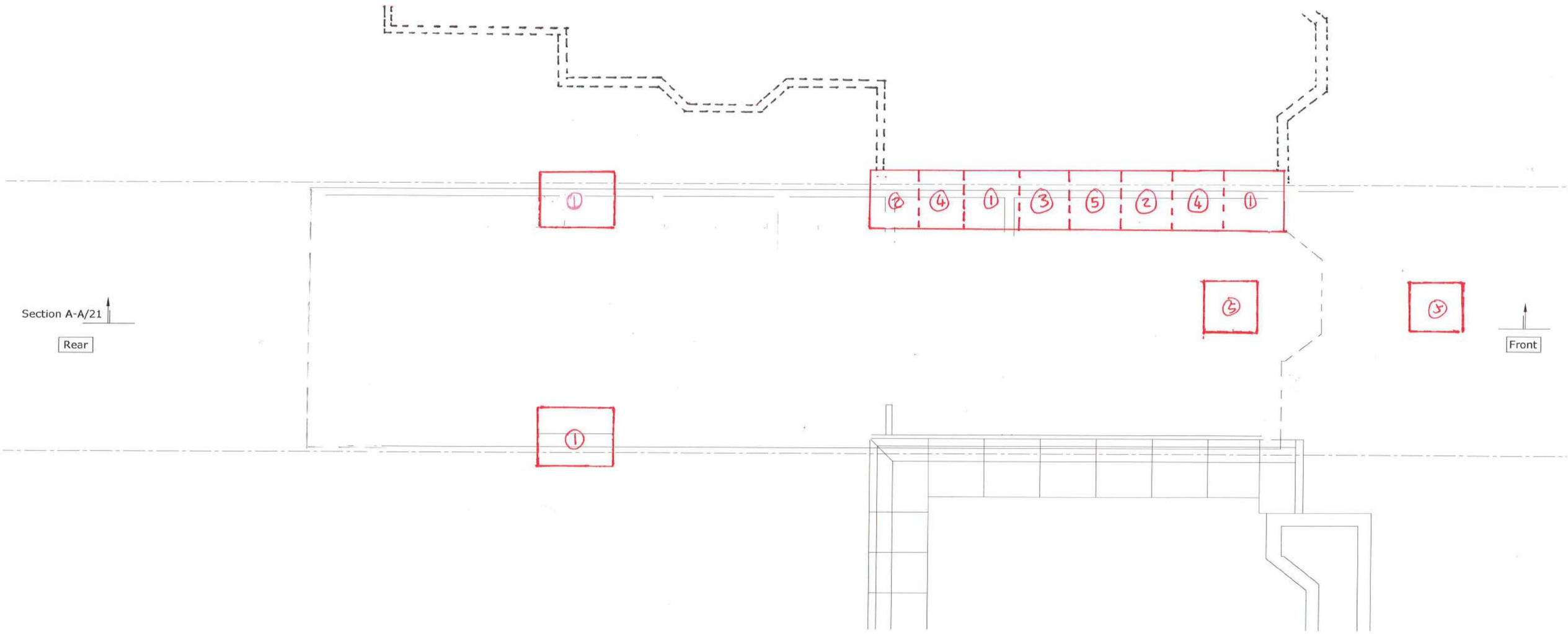

Note: Underground drainage to Architect's details

STAGE 1 – BASEMENT FLOOR PLAN

General Notes

1. Do not scale from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and specifications.
3. Report any discrepancies between this drawing and on site to the Engineer.
4. Contractor is responsible for temporary propping.

Rev.	Date	Comment	By

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job Nº 2298
client Mahesh Varia		drafted by AU	drawing Nº SK05
title Basement Floor Plan SUGGESTED SEQUENCING		date Oct 2016	revision
		status Prelim	

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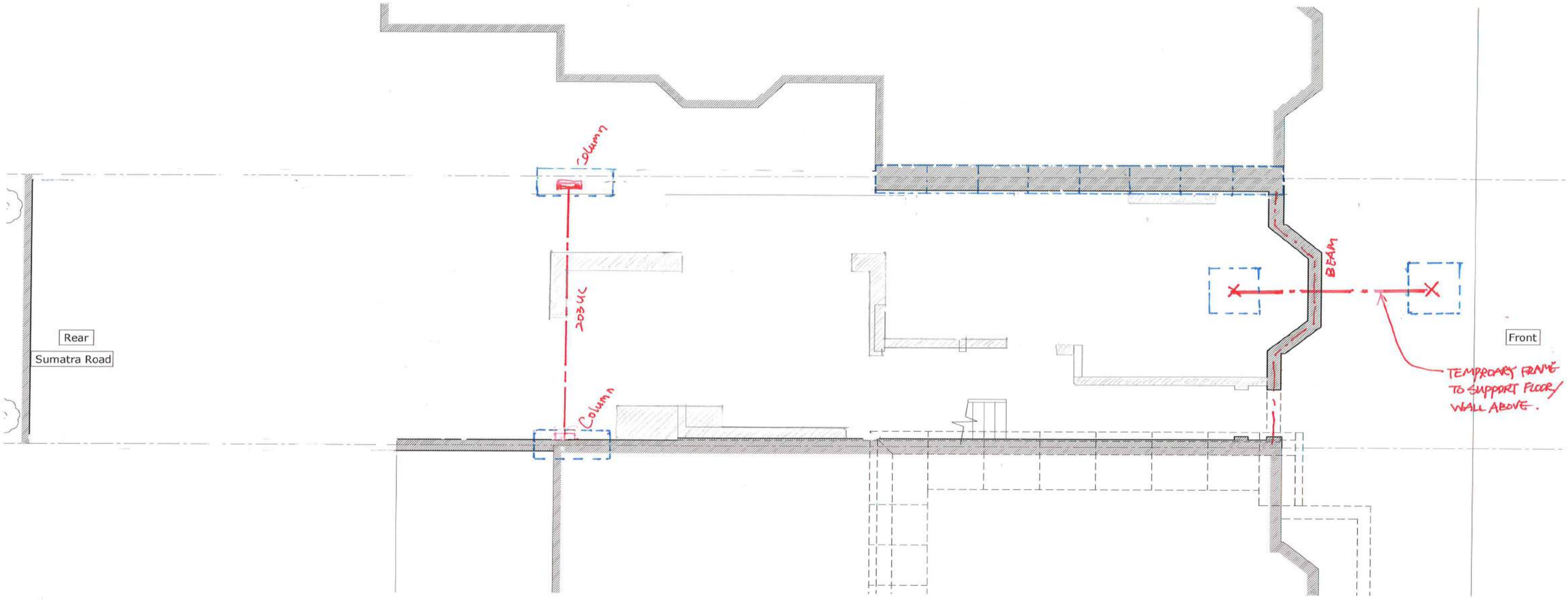

STAGE 2 – GROUND FLOOR PLAN

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	Job N° 2298
client Mahesh Varia		drafted by AU	drawing N° Sk06
title Ground Floor Plan – SUGGESTED SEQUENCING		date Oct 2016	
		status Prelim	revision

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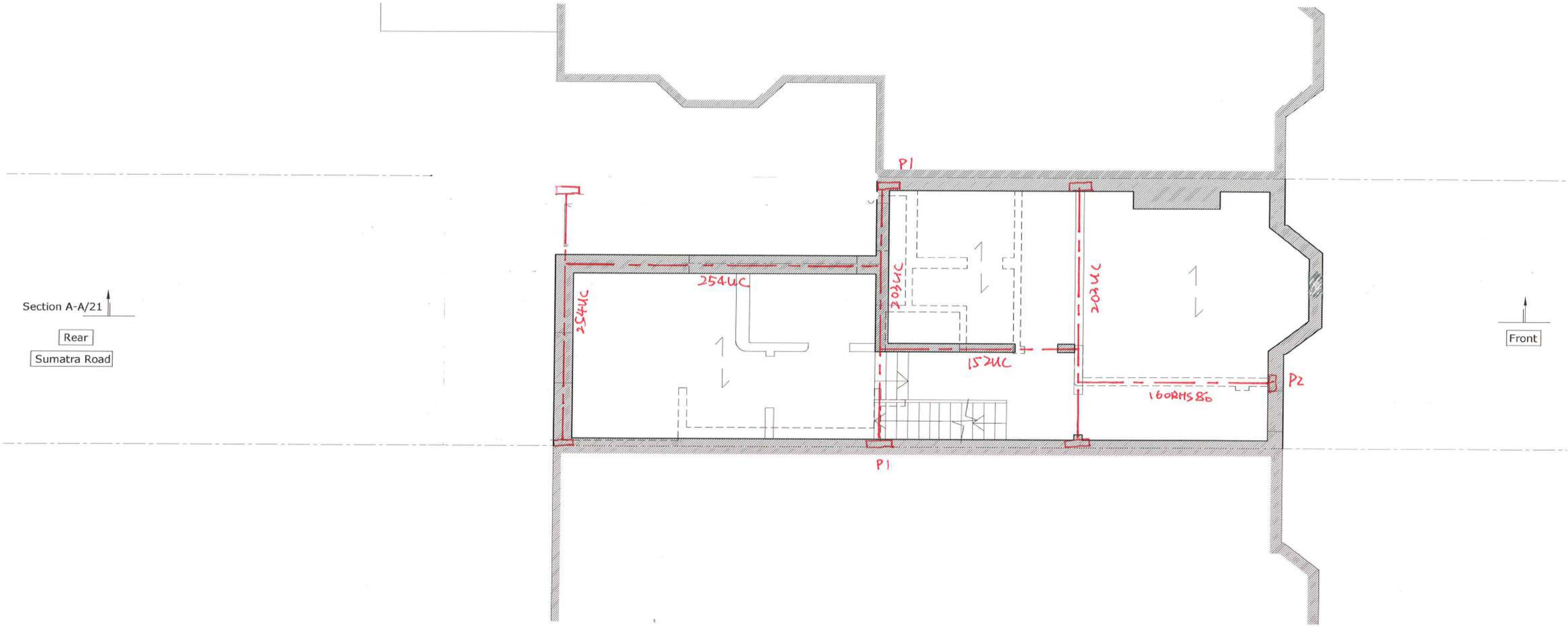

STAGE 2— 1ST FLOOR PLAN

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	Job № 2298
client Mahesh Varia		drafted by AU	drawing № SK07
title First Floor Plan – SUGGESTED SEQUENCING.		date Oct 2016	
		status Prelim	revision

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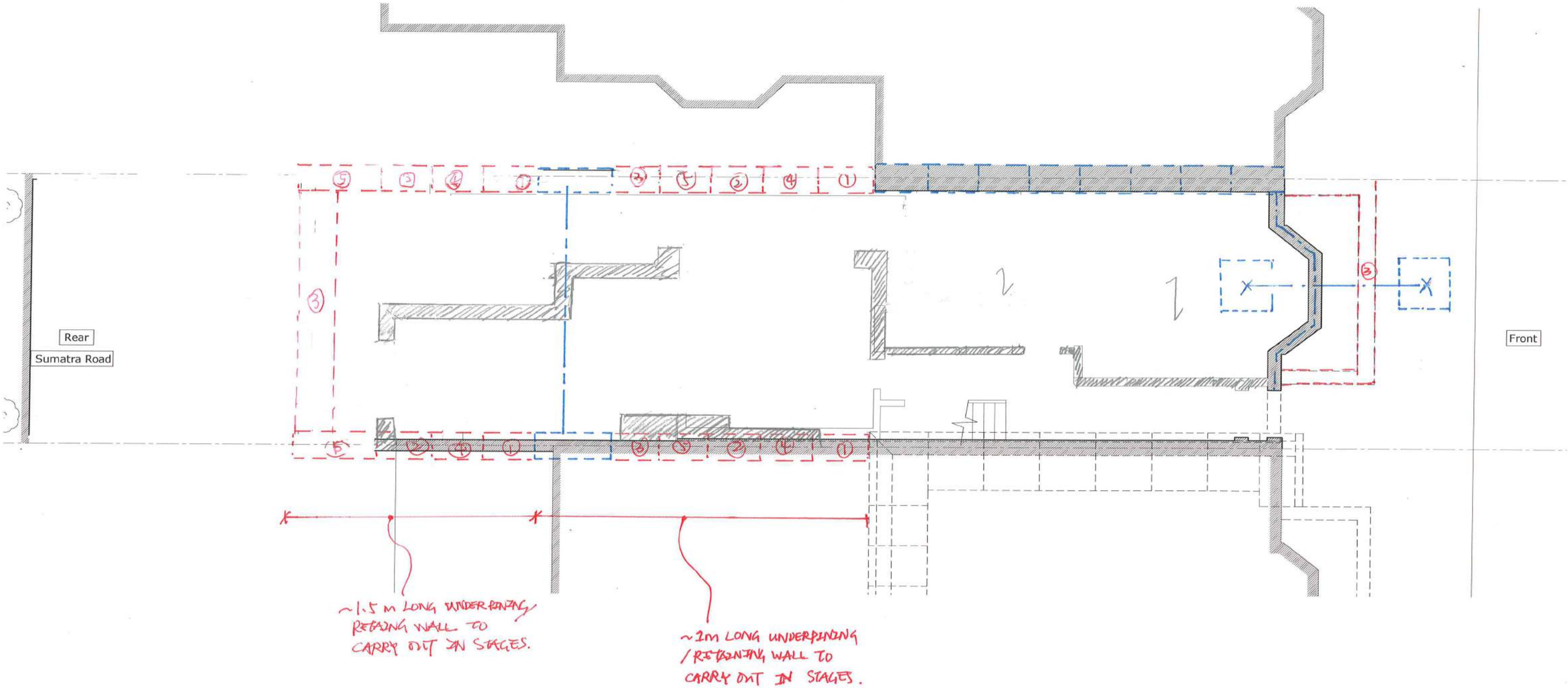

STAGE 3— GROUND FLOOR PLAN

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job № 2298
client Mahesh Varia		drafted by AU	drawing № Sk08
title Ground Floor Plan —SUGGESTED SEQUENCING		date Oct 2016	
		status Prelim	revision

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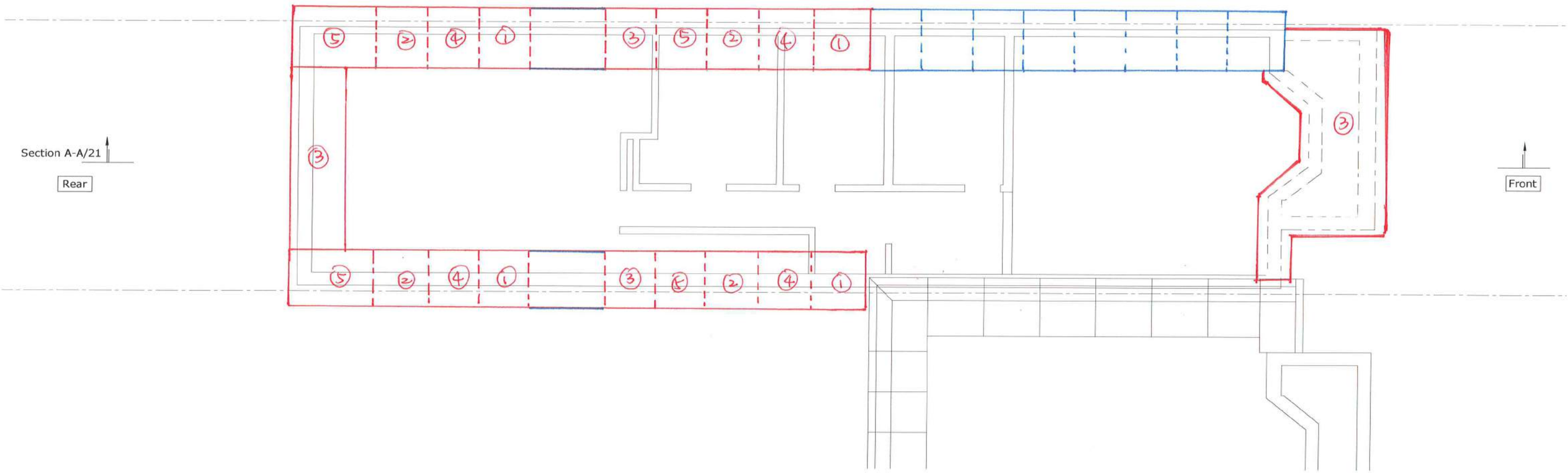

Note: Underground drainage to Architect's details

STAGE 3— BASEMENT FLOOR PLAN

General Notes

1. Do not scale from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and specifications.
3. Report any discrepancies between this drawing and on site to the Engineer.
4. Contractor is responsible for temporary propping.

Rev.	Date	Comment	By

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job № 2298
client Mahesh Varia		drafted by AU	drawing № SK09
title Basement Floor Plan		date Oct 2016	
		status Prelim	revision

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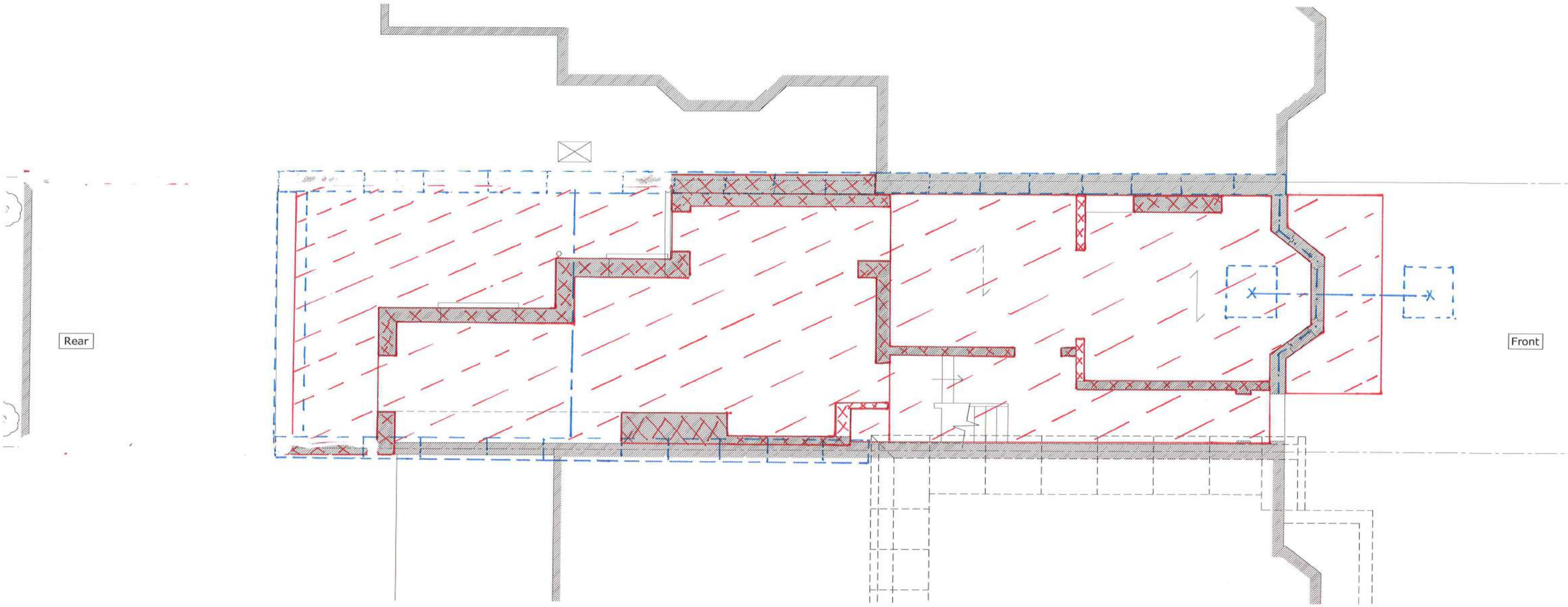

CAREFULLY DEMOLISH THE EXISTING INTERNAL WALLS AT GROUND FLOOR LEVEL AND CARRY OUT EXCAVATION FOR THE FOOTPRINT OF THE BASEMENT AREA.

STAGE 4 – GROUND FLOOR PLAN.

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job № 2298
client Mahesh Varia		drafted by AU	drawing № Sk10
title Ground Floor Plan – SUGGESTED SEQUENCING		date Oct 2016	
		status Prelim	revision

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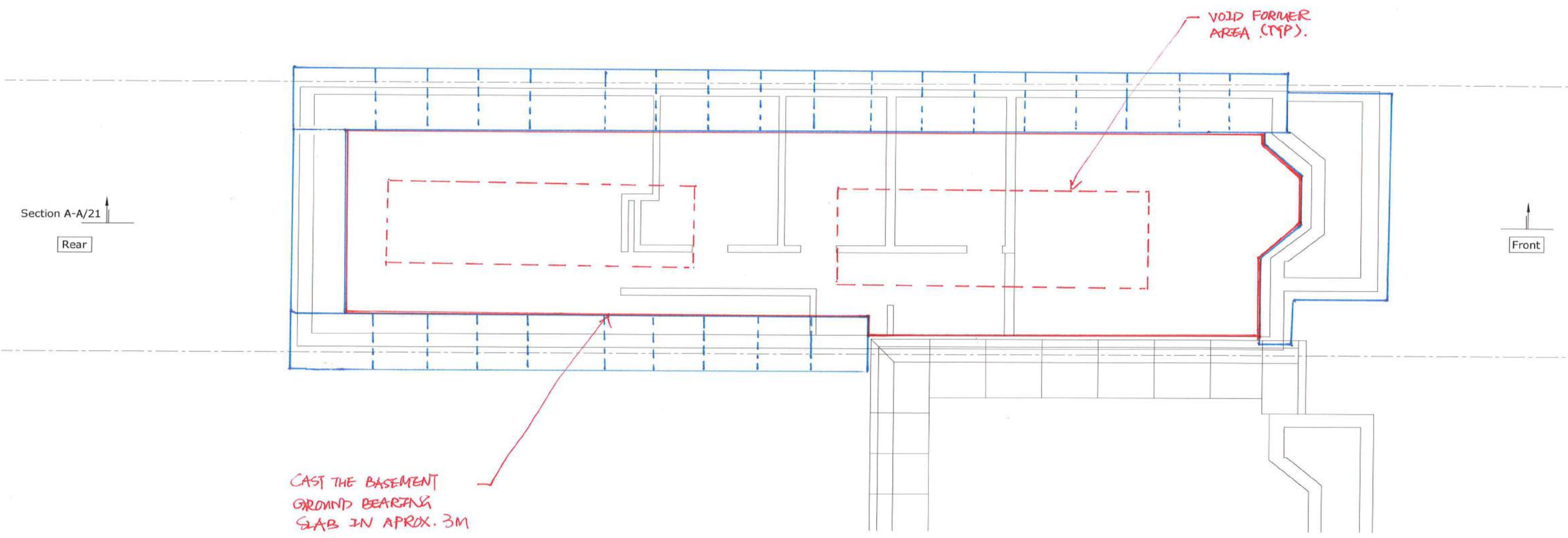

Note: Underground drainage to Architect's details

STAGE 5 — BASEMENT FLOOR PLAN

General Notes

1. Do not scale from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and specifications.
3. Report any discrepancies between this drawing and on site to the Engineer.
4. Contractor is responsible for temporary propping.

Rev.	Date	Comment	By

project 59 Solent Road, NW6 1TY		scale 1:75 @ A3	job № 2298
client Mahesh Varia		drafted by AU	drawing № SK11
title Basement Floor Plan — SUGGESTED SEQUENCING		date Oct 2016	revision
		status Prelim	

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D Monitoring layout drawings

Rev.	Date	Comment	By

Note

1. Refer to Drawing 11 for general notes.

project 59 Solent Road, NW6 1TY	scale 1:200 @A3	Job № 2298	**Hardman** Structural Engineers
client Mahesh Varia	drafted by TC	drawing № Sk01	Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707 Email info@hardmanengineers.com www.hardmanengineers.com
title Monitoring Layout – Site Plan	date Oct 16	revision	 Registered in England & Wales. Company №: 5861593
	status Prelim		

0 1 2 3 4 5 M

Proposed Front Elevation

Solent Road

Drawn By	ELH
Scale	1:50 @ A2
Status	DETAIL

Paul Archer Design Ltd

Issue Not

Hardman Structural Engineers

Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707
Email info@hardmanengineers.com www.hardmanengineers.com

SK01 - Monitoring layout - Front Elevation

103 Farringdon Road London EC1C 3BS Tel 020 3668 2668

www.paularcherdesign.co.uk

0 1 2 3 4 5 M

Proposed Rear Elevation

Solent Road

Drawn By	ELH
Scale	1:50 @ A2
Status	DETAIL

Paul Archer Design Ltd

Issue Note

103 Farringdon Roa

Hardman Structural Engineers

Studio 112, 134-146 Curtain Road, London EC2A 3AR Tel 020 7729 7900 Fax 020 7729 7707
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sk03 — Monitoring layout - Rear Elevati