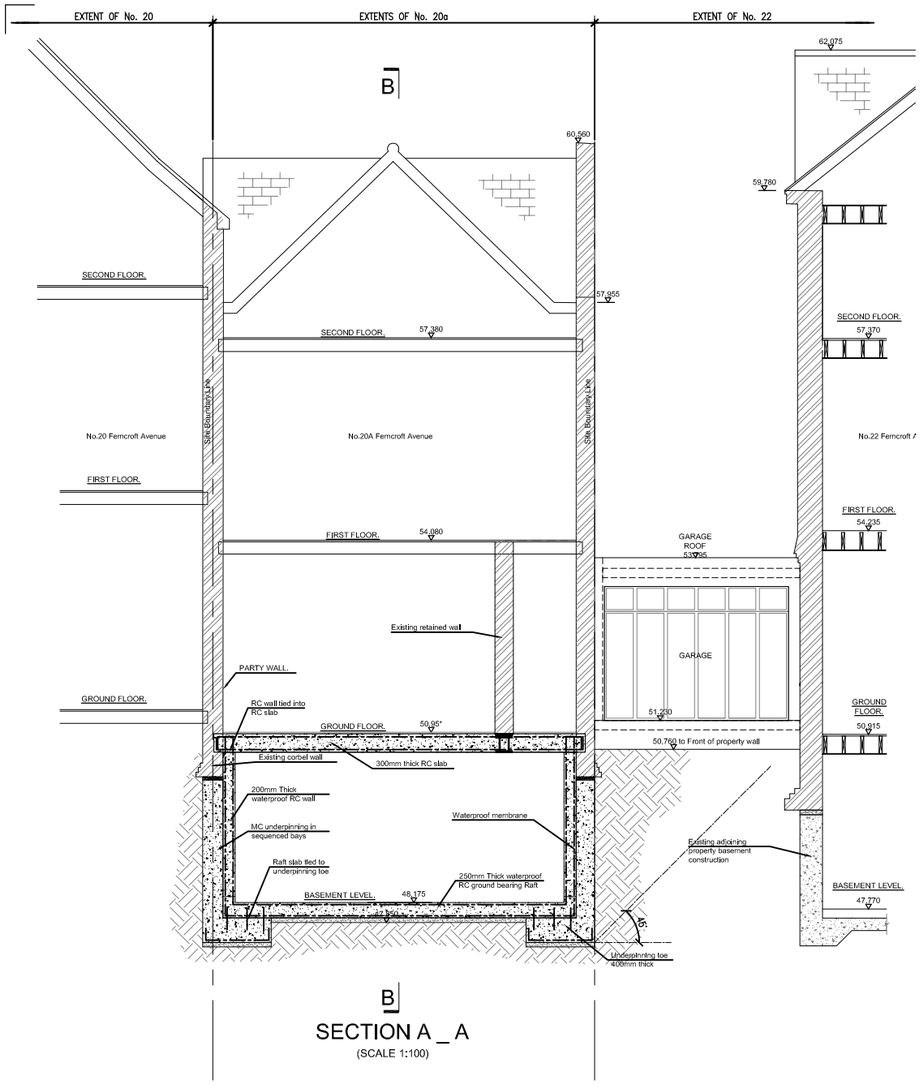
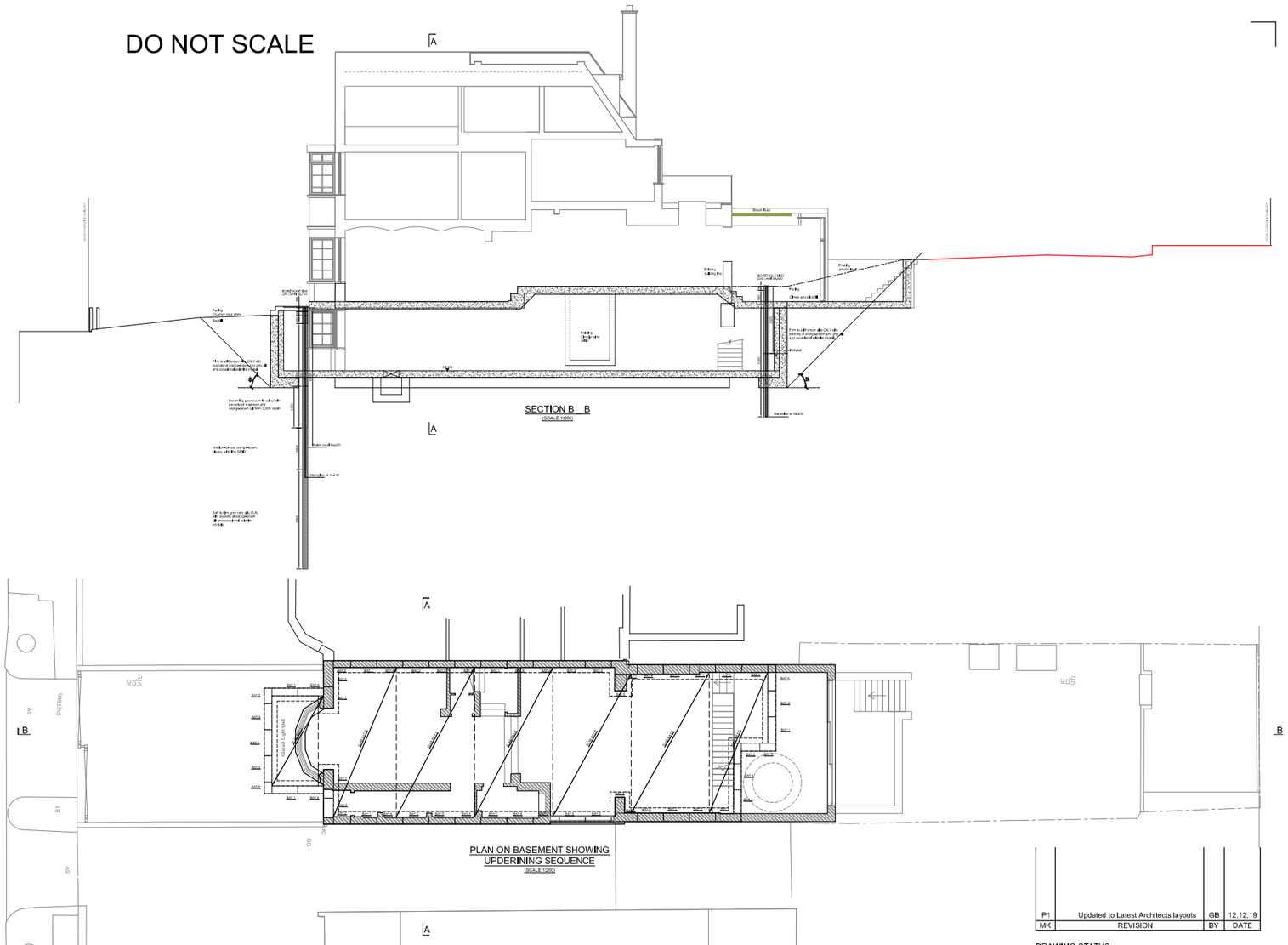
DO NOT SCALE





SUGGESTED SEQUENCE OF WORKS

Install monitoring points on site and the surrounding area

Contractor to review proposed underpinning and excavation sequence and supply full method statements to Project Engineer for approval

All excavation is to be undertaken from with the existing building envelope and site boundary

Suggested Installation of Underpinning Bay Type One (for a five bay sequence repeated as Type One)

- Mass concrete in underpinning legs shall be grade C20, 20mm maximum aggregate size, with a minimum cement ration of 275kg per meter cube and a free water/cement ratio of 0.65. note that this specification is suitable for sulphate conditions up to class 2 (of B.R.E DIGEST 363).
- Underpinning pins shall be excavated in bays not exceeding 1m in length, concreted, and dry-packed up to the underside of existing footing before proceeding to the next leg in the sequence. The sequence of construction is as given on the plan; like numbered legs may be constructed simultaneously. Deviation from the stipulated sequence or configuration of legs may be permitted at the discretion of the engineer, but under no circumstances shall the unsupported length of the structure to be underpinned exceed 20%, ie not more than 1 bay in 5 bays to unsupported at any one time.
- The concrete in underpinning legs shall be placed immediately after the excavation is complete, and has been approved by the Engineer and local authority building inspector. If delay is anticipated, the excavation shall be blinded to protect the bottom and prop the underside of the existing footing, or a further 150mm layer removed immediately prior to concreting.
- The underside of the existing footing shall be thoroughly cleaned, and if irregular, carefully trimmed to create an essential flat and horizontal surface that will not impede the placement of dry pack mortar.
- Care is to be taken to avoid water lying in the foundations.
- Concrete shall be placed employing a shutter or other means to avoid segregation of the mix, and vibrated to ensure proper compaction. Shuttering shall be provided, as required, to restrict overspill into access excavation.
- 75mm thickness dry packing shall be carried out not earlier than 24 hours after casting the leg. Dry pack mortar (1:3 sulphate-resisting Portland cement/sharp sand, mixed with sufficient water to produce 'earth damp' consistency) shall be rammed in so as to completely fill the void with dense, compact material.
- Allow 24 hours minimum between concreting & dry-packing over.
- Allow 24 hours minimum between dry-packing and excavation of the next pin in the sequence.
- Joint faces between pours to be cast shuttered with 75mm shear key or cast against previous cast surface after removal of any soil and laitance.
- Backfilling of excess excavation to be either lean-mix concrete (nominally 15:1 all-in aggregate to ordinary Portland cement) or selected fill.
- Backfilling of pin working space to be by using selected granular fill (which may include as-dug material), taking care to compact it in layers not exceeding 200mm in thickness. In all other situations lean-mix concrete shall be used, unless specific directions are given otherwise.
- Care shall be taken to avoid damage to service connections to the building, gas water and electrical mains shall be properly supported and protected when exposed, and re-buried or sleeved in accordance with the requirements of the relevant statutory authority. Drainage connection shall be similarly protected to avoid damage, but where temporary disconnection is unavoidable. This must be by arrangement with the Contract Administrator. In any event reconnection of services should be made at the end of each working day.
- All works to be overseen at all times by competent staff and signed-off by the contractor's temporary works coordinator.
- The drawing shows a suggested sequence which the Contactor is to follow or submit a revised sequence to the Engineer in good time to allow for comment and/or approval.
- Suggested Installation of Slab Bay Type ONE- (for a Seven bay sequence repeated as Type One)
- With all underpinning to external and internal walls now in place the lower ground floor slab can be installed in a phased sequence as indicated on the drawing
- Excavate Type One slab 3m wide bay to formation level and locally to install drainage pipework, install MOT Type 1, 50mm concrete blinding and DPM, install mesh reinforcement with dowel bars for adjacent bays and cast slab in place
- Allow 48 hours minimum between casting slab bay Type one and excavation of the next slab bay in the sequence.

MK	REVISION	BY	DATE
P1	Updated to Latest Architects layouts	GB	12.12.19

DRAWING STATUS

PLANNING

DRAWING TITLE

UNDERPINNING SEQUENCE AND SECTIONS A _ A & B _ B THROUGH BUILDING AND ADJOINING PROPERTIES

PROJECT — Project Number - P19-461

20A FERNCROFT AVENUE,
LONDON,
NW3 7PH,

simpson | tws
3 Dufferin Avenue
Barbican
London, EC1Y 8PQ
T: 020 7253 2626
E: mail@simpsoneng.com
W: www.simpsoneng.com
London, Henley-on Thames, Gloucester and Exeter

Drawn	Ch'kd	Scales	Date
GB	Ch'kd	NTS	29.10.19

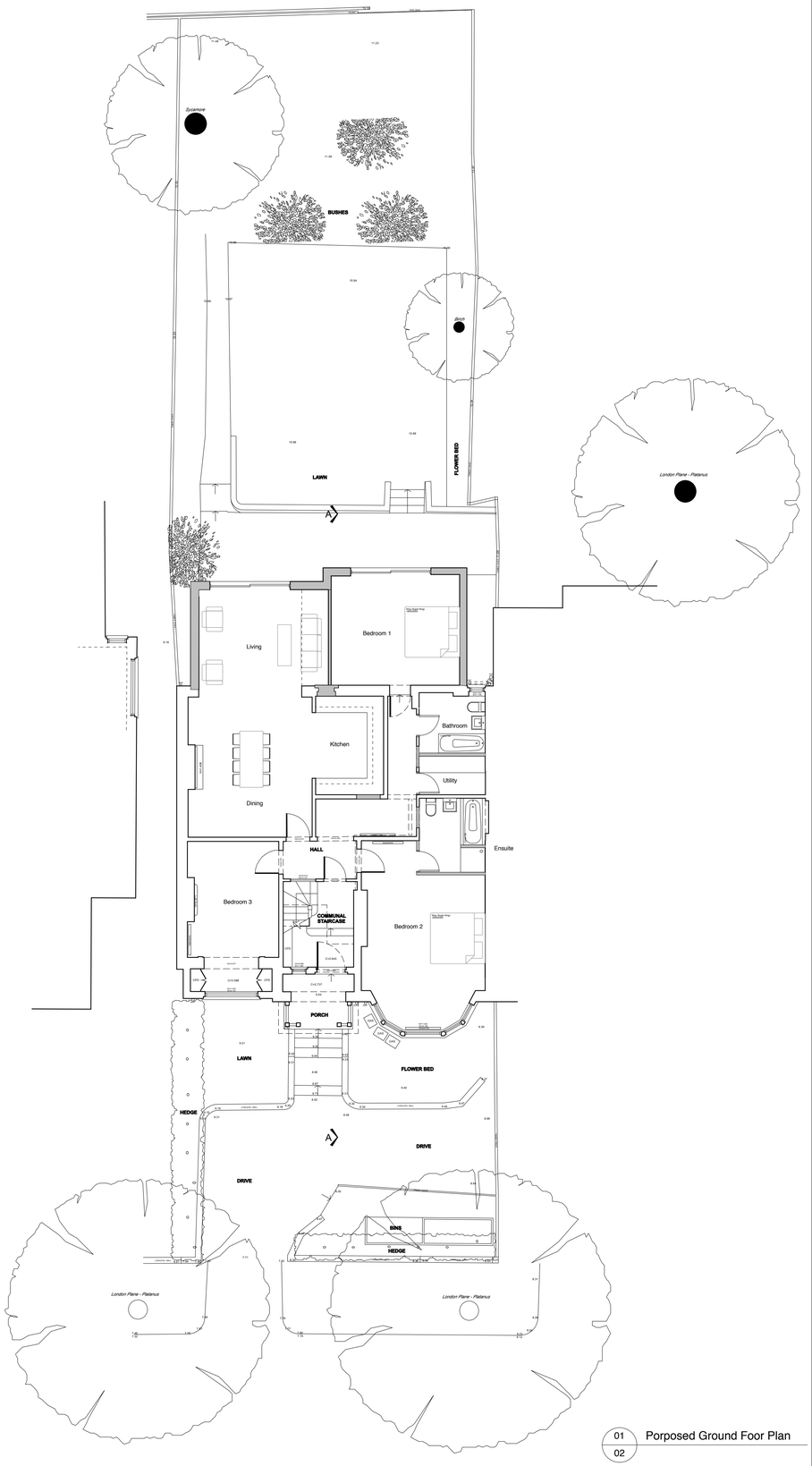
Purpose of Issue
BASEMENT IMPACT ASSESSMENT

Drawing Number	Revision
P19-461_SK08	P1

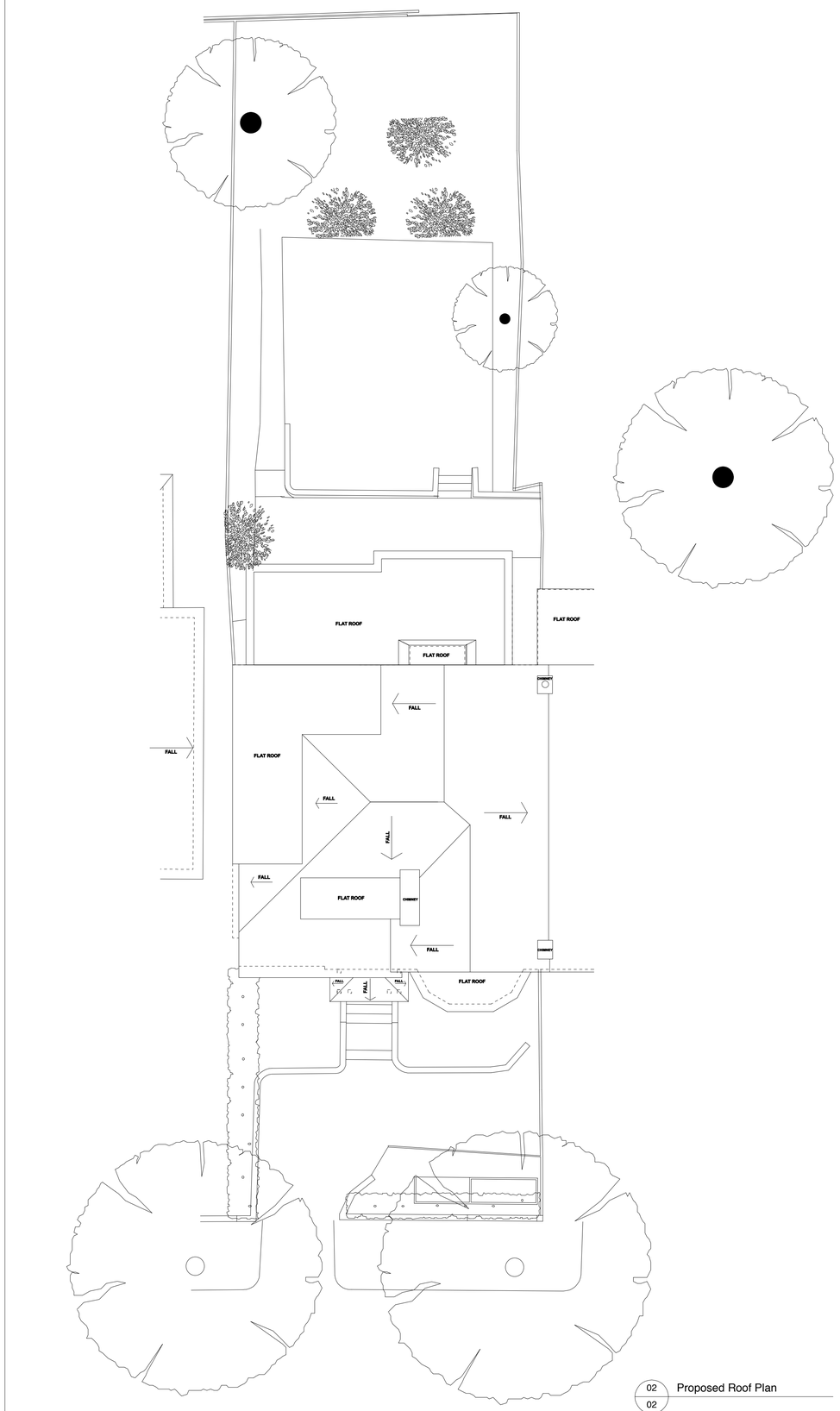
A3

Appendix F

Existing adjoining building drawings for 20 Ferncroft Avenue and 22 Ferncroft Avenue
22 Ferncroft Avenue Soil Investigation for dated 27th May 2014



01 02 Porposed Ground Foor Plan



02 02 Proposed Roof Plan

Notes

Key

N

0 1 2 3 4 M

PLANNING

Revisions

ibla
11 Wells Mews London W1T 3HD
t 020 7580 8808 f 020 7636 9951
www.ibla.uk.com postroom@ibla.uk.com

Client
Norman Glenn

Project
20 Ferncroft Avenue

Drawing
Proposed Ground Floor GA

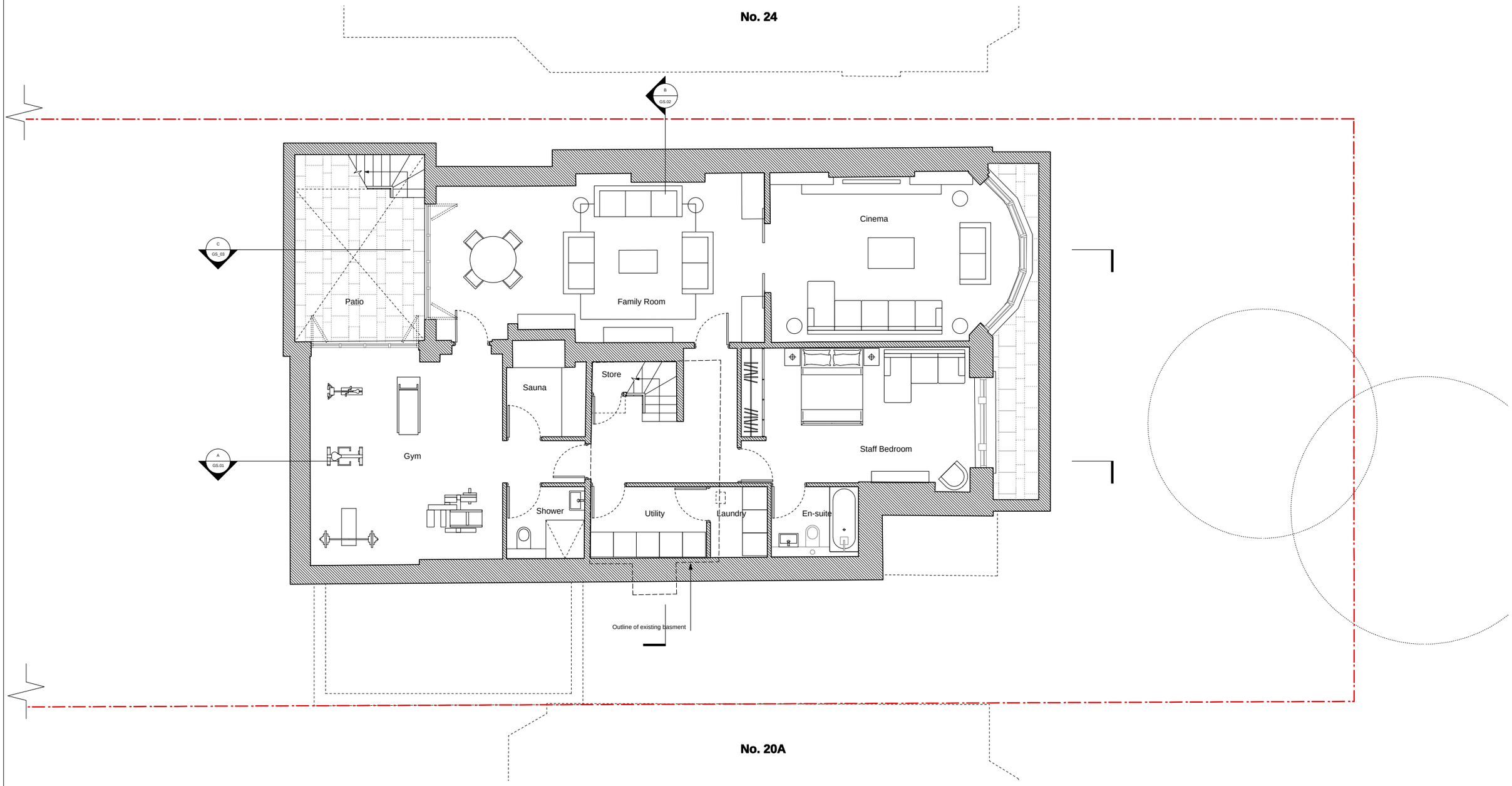
Date
Dec 2010

Scale
1:100 at A1
1:200 at A3

Drawn by
PI

Ref.
727 P05A

No. 24



No. 20A

01 GA.LG **Proposed Lower Ground Floor Plan**
1:100 @ A3

0 2 5m

N

Revisions		
A	20.03.2014	Update addressing planning concerns

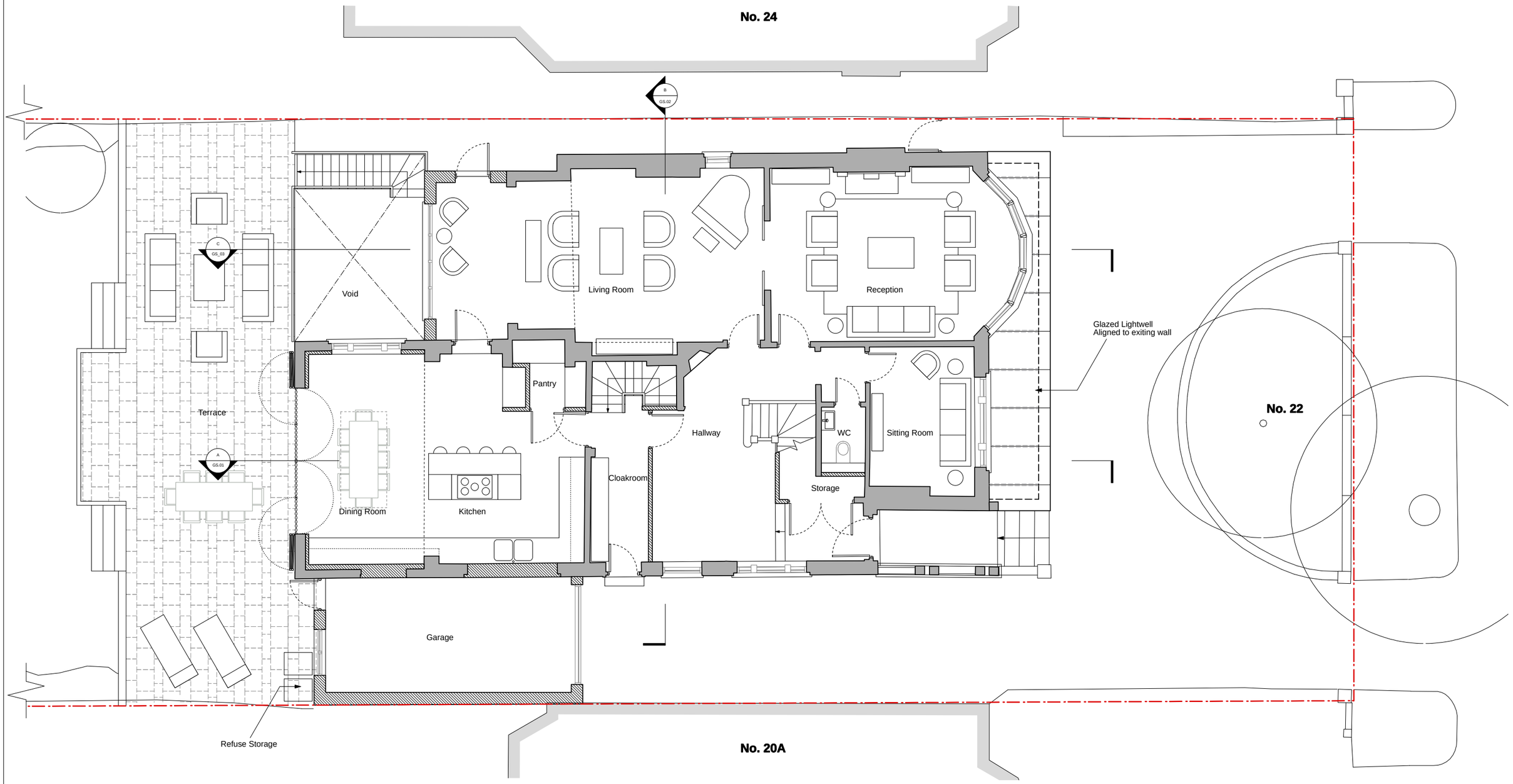
Client: --

Project: 22 Ferncroft Avenue, London, NW3 7PE

Drawing Title: Proposed Lower Ground Floor Plan

21st Architecture Ltd
Twenty First Architecture Ltd,
314 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.21starchitecture.com

Status: Information | Drawn: CL | Checked: RD
Scale: 1:50 @ A1, 1:100 @ A3 | Date: Dec 2013
Drwg. No.: 174_GA_LG | Revision: A



01 GA.00 **Proposed Ground Floor Plan**

1:100 @ A3

0 2 5m

N

Revisions

A	20.03.2014	Update addressing planning concerns

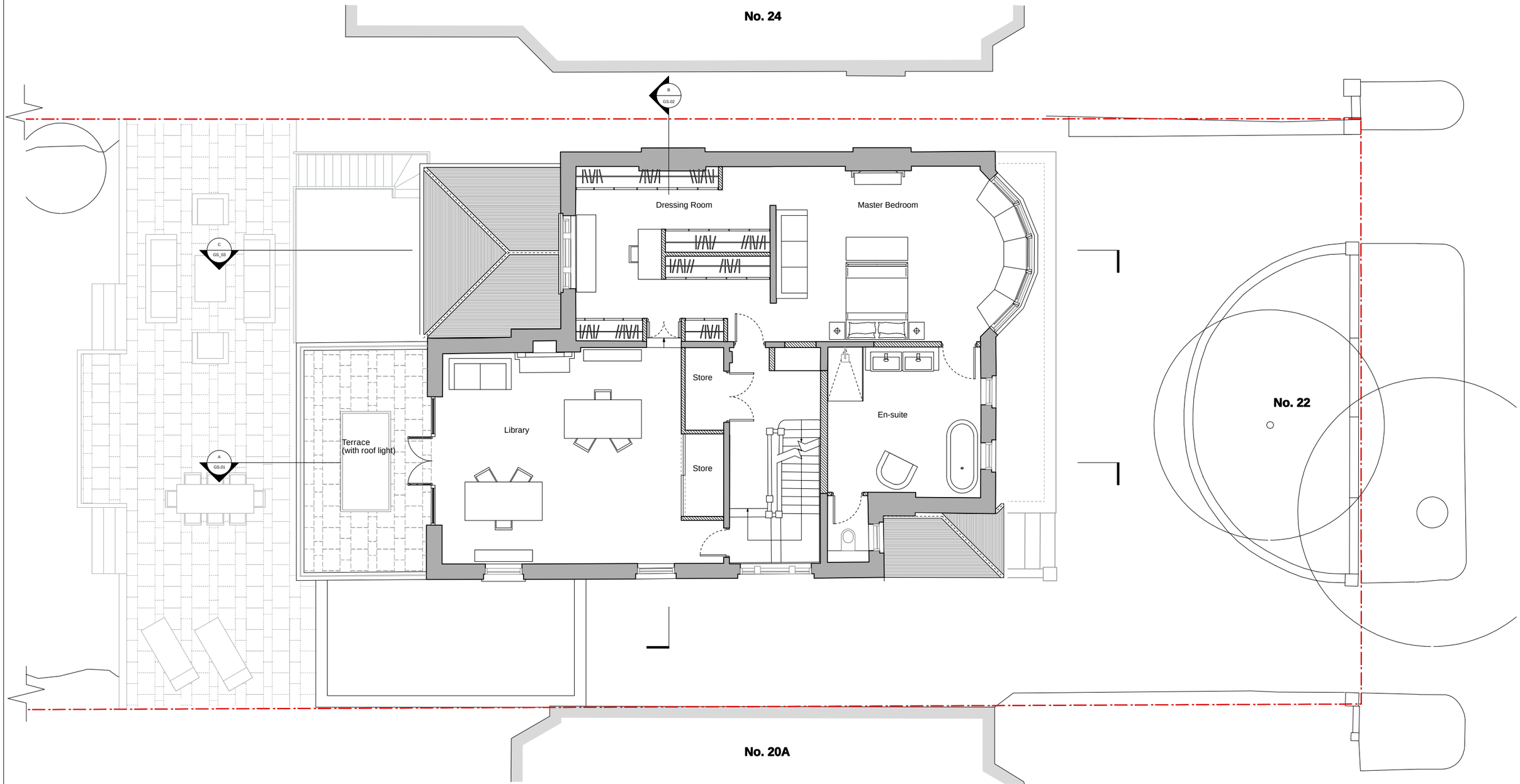
Client
--

Project
22 Ferncroft Avenue
London, NW3 7PE

Drawing Title
Proposed Ground Floor Plan

Twenty First Architecture Ltd,
214 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.21starchitecture.com

Status: Information
Drawn: CL
Checked: RD
Scale: 1:50 @ A1, 1:100 @ A3
Date: Dec 2013
Drwg. No.: 174_GA_00
Revision: A



01 GA.01 **Proposed First Floor Plan**

1:100 @ A3

0 2 5m

N

Revisions			
A	20.03.2014	Update addressing planning concerns	

Client
--

Project
22 Ferncroft Avenue
London, NW3 7PE

Drawing Title
Proposed First Floor Plan

21st Architecture Ltd
Twenty First Architecture Ltd,
314 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.21starchitecture.com

Status	Drawn	Checked
Information	CL	RD

Scale	Date
1:50 @ A1, 1:100 @ A3	Dec 2013

Drwg. No.	Revision
174_GA_01	A

01 GE.01 **Proposed South West (Front) Elevation**

1:100

02 GE.01 **Proposed North East (Rear) Elevation**

1:100

Revisions

A	20.03.2014	Update addressing planning concerns

Client: --

Project: 22 Ferncroft Avenue, London, NW3 7PE

Drawing Title: Proposed Elevations
South West (Front) & North East (Rear)

Twenty First Architecture Ltd,
214 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7962 0252
www.21starchitecture.com

Status	Drawn	Checked
Information	TG	RD

Scale	Date
1:50 @ A1, 1:100 @ A3	Dec 2013

Drwg. No.	Revision
174_GE_01	A

01 GE.02 **Proposed North West (Side) Elevation**

1:100

Revisions

A	20.03.2014	Update addressing planning concerns

Client: --

Project: 22 Ferncroft Avenue, London, NW3 7PE

Drawing Title: Proposed Elevations South West (Side)

21st Architecture Ltd

Twenty First Architecture Ltd,
314 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.21starchitecture.com

Status: Information | Drawn: CL | Checked: RD

Scale: 1:50 @ A1, 1:100 @ A3 | Date: Dec 2013

Drwg. No.: 174_GE_02 | Revision: A

NOTES FOR THE INTERPRETATION OF EXPLORATORY HOLE RECORDS

1 Symbols and abbreviations

Samples

U 'Undisturbed' Sample: - also known as 'U100' or 'U4' - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
Uo Sample not obtained.
U* Full penetration of sample not obtained.
U** Full penetration obtained but limited sample recovered.
Pi Piston Sample: 'Undisturbed' sample 100mm diameter by 600mm long.
D Disturbed Sample.
R Root Sample.
B Bulk Disturbed Sample.
W Water Sample.
J Jar Sample (sample taken in amber glass jar fitted with gas tight lid)
T Tub Sample
Vi Vial Sample
E Environmental Suite (including a jar sample, tub sample and vial sample)

In situ Testing

S Standard penetration test (SPT): In the borehole record the depth of the test is that at the start of the normal 450mm penetration, the number of blows to achieve the standard penetration of 300mm (the 'N' value) is shown after the test index letter, but the seating blows through the initial 150mm penetration are not reported unless the full penetration of 450mm cannot be achieved. In the latter case, the symbols below are added to the test index letter:-
S(R) Refusal of standard penetration test. Blow count reported includes seating blows. Total penetration of refused SPT reported in mm in brackets on borehole record.
So 'Split spoon' SPT sampler sank under its own weight.
The test is usually completed when the number of blows reaches 50 (25 blows for seating count). The depths of both the top and bottom of the test drive are shown in the sample column on the Borehole Record. If a sample is not recovered in the sampler, a disturbed sample is taken over the depth of the test as boring continues.

C Standard Penetration Test (SPT) conducted usually in coarse grained soils or weak rocks using the same procedure as for the SPT but with a 50mm diameter, 60º apex solid cone fitted in place of the sampler. Variations in test results are indicated by the same symbols as for the SPT (above).

V Shear Vane Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

H Hand penetrometer Test: Undrained shear strength (cohesion) (kN/m^2) shown within the Vane/Pen Test and N Value column.

P Perth Penetrometer Test: See "In Situ Testing Notes" for full description. Number of blows for 300mm penetration shown under Vane/Pen Test and N Value column. In sand the number of blows is approximately equivalent to the SPT "N" value.

2 Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1:2002) and Part 2 Principles of classification (BS EN 14688-2:2004) as well as the BS5930:1990 + A2:2010 code of Practice for Site Investigations.

Fine Grained Soils

The consistency of fine grained soils given in the report is based on visual inspection of the samples and the strength is based on results of in situ and/or laboratory undrained shear strength tests when carried out.

The consistency is determined on the following basis:

Consistency	**Manual Test**
Very Soft	Soil exudes between fingers when squeezed in hand
Soft	Soils can be moulded by light finger pressure
Firm	Cannot be moulded by finger but rolled to 3mm threads without breaking/crumbling
Stiff	Crumbles/breaks when rolled to 3mm thick threads but can be moulded into a lump again
Very Stiff	Cannot be moulded and crumbles under pressure, can be indented by thumbnail

Based on BS EN ISO 14688-1:2002

The terms used for the designation of the undrained shear strength are as follows:

Undrained Shear Strength	
Extremely to Very Low	<20 kPa
Low	20-40 kPa
Medium	40-75 kPa
High	75-150 kPa
Very High	150-300 kPa
Extremely high	300-600 kPa

Based on BS EN ISO 14688-2:2004

Note: The undrained shear strength of the soils is measured either by laboratory testing or in the field using hand penetrometer or shear vane.

It is recognised that any coarse grained soil that has in excess of approximately 35% fine grained soil (clay and silt) can often be expected to behave as a fine grained soil despite the dominance of coarse grained material within the soil mass. To reflect this, it is the soil type that dominates the behaviour of the soil mass that appears on the exploratory hole records.

Coarse Grained Soils

The relative densities of coarse grained soils (sand and gravel) given in the report are based on field estimations and the results of the Standard Penetration Test (SPT) and equivalent correlation from other testing. The classification in terms of "N" Values is as follows:

SPT 'N' Value	**Relative Density**
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Greater than 50	Very Dense

ASHDOWN SITE INVESTIGATION LIMITED
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN7 3PF

Borehole No.: BH3

Site Name: 22 Ferncroft Avenue, Hampstead, London

Job No.: LW25160

Start Date: 16/05/2014 | End Date: 16/05/2014

Standpipe Installation	Samples and Testing: Sample Type	Depths: From (m)	Depths: To (m)	Vane/ Pen Test N Value	DPSH Profile Blows/100mm (5, 15, 25)	Strata: Legend	Depth / Reduced Level	Strata Descriptions
							0.00	Ground Level
								Topsoil.
							0.30	
							0.50	MADE GROUND: Brown and black slightly gravelly silty sandy clay. Gravel is fine to coarse flint, brick, sandstone, clinker and ash.
	H	0.60		60				Firm brown orange and grey mottled slightly sandy silty CLAY with occasional pockets of orange sandy silt. (Claygate Member)
	H	0..90		90				
	D V	1.00		100				
	H	1.20		90				
	H	1.50		90				with selenite crystals below 1.50m depth.
	H	1.80		90				
	D V	2.00		>130				becoming stiff below 2.00m depth.
	H	2.10		115				
	H	2.40		90				
	H	2.70		115				
	D V	3.00		>130				becoming dark brown below 3.00m depth.
	H	3.00		140				
	H	3.30		90				
	H	3.70		90				
	D V	4.00		>130				
	H	4.10		140			4.20	
	H	4.50		225				Very stiff / hard dark brown grey and orange mottled slightly sandy silty CLAY with thiin lenses of orange silty sand. (Claygate Member)
	D H	4.90		170			5.00	

Remarks:

Groundwater seepage between 4.00m and 5.00m depth.

Standing water depth at 5.80m on completion, rising to 3.80m after 30 minutes and 3.20m after 1 hour.

Borehole collapsed to 3.60m after 1 hour.

Excavation Method: Dynamic sampler

Borehole Diameter: Various

Made By: DC

ASHDOWN SITE INVESTIGATION LIMITED
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN7 3PF

Borehole No.: BH3

Site Name: 22 Ferncroft Avenue, Hampstead, London

Job No.: LW25160

Start Date: 16/05/2014 | End Date: 16/05/2014

Standpipe Installation	Samples and Testing: Sample Type	Depths: From (m)	Depths: To (m)	Vane/ Pen Test N Value	DPSH Profile Blows/100mm (5 15 25)	Strata: Legend	Strata: Depth / Reduced Level	Strata: Strata Descriptions
	V	5.00		>130				Medium dense brown and orange clayey sandy SILT with some fine to medium mudstone. (Claygate Member)
	D	6.00					6.00	
								End of Borehole

Remarks:

Excavation Method: Dynamic sampler

Borehole Diameter: Various

Made By: DC

ASHDOWN SITE INVESTIGATION LIMITED
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN7 3PF

Borehole No.: BH4

Site Name: 22 Ferncroft Avenue, Hampstead, London

Job No.: LW25160

Start Date: 16/05/2014 | End Date: 16/05/2014

Standpipe Installation	Samples and Testing: Sample Type	Depths: From (m)	Depths: To (m)	Vane/ Pen Test N Value	DPSH Profile Blows/100mm (5 15 25)	Strata: Legend	Depth / Reduced Level	Strata Descriptions
							0.00	Ground Level
							0.30	Block paving (80mm) over, MADE GROUND: Grey fine to medium gravel of crushed rock sub base.
	H	0.40		90				Stiff brown orange and grey mottled slightly sandy silty CLAY with occasional pockets of orange sandy SILT. (Claygate Member)
	D	0.50						
	H	0.70		115				
	V			>130				
	H	1.00		140				becoming very sandy CLAY between 1.10m and 1.60m depth.
	H	1.30		140				
	D	1.50						becoming very stiff below 2.00m depth.
	H	1.60		115				
	H	1.90		170				
	V			>130				
	H	2.10		195				
	H	2.40		195				
	D	2.50						
	H	2.70		170				
	H	3.00		170				
	V			>130			3.10	
	D	3.50						Loose orange and light grey laminated slightly clayey silty fine SAND with laminations of firm grey CLAY and orange sandy SILT. (Claygate Member)
	D	4.50						becoming medium dense below 4.40m depth.
							5.00	

Remarks:

Groundwater seepage below 5.00m depth.

Borehole collapsed to 2.50m depth 20 minutes after completion.

Excavation Method: Dynamic sampler

Borehole Diameter: Various

Made By: DC

ASHDOWN SITE INVESTIGATION
L•I•M•I•T•E•D
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
Swanborough Farm
Swanborough
Lewes, East Sussex
BN7 3PF

Borehole No.: BH4

Site Name: 22 Ferncroft Avenue, Hampstead, London

Job No.: LW25160

Start Date: 16/05/2014 | End Date: 16/05/2014

Standpipe Installation	Samples and Testing					Strata		
	Sample Type	Depths From (m)	Depths To (m)	Vane/ Pen Test N Value	DPSH Profile Blows/100mm 5 15 25	Legend	Depth / Reduced Level	Strata Descriptions
	D H	5.50		90			6.00	Interbedded firm to stiff brown silty sandy CLAY, medium dense SILT and medium dense fine SAND with occasional thin beds of ironstone. (Claygate Member)
								End of Borehole

Remarks:

Excavation Method: Dynamic sampler

Borehole Diameter: Various

Made By: DC

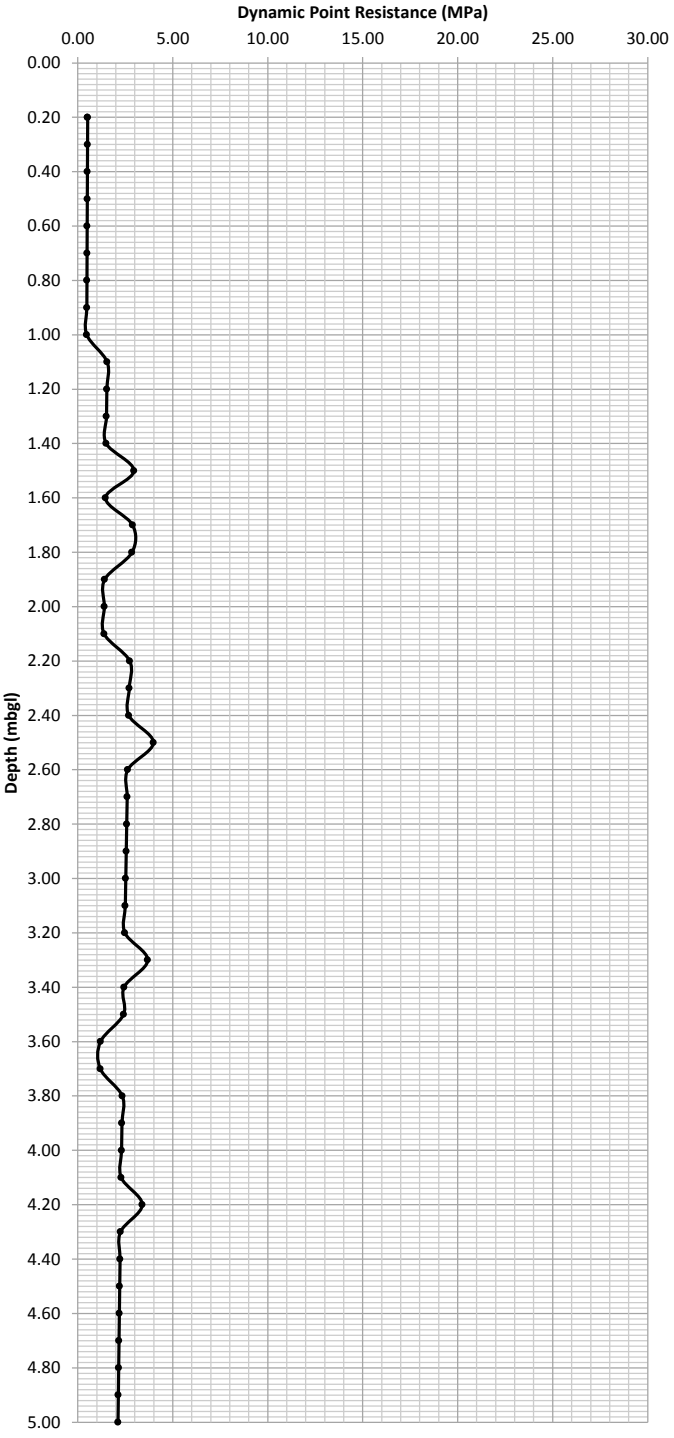
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 22 Ferncroft Avenue, Hampstead, London **Report Ref.** LW25160

Test Location Reference	BH3

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20	0.3	0.33	0.54	0.52
0.30	0.3	0.33	0.54	0.51
0.40	0.3	0.33	0.54	0.51
0.50	0.3	0.33	0.54	0.50
0.60	0.3	0.33	0.54	0.49
0.70	0.3	0.33	0.54	0.49
0.80	0.3	0.33	0.54	0.48
0.90	0.3	0.33	0.54	0.47
1.00	0.3	0.33	0.54	0.47
1.10	1.0	0.10	1.81	1.55
1.20	1.0	0.10	1.81	1.53
1.30	1.0	0.10	1.81	1.51
1.40	1.0	0.10	1.81	1.49
1.50	2.0	0.05	3.62	2.95
1.60	1.0	0.10	1.81	1.46
1.70	2.0	0.05	3.62	2.89
1.80	2.0	0.05	3.62	2.85
1.90	1.0	0.10	1.81	1.41
2.00	1.0	0.10	1.81	1.40
2.10	1.0	0.10	1.81	1.38
2.20	2.0	0.05	3.62	2.74
2.30	2.0	0.05	3.62	2.71
2.40	2.0	0.05	3.62	2.68
2.50	3.0	0.03	5.43	3.98
2.60	2.0	0.05	3.62	2.63
2.70	2.0	0.05	3.62	2.60
2.80	2.0	0.05	3.62	2.57
2.90	2.0	0.05	3.62	2.55
3.00	2.0	0.05	3.62	2.52
3.10	2.0	0.05	3.62	2.50
3.20	2.0	0.05	3.62	2.48
3.30	3.0	0.03	5.43	3.68
3.40	2.0	0.05	3.62	2.43
3.50	2.0	0.05	3.62	2.41
3.60	1.0	0.10	1.81	1.19
3.70	1.0	0.10	1.81	1.18
3.80	2.0	0.05	3.62	2.34
3.90	2.0	0.05	3.62	2.32
4.00	2.0	0.05	3.62	2.30
4.10	2.0	0.05	3.62	2.28
4.20	3.0	0.03	5.43	3.39
4.30	2.0	0.05	3.62	2.24
4.40	2.0	0.05	3.62	2.22
4.50	2.0	0.05	3.62	2.21
4.60	2.0	0.05	3.62	2.19
4.70	2.0	0.05	3.62	2.17
4.80	2.0	0.05	3.62	2.15
4.90	2.0	0.05	3.62	2.13
5.00	2.0	0.05	3.62	2.12



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.7268	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

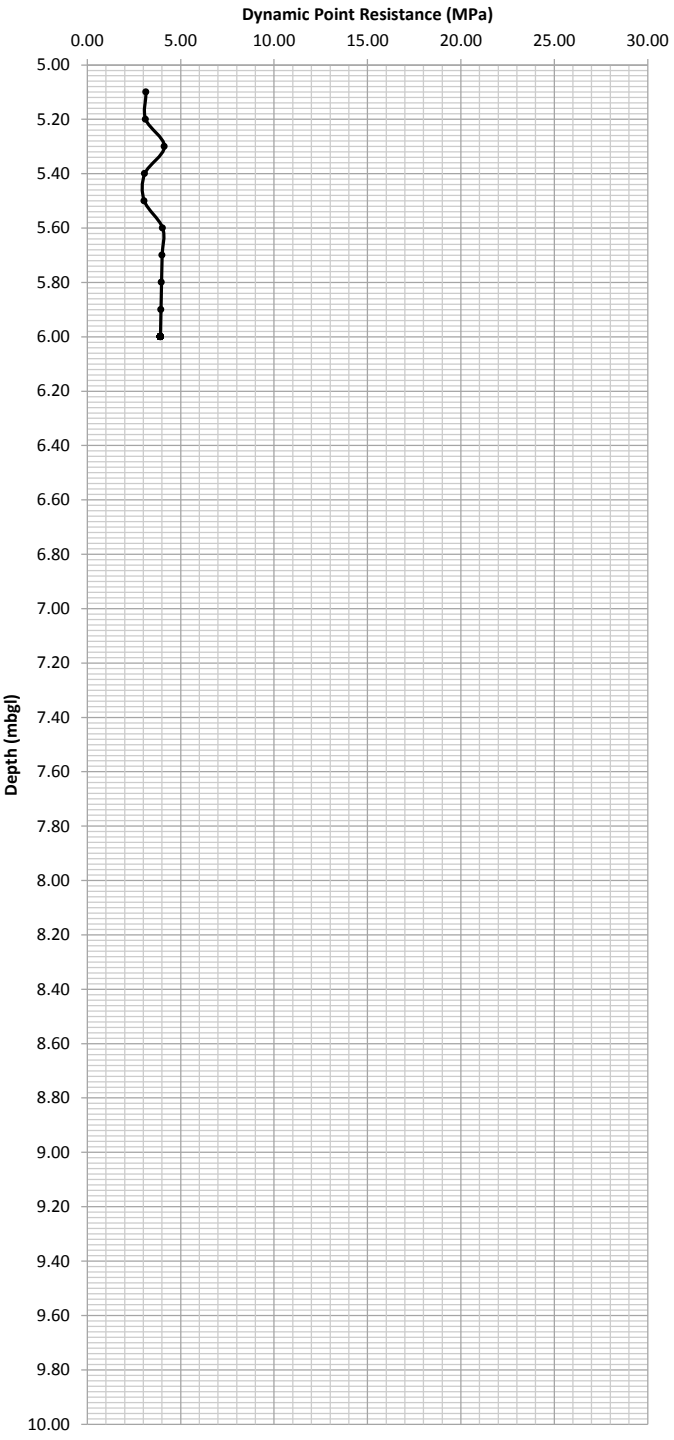
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 22 Ferncroft Avenue, Hampstead, London **Report Ref.** LW25160

Test Location Reference	BH3

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	3.0	0.03	5.43	3.15
5.20	3.0	0.03	5.43	3.12
5.30	4.0	0.03	7.24	4.13
5.40	3.0	0.03	5.43	3.08
5.50	3.0	0.03	5.43	3.05
5.60	4.0	0.03	7.24	4.04
5.70	4.0	0.03	7.24	4.01
5.80	4.0	0.03	7.24	3.98
5.90	4.0	0.03	7.24	3.95
6.00	4.0	0.03	7.24	3.92
6.10				
6.20				
6.30				
6.40				
6.50				
6.60				
6.70				
6.80				
6.90				
7.00				
7.10				
7.20				
7.30				
7.40				
7.50				
7.60				
7.70				
7.80				
7.90				
8.00				
8.10				
8.20				
8.30				
8.40				
8.50				
8.60				
8.70				
8.80				
8.90				
9.00				
9.10				
9.20				
9.30				
9.40				
9.50				
9.60				
9.70				
9.80				
9.90				
10.00				



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.7268	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

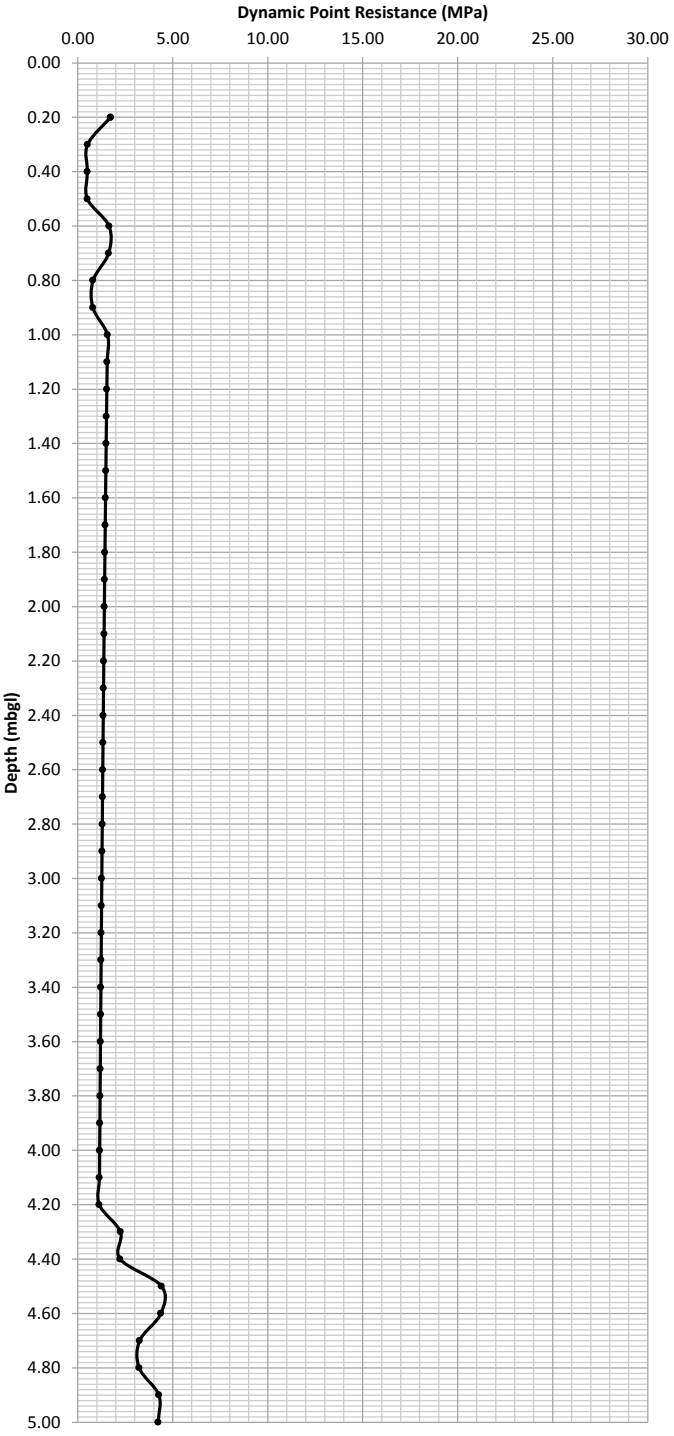
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 22 Ferncroft Avenue, Hampstead, London **Report Ref.** LW25160

Test Location Reference	BH4

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20	1.0	0.10	1.81	1.73
0.30	0.3	0.33	0.54	0.51
0.40	0.3	0.33	0.54	0.51
0.50	0.3	0.33	0.54	0.50
0.60	1.0	0.10	1.81	1.64
0.70	1.0	0.10	1.81	1.62
0.80	0.5	0.20	0.91	0.80
0.90	0.5	0.20	0.91	0.79
1.00	1.0	0.10	1.81	1.56
1.10	1.0	0.10	1.81	1.55
1.20	1.0	0.10	1.81	1.53
1.30	1.0	0.10	1.81	1.51
1.40	1.0	0.10	1.81	1.49
1.50	1.0	0.10	1.81	1.48
1.60	1.0	0.10	1.81	1.46
1.70	1.0	0.10	1.81	1.44
1.80	1.0	0.10	1.81	1.43
1.90	1.0	0.10	1.81	1.41
2.00	1.0	0.10	1.81	1.40
2.10	1.0	0.10	1.81	1.38
2.20	1.0	0.10	1.81	1.37
2.30	1.0	0.10	1.81	1.35
2.40	1.0	0.10	1.81	1.34
2.50	1.0	0.10	1.81	1.33
2.60	1.0	0.10	1.81	1.31
2.70	1.0	0.10	1.81	1.30
2.80	1.0	0.10	1.81	1.29
2.90	1.0	0.10	1.81	1.27
3.00	1.0	0.10	1.81	1.26
3.10	1.0	0.10	1.81	1.25
3.20	1.0	0.10	1.81	1.24
3.30	1.0	0.10	1.81	1.23
3.40	1.0	0.10	1.81	1.22
3.50	1.0	0.10	1.81	1.20
3.60	1.0	0.10	1.81	1.19
3.70	1.0	0.10	1.81	1.18
3.80	1.0	0.10	1.81	1.17
3.90	1.0	0.10	1.81	1.16
4.00	1.0	0.10	1.81	1.15
4.10	1.0	0.10	1.81	1.14
4.20	1.0	0.10	1.81	1.13
4.30	2.0	0.05	3.62	2.24
4.40	2.0	0.05	3.62	2.22
4.50	4.0	0.03	7.24	4.41
4.60	4.0	0.03	7.24	4.37
4.70	3.0	0.03	5.43	3.25
4.80	3.0	0.03	5.43	3.23
4.90	4.0	0.03	7.24	4.27
5.00	4.0	0.03	7.24	4.23



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.7268	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

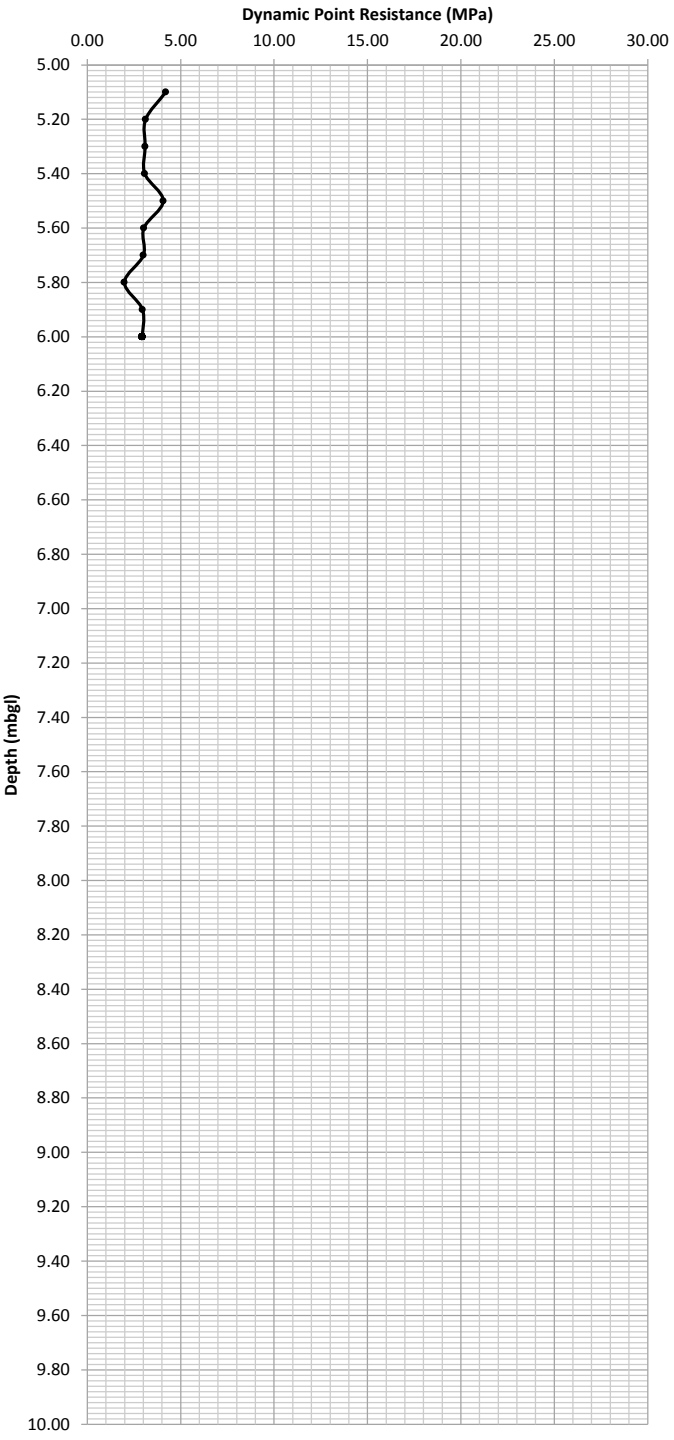
ASHDOWN SITE INVESTIGATION LTD

Dynamic Probe Record

SITE 22 Ferncroft Avenue, Hampstead, London **Report Ref.** LW25160

Test Location Reference	BH4

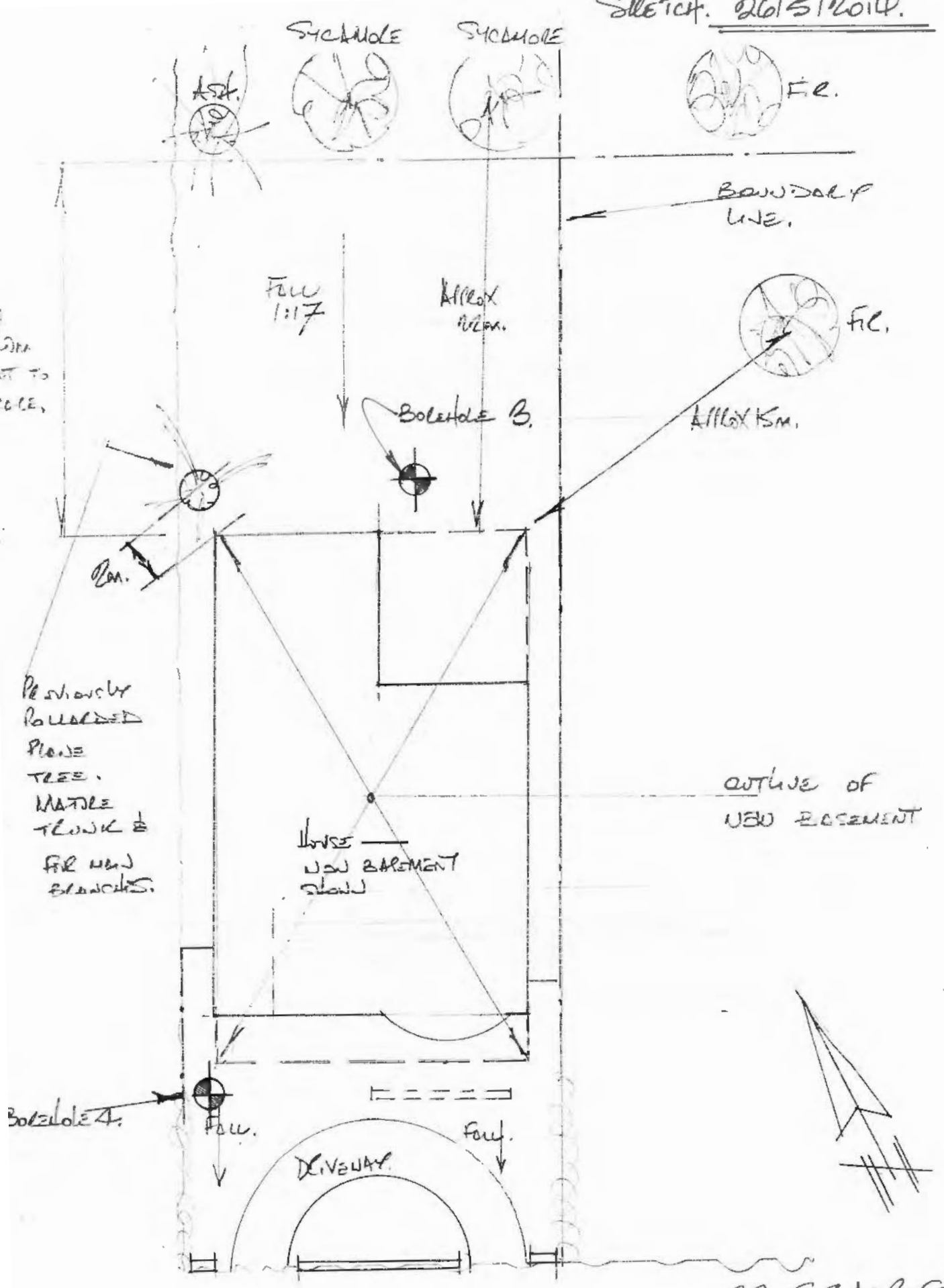
Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
5.10	4.0	0.03	7.24	4.20
5.20	3.0	0.03	5.43	3.12
5.30	3.0	0.03	5.43	3.10
5.40	3.0	0.03	5.43	3.08
5.50	4.0	0.03	7.24	4.07
5.60	3.0	0.03	5.43	3.03
5.70	3.0	0.03	5.43	3.00
5.80	2.0	0.05	3.62	1.99
5.90	3.0	0.03	5.43	2.96
6.00	3.0	0.03	5.43	2.94
6.10				
6.20				
6.30				
6.40				
6.50				
6.60				
6.70				
6.80				
6.90				
7.00				
7.10				
7.20				
7.30				
7.40				
7.50				
7.60				
7.70				
7.80				
7.90				
8.00				
8.10				
8.20				
8.30				
8.40				
8.50				
8.60				
8.70				
8.80				
8.90				
9.00				
9.10				
9.20				
9.30				
9.40				
9.50				
9.60				
9.70				
9.80				
9.90				
10.00				



Notes:

Hammer Mass	63.5	kg
Fall Height	0.76	m
Cone Area	0.0019	m^2
E_{theor}	473	J
Energy Ratio	0.7268	
Anvil Mass	1.25	kg
Rod Mass	8.79	kg/m

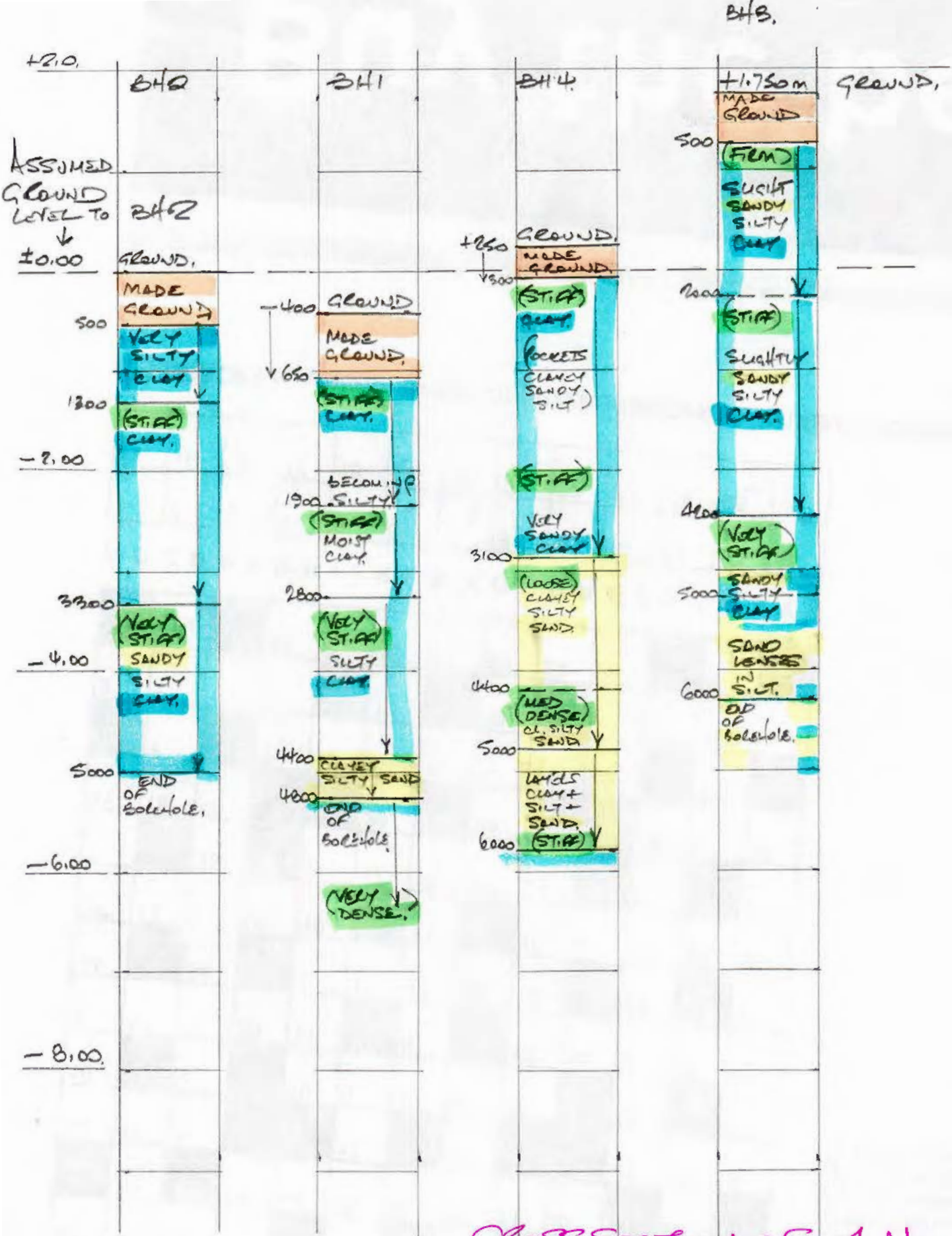
SKETCH. 26/5/2014.



PLAN ON BASEMENT @ 1:100

22 GOLDCROFT AVENUE, HAMPSTEAD NW3

JOB No. 1250.



CROSS SECTION OF 4 No. BOREHOLES TO 10/22 FERN CROFT AVENUE, HAMPSTEAD, NW3. JOB No 1250. 27/5/2014

Appendix D

Soil Investigation Report - May 2014.

A Report

concerning the soil investigations carried out

at

22, Ferncroft Avenue, Hampstead,
LONDON NW 3 7 PH.

Prepared by
Soarbond Ltd. for Mr. and Mrs Torns,

Chartered Civil & Structural Engineers.

17, Clarendon Road,
Ealing,
London W5 1AA.

Tel: 0208 997 8663

1250 / 27 May 2014.

1.0. Introduction.

1.1 The brief given provided is to check the soil sampling carried out at the above property and also the soil sampling carried out " 2 properties away " i.e. within 15 metres of the subject property. In all, 4 number 5 to 6 metres deep boreholes were sunk and the soil sampled for all four boreholes. Under Appendix A of this document can be found the borehole logs for BH 3 and 4; the previous boreholes at 18 were numbered 1 and 2 so we have decided to continue with this numbering. Also included with this information are the dynamic point resistance values which show that the sandy silty clay material with lenses of sandy clayey silt and clayey silty sand are relatively soft to 5 metres depth and retain a great deal of water within their mass. There is ingress of water noted into the boreholes between the wet / moist mass of silty, sandy CLAY but it is not a large amount of water that cannot be controlled by pumping out the dig to basement in a controlled manner. Refer proposals for temporary works for details.

1.2 22 Ferncroft Avenue is a detached house on the western side of Hampstead Hill and, locally, we have estimated that the ground is falling towards the road at a gradient of 1 in 17. The house appears to be late Victorian or Edwardian.

1.3 This report is required by the Planning Authority to satisfy itself that granting planning permission to carry out the formation of a full plan demise basement will not have a detrimental effect on the neighbouring properties and our proposals to counter any soil movement will be satisfactory and adopted by the Main Contractor.

1.4 As Structural Engineers, we consider the permanent works to form the basement are fully described on the Architect's drawings and will be further detailed to by us, as the Structural Engineers in future when the detailed design of the project proceeds.

1.5 The temporary works are considered crucial here as the first stage of works will entail excavation to form underpins in discrete, small areas and away from other underpins. We consider that there will be no possibility of subject house movement or localised damage to neighbours if the basement walling is formed by using classical underpinning techniques.

The underpins will be formed with pumping out of standing water from approximately 3.6 metre depth below. It will be suggested to the main Contractor that injecting the lenses of sand or heavily sandy clay with grout will also help to reduce

the inflow of water as this will form a concrete shield to the perimeter. Also, the excavation of the internal block of clay soil can be carried out piecemeal so that areas of prepared ground can be concrete blinded to seal the inflow of water from below. It should be noted that the soil sampling has taken place after 6 months of very heavy rain and the ground water levels are exceptionally high. With summer approaching, these levels will drop quite significantly and trees will take up a great deal of ground water at the end of the garden.

Further temporary works that should be considered are the use of poling boards or trench sheeting to help retain soil before underpins are formed. Secondly, we would advise the use of " stand alone " well points around the site to remove water from wells, lower the local ground water table locally at this site and pump it further up the hill so it finds its way into the soil at the end of the garden and drains into the neighbour's gardens so not reducing the local water table away from the site.
Thirdly, we would recommend consideration of the use of sheet piling using a small back-actor drill. The soil survey indicates the material to 5 metres is easily penetrated and pushing in jointed sheeting material could be feasible to close off the water bound sand lenses that fall towards the house. This would reduce ingress but not stop it completely.

1.6 This report does not include any information on the remaining areas of the property and concentrates solely on the suitability of the proposed basement redevelopment works.

1.7 Under Appendix A, we attach the soil survey for this property whilst, under Appendix B, we have included the sketch drawings showing the locations of boreholes and a cross section appraisal indicating the variety of material.

2.0 Observations.

2.1 Based on the information given in appendix A, there will be no difficulty in preparing a suitable method statement for the planned works when a selected Contractor has chosen. The formation of the basement should be carried out on traditional lines i.e. forming underpins to give a box down to below basement level, casting the basement slab whilst bracing the box before the sides and base as well as the newly formed suspended ground floor is finalised.

2.2 All this will allow the material to the outside to be kept in location and not allowed to move. This will allow the boundary walls / fences and the neighbour's sub structure construction to remain as is and not suffer any untoward damage.

2.3 The soil across the site appears to be, generally, sandy silty clay but moist and wet in many places because of discrete lens of silt and sand. The inflow of water from the two boreholes appeared to confirm that we have ingress to 31 litres per hour which can be accommodated easily by pumping.

2.4 The selected Contractor after tendering, will remove spoil from site via the front where we have a large garden easily turned into a temporary storage area for spoil, materials and offices etc. Pumping can also take place here as it would appear that the sand lenses follow the contours of the ground partially and we will hit the sand lenses at the front of the house and not at the back.

2.5 Once the basement shell has been constructed, the Contractor will complete the shell of the block and waterproof it, employing a cavity drain, as given on the drawings and to the Structural Engineer's requirements. The box will be fitted out and finishes completed.

2.6 There will be a requirement for a new plant room and materials for this will be transferred into the new basement so that the waterproofing of the basement can proceed using our recommendation of Delta Membrane and two sumps to remove arisings in the basement.

2.7 At the same time as the above works are carried out from the inside and all arisings taken out from the front of the block to grab lorries, works will also be advanced from the inside to the ground floor and the superstructure.

2.8 If it is found that, at any time, water ingresses into this site dig becomes difficult to manage or excessive, then the

Contractor can seal the inflow areas using concrete grout injections as mentioned above, casting dry lean concrete behind any trench sheets or poling boards, using more and stronger water pumps or any combination of these or any other method he would like to propose for consideration such as ground freezing, piling, matting injections and such new technologies as are available within budget etc.

3.0 Conclusions.

3.1 Appropriate temporary works must be carried out to prevent any foreseeable structural damage to the permanent works. Slips and movement of walling, foundations, slabs and roofs must be curtailed and reduced to a minimum. There will be cases where removal of loading, overburden, release of side pressure and changes to the existing distribution may cause a release of stress (i.e. clay heave) but this has to be managed to ensure limitation of damages.
The temporary works indicated here appear to be satisfactory to ensure such limitation but the opening up of the below ground zone may cause some reworking of the details depending on the uncovered situation. Sampling, given above, is only as accurate as the immediate locality.

3.2 The scheme suggested above where works start at the front and work backwards towards the rear is easily the favoured way of working by most Contractors. However, each Contractor will decide his method and prepare a suitable Statement for Basement Construction, House redevelopment and Traffic Movement study.

3.3 We feel that there is nothing critical or difficult in the redevelopment and it should be favourably considered by the Local Authority planning officers and their advisors. The works will be within the existing site boundaries and within the clay strata. Using acceptable temporary works and the party wall awards still to be sorted out, must give all involved comfort that the works will not overlook any critical item.

For and on behalf of

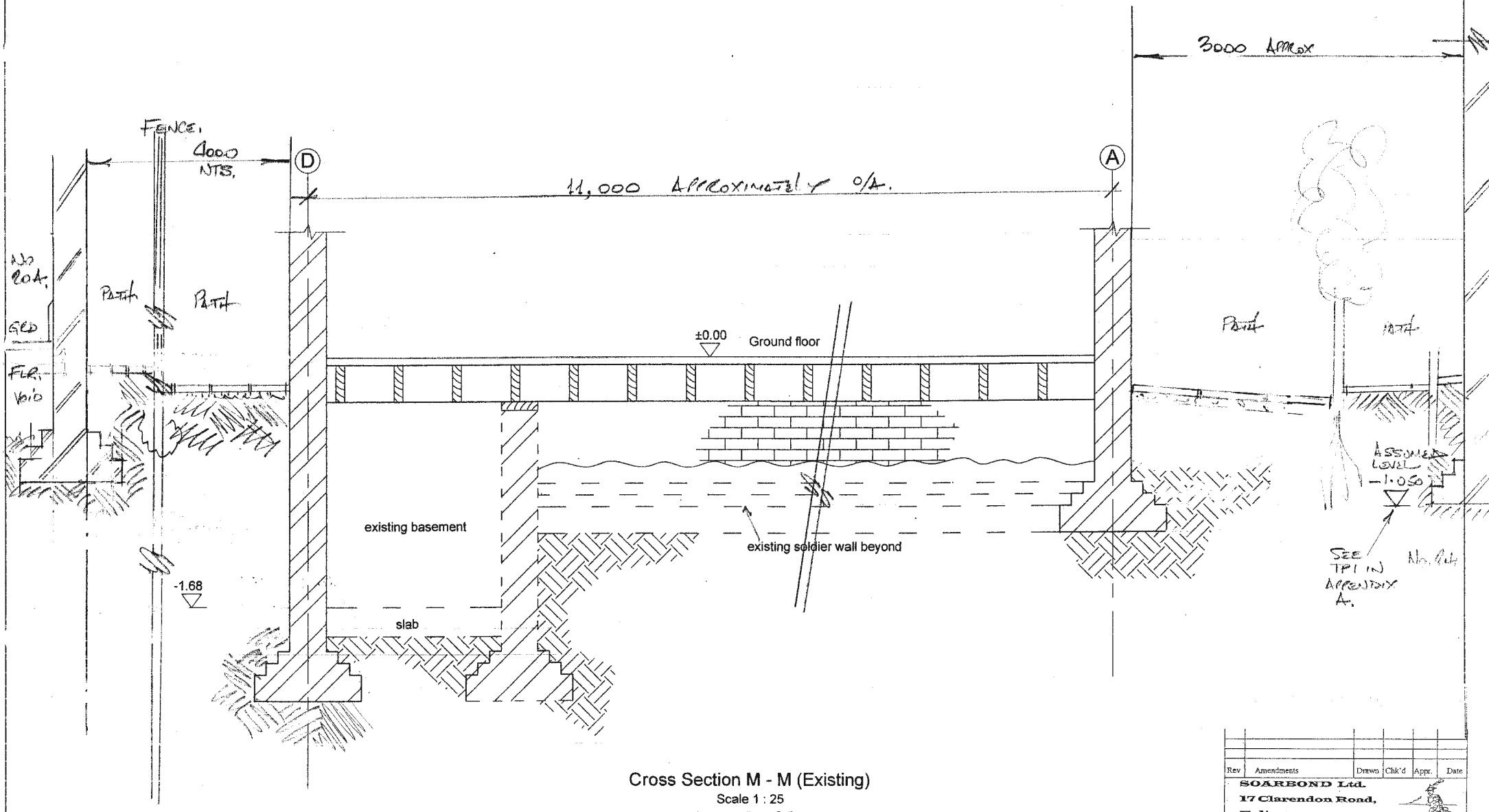
Soarbond Ltd.

WKJ Zablocki B.Sc. C. Eng. MICE
Director.

Appendix E

Typical cross sections through basement works.

APPENDIX E (1)



Cross Section M - M (Existing)

Scale 1 : 25

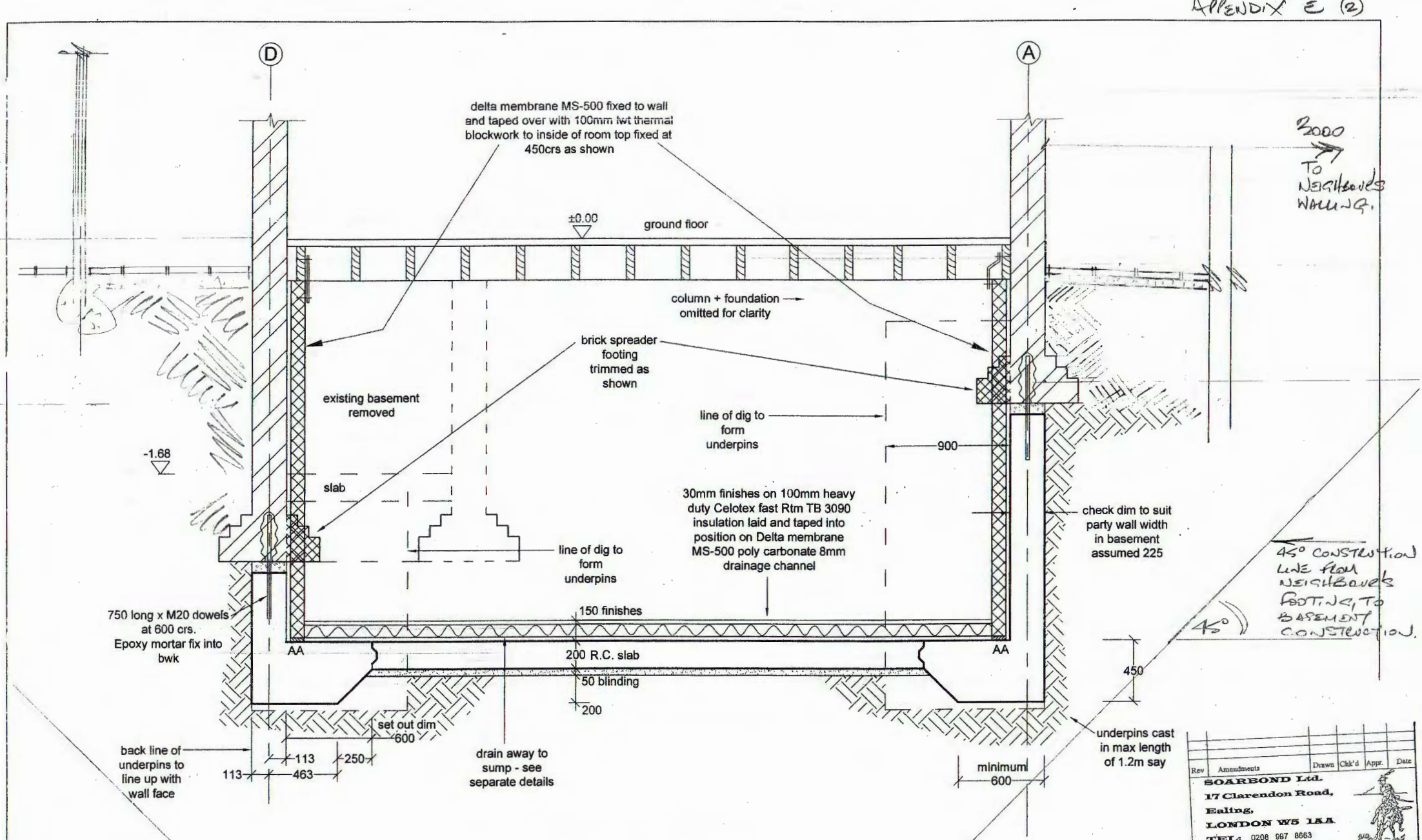
NUMBER 22

Rev	Amendments	Drawn	Chk'd	Appr.	Date

SOARBOND Ltd.
17 Clarendon Road,
Ealing,
LONDON W5 1AA
TEL: 0208 997 8663
E Mail : soarbond@yahoo.co.uk

Job Title.	22 FERNCROFT AVE., HAMPSTEAD, NW3 TP1 on 10 June
Drawing Title.	Cross Section - Existing.
Client.	MR. & MRS. TOMS
Scale 1:25	Date JAN 2014 Drawn By: WL
Chk'd	Date Approved:
Job No. 1250	Drg. No. 10 Rev.

APPENDIX E (2)



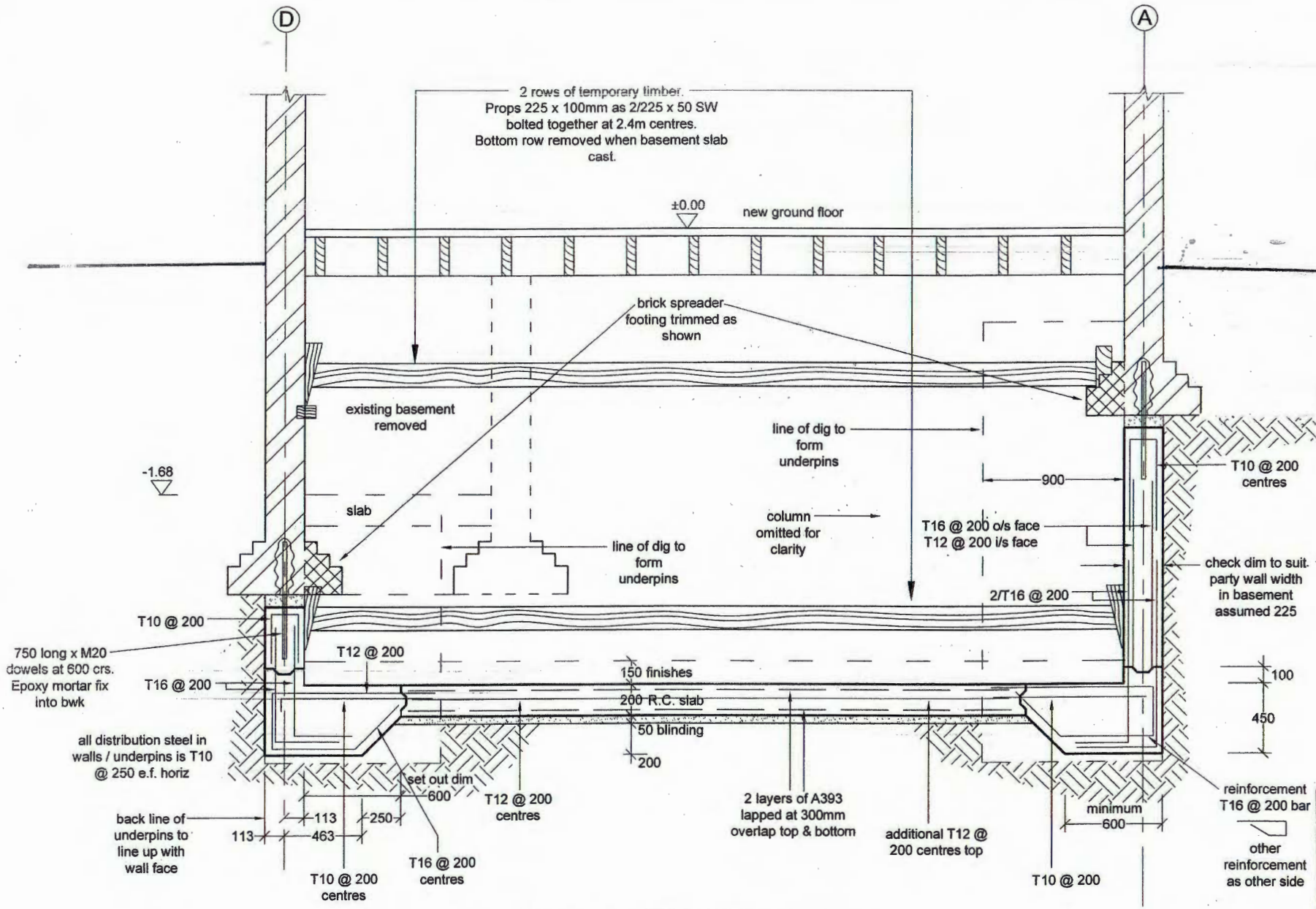
Cross Section M - M (Proposed) G.A.
Internal Basement Finishes
Scale 1 : 25

45° CONSTRUCTION LINE FROM NEIGHBOUR'S FOOTING (1200 DEEP) AT 20A.

Rev	Amendments	Drawn	Chk'd	Appr.	Date

SOARBOND Ltd.
17 Clarendon Road,
Ealing,
LONDON W5 1AA
TEL: 0208 997 8663
E Mail : soarbond@yahoo.co.uk

Job Title	22 FERNCROFT AVE. HAMPSTEAD NW3
Drawing Title	CROSS SECTION MM "HABITABLE SPACE"
Client	MR. & MRS. TORNS
Scale	1:25
Date	JAN 2014
Drawn By	WZ
Chk'd	
Date	
Approved:	
Job No.	1250
Drg. No.	11
Rev.	



Wall Propping and Slab / Wall Reinforcement
Details Given for
Cross Section M - M (Proposed) G.A.
Scale 1 : 25

Rev	Amendments	Drawn	Chk'd	Appr.	Date

SOARBOND Ltd.
17 Clarendon Road,
Ealing,
LONDON W5 1AA
TEL: 0208 997 8663
E Mail : soarbond@yahoo.co.uk

Job Title.	22 FERNCROFT AVE., HAMPSTEAD NW3.
Drawing Title.	TEMPORARY PROPPING AND BOAT REINFORCEMT
Client.	MR & MRS TORNS.
Scale 1:25	Date JAN 2014 Drawn By: WZ
Chk'd	Date Approved:
Job No. 1250	Drg. No. S12. Rev.

Appendix G

SIMPSON P19_461_SK09_TFL Property Asset Register Map and Main Line Rail Location