CampbellReith
consulting engineers

27A Lambolle Road, London NW3 4HS

Basement Impact Assessment Audit

For

London Borough of Camden

Project Number: 12336-24
Revision: D2

May 2016

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Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
D1	March 2016	Comment	TSemb12336-24-100316-27A Lambolle Road-D1.doc	TS	EMB	EMB
D2	May 2016	Report updated following receipt of supplementary information.	TSemb12336-24-100316-27A Lambolle Road-D2.doc	TAM	EMB	EMB

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Project Partner	E M Brown, BSc MSc CGeol FGS
Project Number	12336-24
Project Name	27A Lambolle Road NW3 4HS
Planning Reference	2015/6692/P

Contents

Appendix

1.0 NON-TECHNICAL SUMMARY

1.1. CampbellReith was instructed by London Borough of Camden, (LBC) to carry out an audit on the Basement Impact Assessment submitted as part of the Planning Submission documentation for 27A Lambolle Road, NW3 4HS (planning reference 2015/6692/P). The basement is considered to fall within Category B as defined by the Terms of Reference.

1.2. The Audit reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development in accordance with LBC's policies and technical procedures.

1.3. CampbellReith was able to access LBC's Planning Portal and gain access to the latest revision of submitted documentation and reviewed it against an agreed audit check list.

1.4. The BIA has been prepared by an established engineering consultant possessing suitable qualifications.

1.5. The proposed development comprises of an extension to an existing basement so that the combined new and existing basement will occupy the full footprint of the house. The basement is founded in the London Clay.

1.6. It is unlikely that the groundwater table will be encountered during basement foundation excavation.

1.7. Conventional reinforced concrete underpinning is proposed for the affected party wall between 25 and 27 Lambolle Road. Construction methodology for the permanent and temporary works, feasibility statement and outline structural design for retaining walls, foundations and basement slab have been provided as requested supplementary information.

1.8. Movement monitoring is not discussed in the supplementary reports, however it is agreed that with good workmanship, ground movements should be small and limited to the existing structure and contained to Burland Category One.

1.9. It is accepted that the surrounding slopes to the development site are stable.

1.10. It is accepted that the development will not impact on the wider hydrogeology of the area. The site did flood in 1975. The proposed development does not alter the risk of future flooding, either to this property or to neighbouring properties.

1.11. Requirements for further information and/or clarification are discussed in Section 4 and summarised in Appendix 2.

2.0 INTRODUCTION

2.1. CampbellReith was instructed by London Borough of Camden (LBC) on 8th February 2016 to carry out a Category B Audit on the Basement Impact Assessment (BIA) submitted as part of the Planning Submission documentation for 27A Lambolle Road, NW3 4HS, Reference 2015/6692/P.

2.2. The Audit was carried out in accordance with the Terms of Reference set by LBC. It reviewed the Basement Impact Assessment for potential impact on land stability and local ground and surface water conditions arising from basement development.

2.3. A BIA is required for all planning applications with basements in Camden in general accordance with policies and technical procedures contained within

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance (CPG) 4: Basements and Lightwells.
- Camden Development Policy (DP) 27: Basements and Lightwells.
- Camden Development Policy (DP) 23: Water.

2.4. The BIA should demonstrate that schemes:

a) maintain the structural stability of the building and neighbouring properties;

b) avoid adversely affecting drainage and run off or causing other damage to the water environment; and,

c) avoid cumulative impacts upon structural stability or the water environment in the local area

and evaluate the impacts of the proposed basement considering the issues of hydrology, hydrogeology and land stability via the process described by the GSD and to make recommendations for the detailed design.

2.5. LBC's Audit Instruction described the planning proposal as *"Excavation of additional floor space at lower ground level."*

2.6. The Audit Instruction also confirmed 27A Lambolle Road does not involve, or neighbour, listed buildings.

2.7. CampbellReith accessed LBC's Planning Portal on 21st January 2016 and gained access to the following relevant documents for audit purposes:

- Basement Impact Assessment Report (BIA)
- Geotechnical, Hydrological and Hydrogeological Assessment
- Planning Application Drawings consisting of
  - Existing Side Elevations, Sections and Plan
  - Proposed Side Elevations, Sections and Plan
  - Location Plan

2.8. CampbellReith requested in the D1 version of this report that supplementary information be provided to be read in conjunction with the BIA report. The following was made available:

- Feasibility Statement for Basement Extension at 27a Lambolle Road NW3 4HS by KNIGHTWOOD STRUCTURAL DESIGN.
- Construction Method Statement by Basement Masters.
- Calculation sheet by Basement Masters.

3.0 BASEMENT IMPACT ASSESSMENT AUDIT CHECK LIST

Item	Yes/No/NA	Comment
Are BIA Author(s) credentials satisfactory?	Yes	BIA.
Is data required by Cl.233 of the GSD presented?	Yes	
Does the description of the proposed development include all aspects of temporary and permanent works which might impact upon geology, hydrogeology and hydrology?	Yes	BIA.
Are suitable plan/maps included?	Yes	BIA.
Do the plans/maps show the whole of the relevant area of study and do they show it in sufficient detail?	Yes	BIA.
Land Stability Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Section 4.
Hydrogeology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Section 4.
Hydrology Screening: Have appropriate data sources been consulted? Is justification provided for 'No' answers?	Yes	BIA Section 4.
Is a conceptual model presented?	Yes	BIA and Geotechnical, Hydrological and Hydrogeological Assessment.
Land Stability Scoping Provided?	Yes	BIA Section 5.

Item	Yes/No/NA	Comment
Is scoping consistent with screening outcome?		
Hydrogeology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 5.
Hydrology Scoping Provided? Is scoping consistent with screening outcome?	Yes	BIA Section 5.
Is factual ground investigation data provided?	Yes	BIA and Geotechnical, Hydrological and Hydrogeological Assessment.
Is monitoring data presented?	Yes	Geotechnical, Hydrological and Hydrogeological Assessment Section 3.4.
Is the ground investigation informed by a desk study?	Yes	Geotechnical, Hydrological and Hydrogeological Assessment Section 2.4.
Has a site walkover been undertaken?	No	Not known.
Is the presence/absence of adjacent or nearby basements confirmed?	Yes	Proposed basement extension is bounded by owner's basement. No information on any other basements in the vicinity.
Is a geotechnical interpretation presented?	Yes	BIA.
Does the geotechnical interpretation include information on retaining wall design?	Yes.	Preliminary design provided in supplementary information.
Are reports on other investigations required by screening and scoping presented?	Yes	Geotechnical, Hydrological and Hydrogeological Assessment presented. Construction Method Statement / Feasibility Report and preliminary structural calculations provided as supplementary information.

Item	Yes/No/NA	Comment
Are baseline conditions described, based on the GSD?	Yes	BIA.
Do the base line conditions consider adjacent or nearby basements?	Yes	The owner's building has a basement founded at a similar level.
Is an Impact Assessment provided?	Yes	BIA Section 7.
Are estimates of ground movement and structural impact presented?	No	Impact on neighbours will be small provided good workmanship. Statement provided that damage will be to Burland Category One.
Is the Impact Assessment appropriate to the matters identified by screen and scoping?	Yes	
Has the need for mitigation been considered and are appropriate mitigation methods incorporated in the scheme?	Yes	A monitoring plan is proposed.
Has the need for monitoring during construction been considered?	Yes	BIA Section 7.4.
Have the residual (after mitigation) impacts been clearly identified?	Yes	
Has the scheme demonstrated that the structural stability of the building and neighbouring properties and infrastructure will be maintained?	Yes	Construction Method Statement / Structural Feasibility Report and preliminary calculations have been presented as supplementary information.
Has the scheme avoided adversely affecting drainage and run-off or causing other damage to the water environment?	Yes	

Item	Yes/No/NA	Comment
Has the scheme avoided cumulative impacts upon structural stability or the water environment in the local area?	Yes	Construction Method Statement / Structural Feasibility Report and preliminary calculations have been presented as supplementary information.
Does report state that damage to surrounding buildings will be no worse than Burland Category 2?	Yes	Statement provided that damage will be to Burland Category One.
Are non-technical summaries provided?	Yes	Construction Method Statement / Structural Feasibility Report and preliminary calculations have been presented as supplementary information.

4.0 DISCUSSION

4.1. The current BIA, which has been prepared by LBH Wembley appears to be thorough and undertaken by competent persons. Construction method statement / feasibility report and preliminary structural calculations have been provided as supplementary information.

4.2. The existing basement on the property is to be extended by the proposed basement, which will be at the same depth. As these are founded at a similar level no significant ground movements are expected to the owner's property.

4.3. On the side of the proposed basement extension part of the neighbouring property, 25 Lambolle Road, will be undermined. The party wall is proposed to be deepened by conventional underpinning techniques. There is no prediction of ground movements, however it is agreed that with good workmanship, ground movements should be small, with damage to Burland Category One or less. The supplementary information provided contained an indicative construction method statement which appeared to be in keeping with modern standard practice for this type of conventional reinforced concrete underpinning.

4.4. The LBC Instruction to proceed with the audit identified that the basement proposal either doesn't involve a listed building or is not located adjacent to listed buildings.

4.5. The BIA has identified that the proposed basement is underlain by the London Clay which extend from 0.8m below ground level to at least 4.6 metres below ground level. Details as to how the existing basement will be tied / water protected to the proposed basement have been included in the supplementary information provided.

4.6. The area of hardstanding on the site will not be significantly increased and is unlikely to affect the adjacent properties and nearby water courses.

4.7. The proposed basement is unlikely to encounter the groundwater table during construction. The site investigation did not encounter the groundwater table.

4.8. There is no prediction of ground movements or level of building damage expected. It is agreed that with good workmanship, ground movements should be small, within Burland Category One. The Construction method statement / feasibility report and preliminary calculations appear to be in order.

4.9. Monitoring of the neighbouring property that will be undermined during excavation and construction is recommended.

4.10. It is accepted that there are no slope stability concerns regarding the proposed development.

4.11. The site flooded in 1975. A Flood Risk Assessment confirms the proposed basement will have no additional impact with regard to flooding of either the owner's property or of neighbouring properties.

5.0 CONCLUSIONS

5.1. The BIA has been prepared by an established engineering consultant possessing suitable qualifications.

5.2. The proposed development comprises of an extension to an existing basement so that the combined new and existing basement will occupy the full footprint of the house. The basement is founded in the London Clay.

5.3. It is unlikely that the groundwater table will be encountered during basement foundation excavation.

5.4. Conventional reinforced concrete underpinning is proposed for the affected party wall between 25 and 27 Lambolle Road. Supplementary information gives the structural details and construction methodology for this underpinning to a satisfactory degree.

5.5. Movement monitoring of the neighbouring property that will be undermined during excavation and construction is recommended. It is agreed that with good workmanship ground movements should be restrict damage to Burland Category 1.

5.6. It is accepted that the surrounding slopes to the development site are stable.

5.7. It is accepted that the development will not impact on the wider hydrogeology of the area. The site did flood in 1975. The proposed development does not alter the risk of future flooding, either to this property or to neighbouring properties.

5.8. In summary, the BIA has identified the potential impacts arising from the basement proposals and recommends suitable mitigation where required.

Appendix 1: Residents' Consultation Comments

Residents' Consultation Comments

Surname	Address	Date	Issue raised	Response
Korpac	44A Lambolle Road	23/01/16	Concerns regarding damage to property	See Sections 4.3 and 5.5.

Appendix 2: Audit Query Tracker

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Audit Query Tracker

Query No	Subject	Query	Status	Date closed out
1	Stability	Indicative calculations for retaining walls, slabs and foundation pressures required.	Closed	May 2016
2	Stability	Proposed mitigation measures to limit damage to Burland Category 1 to be provided.	Closed	May 2016
3	Stability	Indicative permanent and temporary works sequence required.	Closed	May 2016
4				
5				
6				
7				
8				

Appendix 3: Supplementary Supporting Documents

Basement Masters
GOR-RAY HOUSE,
758 GREAT CAMBRIDGE ROAD
ENFIELD, MIDDLX, EN1 3PN
Tel: (020) 8443 7099 Fax: (020) 8366 5576

Project Title	Job No.
27 Lambolle Road, Camden	27LRC16
Element: Loads	Calc. sheet No.: 01
Drawing ref	Calculations by: CDW / Checked by	Date: March 2016

REF

CALCULATION SHEET

LOADS

Pitched Roof				
Imposed	0.75	x1.6	=	1.20
Tiles Rafter	0.75			
Ceiling	0.25			
Sevices	0.25			
Insulation	0.10	x1.4	=	1.89
Total	2.10kN/m2	x1.452	=	3.09kN/m2
Flat Roof				
Imposed	0.75	x1.6	=	1.20
Membrane	0.50			
Boards, joists	0.25			
Ceiling	0.25			
Insulation	0.10	x1.4	=	1.54
Total	1.85kN/m2	x1.481	=	2.74kN/m2
Suspended Floor				
Imposed	1.50	x1.6	=	2.40
Boards, joists	0.35			
Ceiling	0.25			
Partitions	0.75	x1.4	=	1.89
Total	2.85kN/m2	x1.505	=	4.29kN/m2
Basement Floor Slab				
Imposed	1.50	x1.6	=	2.40
75mm Screed	1.80			
75mm Insulation	0.10			
250mm Concrete Slab	6.00	x1.4	=	11.06
Total	9.40kN/m2	x1.688	=	15.86kN/m2
Walls				
Stud Partitions	0.75kN/m2	x1.4	=	1.05kN/m2
100mm Blockwork	1.00kN/m2	x1.4	=	1.40kN/m2
100mm Brickwork	2.50kN/m2	x1.4	=	3.50kN/m2
Bwk + Blk	3.50kN/m2	x1.4	=	4.90kN/m2
215mm Bwk	5.00kN/m2	x1.4	=	7.00kN/m2
250mm Concrete	6.00kN/m2	x1.4	=	8.40kN/m2

Basement Masters
GOR-RAY HOUSE,
758 GREAT CAMBRIDGE ROAD
ENFIELD, MIDDLX, EN1 3PN
Tel: (020) 8443 7099 Fax: (020) 8366 5576

Project Title		Job No. 27 LRC16
Element		Calc. sheet No. 02
Drawing ref	Calculations by CDW / Checked by	Date MARCH 2016

REF

CALCULATION SHEET

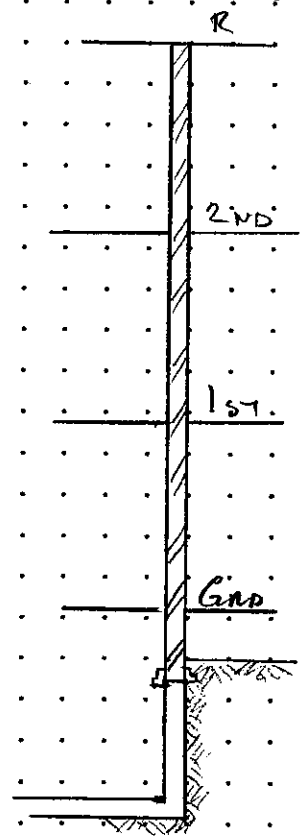
PARTY WALL

DEAD LOADS

ROOF (NOMINAL) = 1.0
2ND FLOOR = 1.35 x 4.4/2 x 2 = 5.94
1ST FLOOR = 1.35 x 4.4/2 x 2 = 5.94
GND FLOOR = 1.35 x 4.4/2 x 2 = 5.94
WALL = 5 x 8.5 = 42.50
CONC WALL = 6 x 2.5 = 15.00
P = 76.32 kN/m

IMPOSED LOADS

ROOF (NOMINAL) = 1.0
3 FLOORS = 3 x 1.5 x 4.4/2 x 2 = 19.8
P = 20.8 kN/m



Basement Masters	Project Title: 27 Lambolle Road	Job No: 27LRC16
GOR-RAY HOUSE, 758 GREAT CAMBRIDGE ROAD ENFIELD, MIDDLX. EN1 3PN	Element: Party Wall	Calc. Sheet No. 03
Tel: (020) 8443 7009 Fax: (020) 8366 5876	Drawing Ref: Calculations by: CDW	Date: 16-Mar-16

Retaining Wall

Height	Angle of Repose		ka	kp		Water Depth	ρw	Pw
m	Degrees	Radians				m		kN/m
2.750	30	0.52	0.333	3.000		1.500	12.26	7.66

Dead Loads

Overburden	Soil	Line Load	Distance	ρo	ρs	Po	Ps	Pl
kN/m2	kN/m3	kN/m	m			kN/m	kN/m	kN/m
1.35	18.0	0	0	0.45	16.50	1.24	22.69	0.00

Live Loads

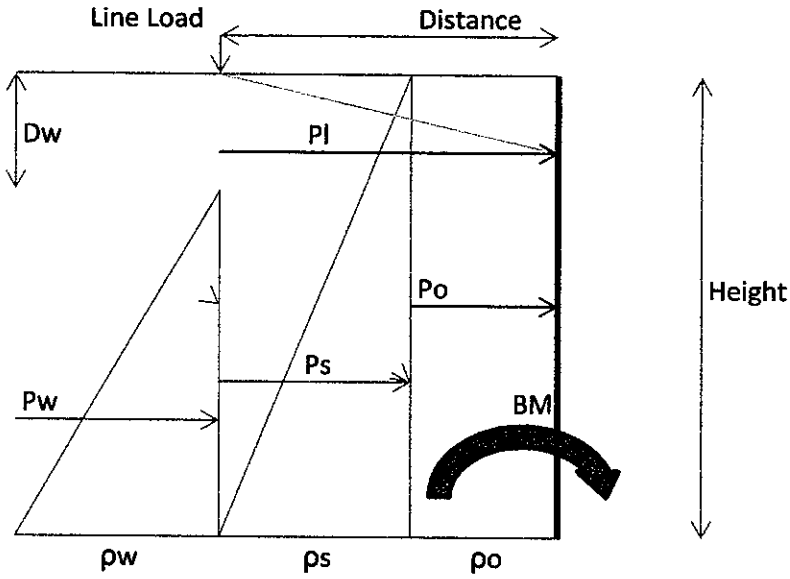
Overburden	Material	Line Load	Distance	ρo	ρs	Po	Ps	Pl
kN/m2	kN/m3	kN/m	m			kN/m	kN/m	kN/m
1.50	0.0	0	0	0.50	0.00	1.38	0.00	0.00

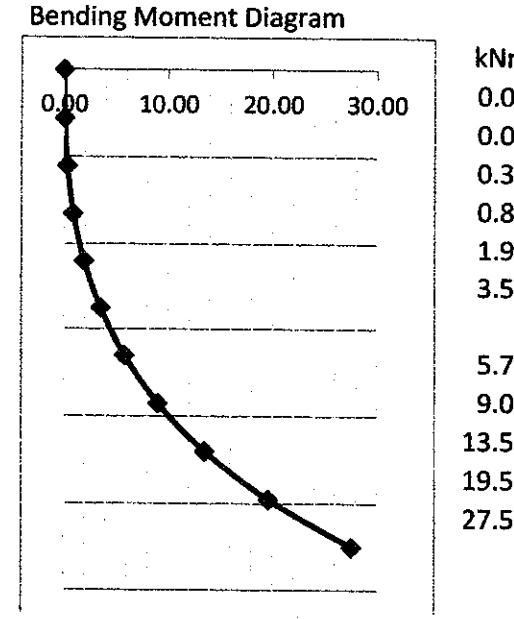
Dead Loads

ΣP	Po BM	Ps BM	Pl BM	Pw BM	ΣBM	Load Fctr	Pu	Mu
kN/m	kNm/m	kNm/m	kNm/m	kNm/m	kNm/m		kN/m	kNm/m
31.59	1.70	20.80	0.00	3.19	25.69	1.4	44.225	35.969

Live Loads

ΣP	Po BM	Ps BM	Pl BM	ΣBM	Load Fctr	Pu	Mu
kN/m	kNm/m	kNm/m	kNm/m	kNm/m		kN/m	kNm/m
1.38	1.89	0.00	0.00	1.89	1.6	2.200	3.025





Basement Masters
GOR-RAY HOUSE,
758 GREAT CAMBRIDGE ROAD
ENFIELD, MIDDLX. EN1 3PN
Tel: (020) 8443 7099 Fax: (020) 8368 5578

Project Title: 27 Lambolle Road		Job No: 27LRC16
Element: Party Wall		Calc. Sheet No. 04
Drawing Ref:	Calculations by: CDW	Date: 17-Mar-16

Dead Loads

P	W	BM
kN	kN/m2	kNm
76.32	7.90	25.88

Live Loads

P	W	BM
kN	kN/m2	kNm
20.80	1.50	1.89

Grd Capacity	Slab T	Cover	Slab d	Wall T	Cover	b	Wall d
kN/m2	mm	mm	mm	mm	mm	mm	mm
100	250	50	190	250	50	1000	190

Sevice Loads

P	W	B	Slab BM	Wall BM
kN	kN/m2	m	kNm	kNm
97.12	9.40	1.072	52.05	27.77

Ultimate Loads

P	W	P/B	Slab Mu	Wall Mu	Fcu	Py
kN	kN/m2	kN/m2	kN	kNm	N/m2	N/mm2
140.13	13.46	130.72	75.11	39.26	35	460

Slab Design

k	z'	As	Min As
		mm2	mm2
0.059	0.929	974	325

Charts 21 to 40

d/h	100Asc/bh
0.76	0.4

Wall (Beam Design)

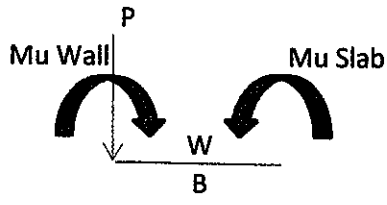
k	z'	As	Min As
		mm2	mm2
0.031	0.950	498	325

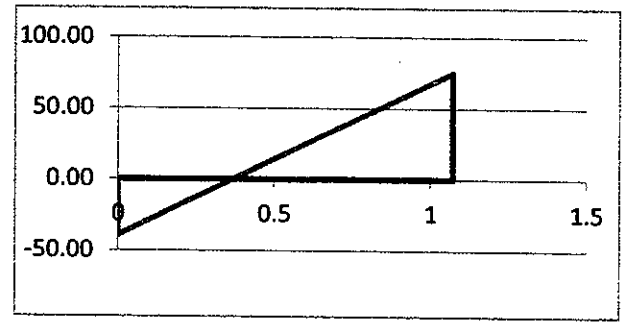
Wall (Column Design)

W/bh	M/bhh	As	Min As
N/mm2	N/mm2	mm2	mm2
0.30	0.63	1000	1000

Trial As	Trial As'	Span/d
1005	393	6.458

Load Diagram





Bending Moment Diagram kNm

Basement Masters
GOR-RAY HOUSE,
758 GREAT CAMBRIDGE ROAD
ENFIELD, MIDDLX, EN1 3PN
Tel: (020) 8443 7099 Fax: (020) 8366 5576

Project Title		Job No. 27LRC16
Element		Calc. sheet No. 05
Drawing ref	Calculations by CDW / Checked by	Date MARCH 2016

REF

CALCULATION SHEET

REAR WALL

DEAD LOADS

ROOF = 1.35 x 5.2/2 = 3.5

3 FLOORS (NOMINAL) = 3.0

WALL = 5 x 8.5 = 42.5

CONC WALL = 6 x 2.5 = 15.0

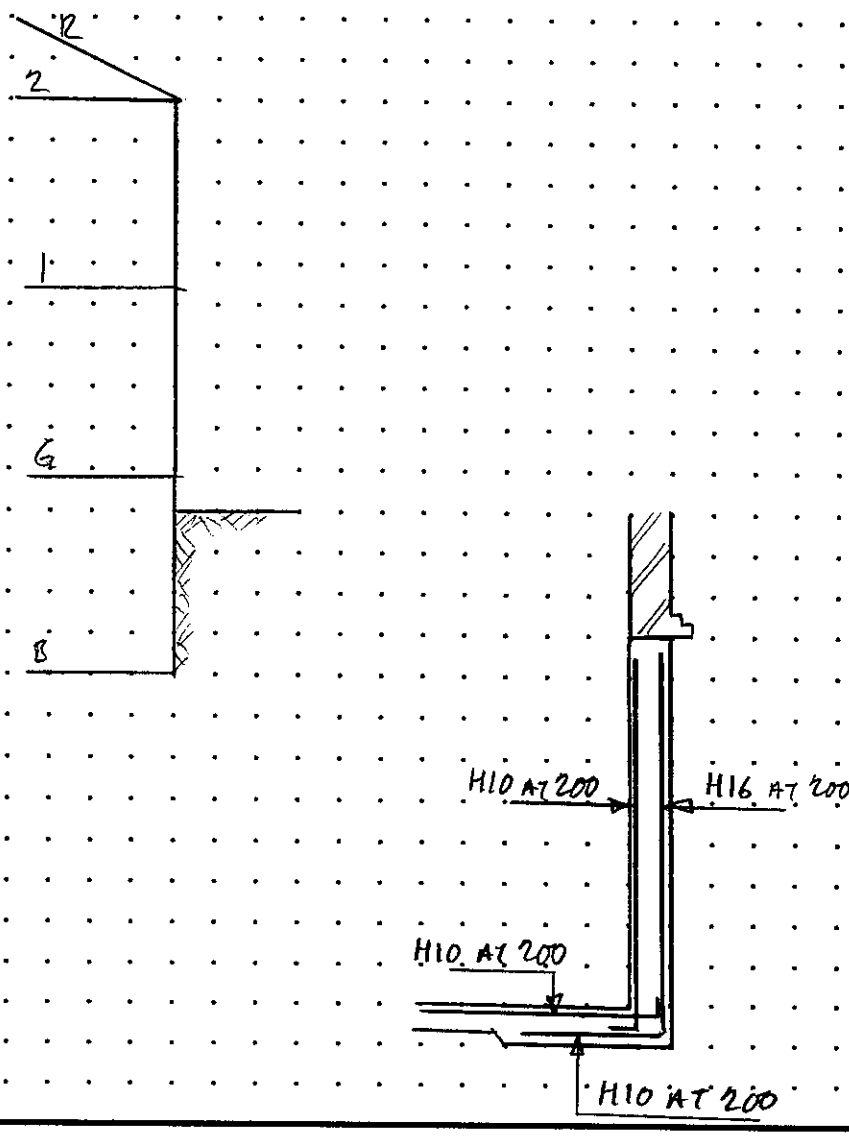
P = 64.0

IMPOSED LOADS

ROOF = 0.75 x 5.2/2 = 1.95

3 FLOORS (NOMINAL) = 3.00

4.95 kN/m



Basement Masters	Project Title: 27 Lambolle Road	Job No: 27LRC16
GOR-RAY HOUSE, 756 GREAT CAMBRIDGE ROAD ENFIELD, MIDDLX, EN1 3PN	Element: Rear Wall	Calc. Sheet No. 06
Tel: (020) 8443 7099 Fax: (020) 8366 5576	Drawing Ref: Calculations by: CDW	Date: 17-Mar-16

Retaining Wall

Height	**Angle of Repose**		ka	kp	**Water Depth**	ρw	Pw
m	Degrees	Radians			m (Dw)		kN/m
2.750	30	0.52	0.333	3.000	1.500	12.26	7.66

Dead Loads

Overburden	**Soil**	**Line Load**	**Distance**	ρo	ρs	Po	Ps	Pl
kN/m2	kN/m3	kN/m	m			kN/m	kN/m	kN/m
1.00	18.0	0	0	0.33	16.50	0.92	22.69	0.00

Live Loads

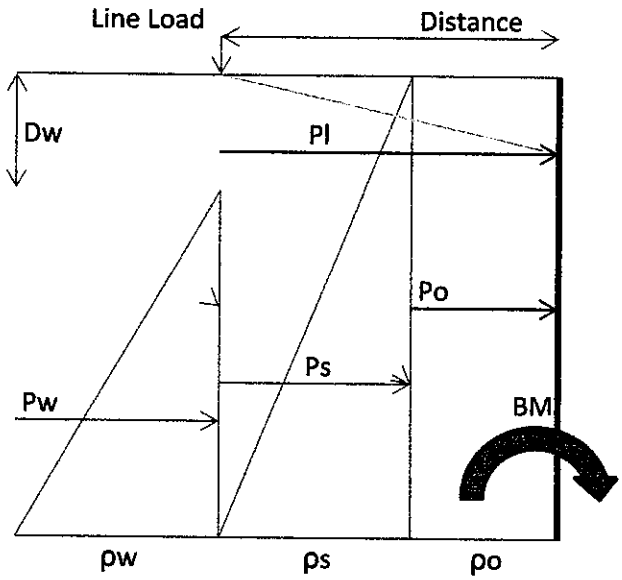
Overburden	**Material**	**Line Load**	**Distance**	ρo	ρs	Po	Ps	Pl
kN/m2	kN/m3	kN/m	m			kN/m	kN/m	kN/m
2.50	0.0	0	0	0.83	0.00	2.29	0.00	0.00

Dead Loads

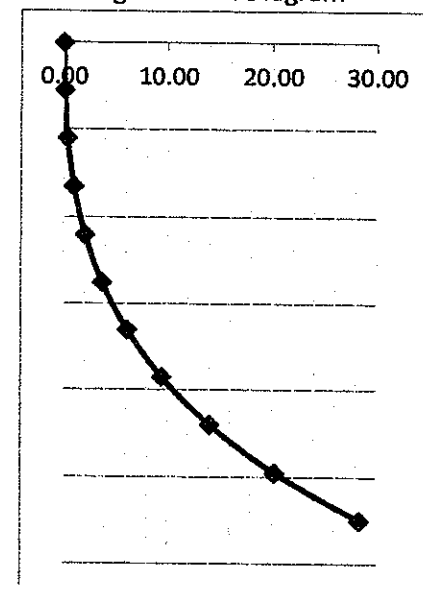
ΣP	Po BM	Ps BM	Pl BM	Pw BM	ΣBM	Load Fctr	Pu	Mu
kN/m	kNm/m	kNm/m	kNm/m	kNm/m	kNm/m		kN/m	kNm/m
31.27	1.26	20.80	0.00	3.19	25.25	1.4	43.776	35.351

Live Loads

ΣP	Po BM	Ps BM	Pl BM	ΣBM	Load Fctr	Pu	Mu
kN/m	kNm/m	kNm/m	kNm/m	kNm/m		kN/m	kNm/m
2.29	3.15	0.00	0.00	3.15	1.6	3.667	5.042



Bending Moment Diagram



kNm
0.00
0.06
0.34
0.96
2.04
3.70
6.09
9.42
14.03
20.25
28.40

Basement Masters	Project Title: 27 Lambolle Road	Job No: 27LRC16
GOR-RAY HOUSE, 758 GREAT CAMBRIDGE ROAD ENFIELD, MIDDLX, EN1 3PN	Element: Rear Wall	Calc. Sheet No. 07
Tel: (020) 8443 7009 Fax: (020) 8366 5576	Drawing Ref: Calculations by: CDW	Date: 17-Mar-16

Dead Loads		
P	W	BM
kN	kN/m2	kNm
64.00	7.90	25.25

Live Loads		
P	W	BM
kN	kN/m2	kNm
5.00	1.50	3.15

Grd Capacity	Slab T	Cover	Slab d	Wall T	Cover	b	Wall d
kN/m2	mm	mm	mm	mm	mm	mm	mm
100	250	50	190	250	50	1000	190

Sevice Loads

P	W	B	Slab BM	Wall BM
kN	kN/m2	m	kNm	kNm
69.00	9.40	0.762	26.27	28.40

Ultimate Loads

P	W	P/B	Slab Mu	Wall Mu	Fcu	Py
kN	kN/m2	kN/m2	kN	kNm	N/m2	N/mm2
97.60	13.46	128.15	37.17	40.39	35	460

Slab Design

k	z'	As	Min As
		mm2	mm2
0.029	0.950	471	325

Charts 21 to 40

d/h	100Asc/bh
0.76	0.4

Wall (Beam Design)

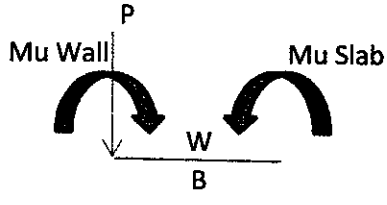
k	z'	As	Min As
		mm2	mm2
0.032	0.950	512	325

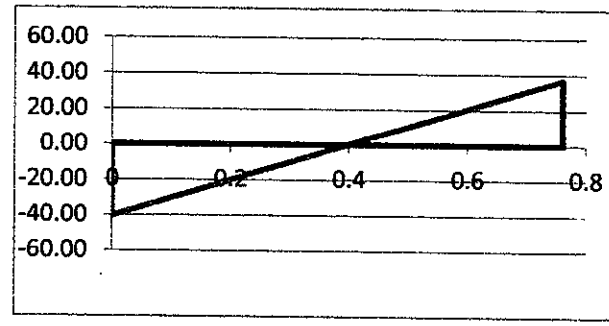
Wall (Column Design)

W/bh	M/bhh	As	Min As
N/mm2	N/mm2	mm2	mm2
0.15	0.65	1000	1000

Trial As	Trial As'	Span/d
1005	393	6.594

Load Diagram





Bending Moment Diagram kNm

Basement Masters
GOR-RAY HOUSE,
758 GREAT CAMBRIDGE ROAD
ENFIELD, MIDDLX, EN1 3PN
Tel: (020) 8443 7099 Fax: (020) 8366 5576

Project Title		Job No. 27LRC16
Element		Calc. sheet No. 08
Drawing ref	Calculations by CDW	Checked by / Date MARCH 2016

REF

CALCULATION SHEET

INTERNAL WALL

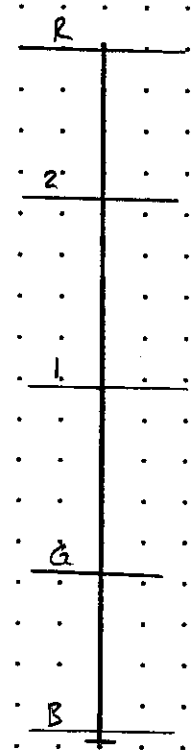
SERVICE LOADS

DEAD

ROOF	= 1.35 x 7.5/2	=	5.06
2ND	= 1.35 x 7.5/2	=	5.06
1ST	= 1.35 x 7.5/2	=	5.06
GND	= 1.35 x 7.5/2	=	5.06
225 WALL	= 5 x 5.5	=	27.50
340 WALL	= 7.5 x 2.75	=	20.63
			68.37 kN/m

IMPOSED

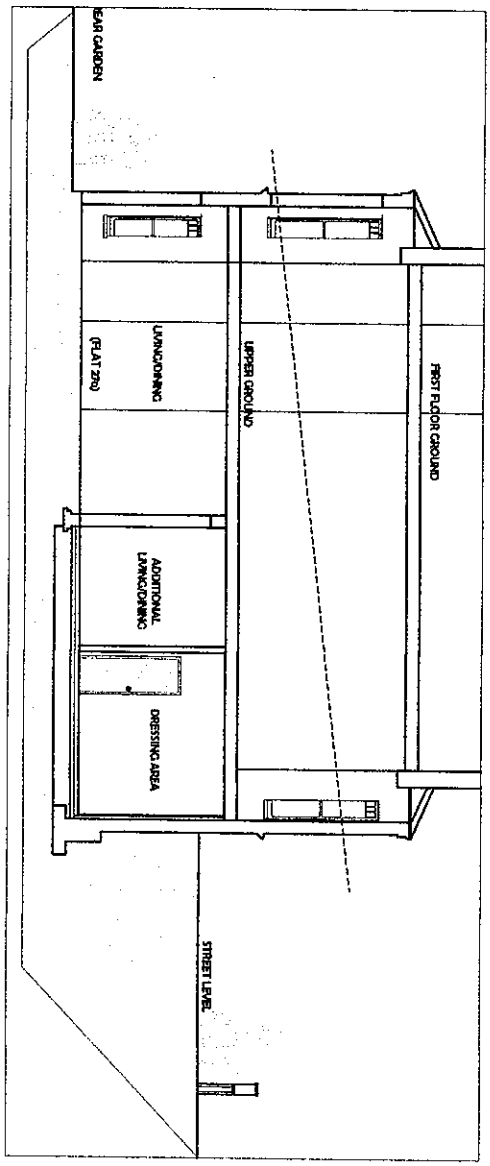
ROOF	= 0.75 x 7.5/2	=	2.81
3 FLOORS	= 3 x 1.5 x 7.5/2	=	16.88
			19.69 kN/m
	Σ =		88.06 kN/m



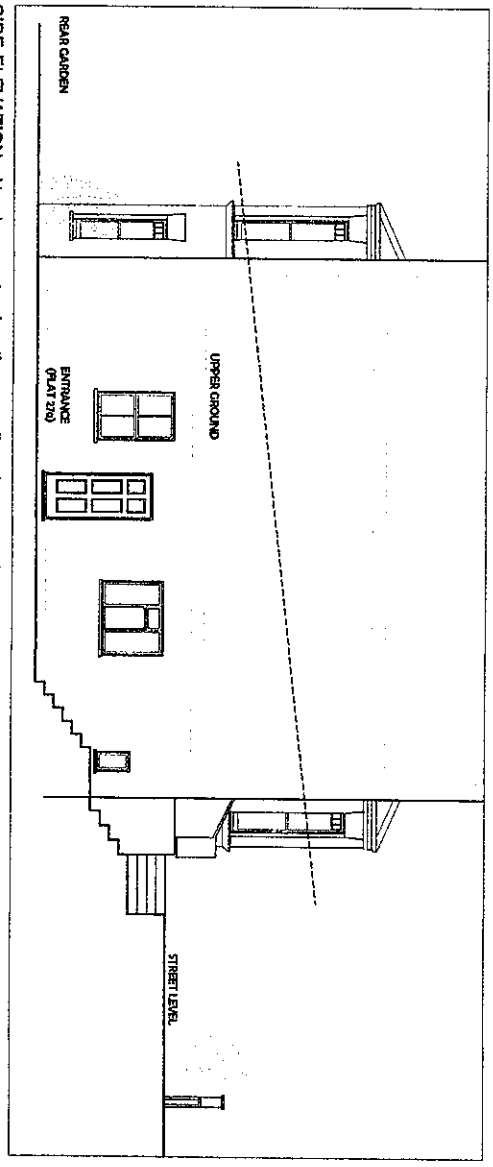
GROUND CAPACITY = 100 kN/m²

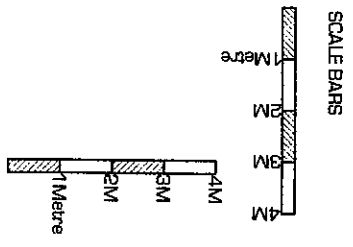
FOOTING WIDTH = 88/100 = 0.88m SAY 900 mm

SECTION



SIDE ELEVATION - No changes to elevations as all work proposed is to be at lower ground level and non visible externally





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Tel: (020) 8443 7099 Fax: (020) 8366 5576

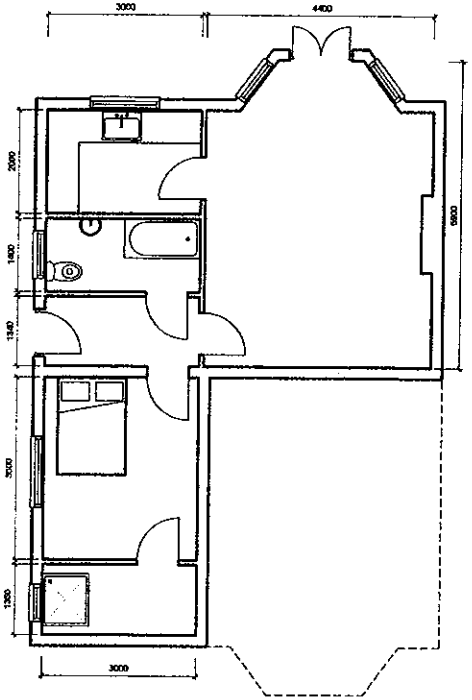
PROPOSED PLANS

customer name & site address:
Mr. B. Fishman
27A Lambolle Road
NW3 4HS

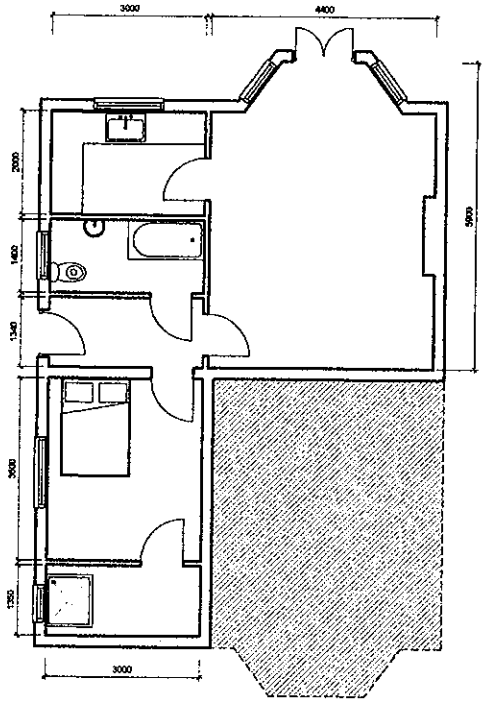
works:
Basement Extension

drawn:	chk:	date:
---	---	19th November 2015
council: CAMDEN		scale: 1:100 @ A3
reference: ---	rev: ---	Dwg no. LAMB-15-A04

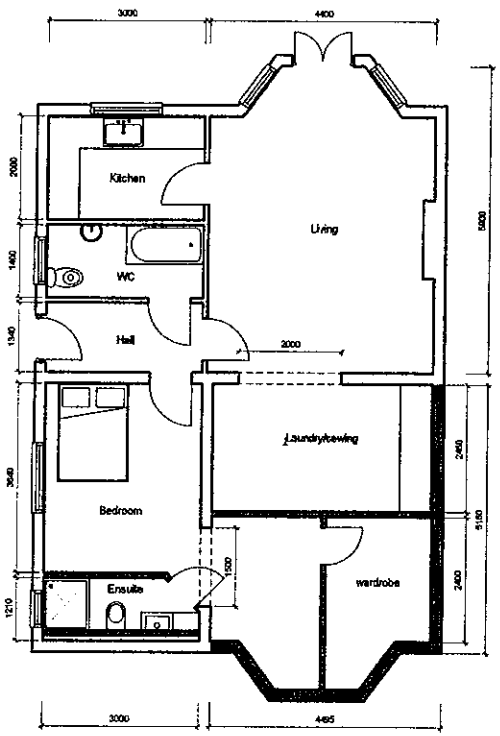
Appendix 3



1 **Level 0 existing**
1 : 50



3 **Level 0 opportunity**
1 : 50



2 **Level 0 proposed**
1 : 50

GENERAL NOTES:

1. All existing and proposed layouts to be carried out by a **registered/chartered Architect (ARB/RIBA)**
2. All Planning and Conservation consents to be secured from **Camden Borough Council.**
3. Note: Camden Application ref **2007/3942/P** was granted planning permission for a basement and lightwell.
4. Proposed room layout will be subject to **Building Regulations Approval.**
5. Proposed partitions, linings and services to meet **Building Regulations 2010.**
6. Structural calculations to meet **Approved Document A - The Building Regulations 2010.**
7. Structural modifications to be designed and checked by a **chartered Structural Engineer MICE/IStructE.**
8. Structural opening sizes to be confirmed subject to further detailed structural analysis by the engineer.
9. All Party Wall matters to be dealt with by an appointed **Party Wall Surveyor.**
10. **ALL DIMENSIONS ARE APPROXIMATE**
11. **ALL DIMENSIONS TO BE VERIFIED ON SITE**

project	37a Lamballe Road, London NW3 4HS		
drawing	FLOORPLANS EXISTING AND PROPOSED		
1 : 50 @ A3	date 09.04.2015	drawn JF	check JF

J FOSTER ARCHITECTS

15.LAM 01 001 - 00

Construction Method Statement For

27a Lambolle Road, London, NW3 4HS

PROJECT NO: 813

Produced on 14th April 2016

Authored by: Basements Masters Limited

Tel : 020 8443 7099 Fax: 020 8366 5576
Gor-Ray House, 758 Great Cambridge Road, Enfield, Middlesex EN1 3PN
Basement Masters Limited Company Registered in England and Wales No. 05095652
info@ basementmasters.co.uk
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Construction Method Statement

27a Lambolle Road, London, NW3 4HS

Introduction

This method statement should be read in conjunction with the Structural Engineer's and Architect's drawings and the attached illustrations.

Please also refer to the attached illustration showing underpinning stages. This sketch details the construction method we are likely to adopt, based on the assumed ground conditions consisting London Clay to a depth of excavation.

The key stages are as follows:

1) Establish access, hoarding and conveyor
2) Temporary support to excavated faces
3) Temporary support to floors and walls
4) Reinforced concrete underpinning
5) Installation of new steel beams
6) Excavation, drainage and basement slab
7) Internal waterproofing membrane and screed
8) Potential impact on the adjoining properties
9) Neighbourhood liaison

1. Establish access, hoarding and conveyor

The hoarding will be positioned at the front side of the property, which will be subject to any restrictions imposed by the local governing authority. The layout will be similar to the attached hoarding layout drawing and picture, which details a typical setup over the highway and footpath.

Carefully protect and/or remove any internal or external fixtures and fittings affected by the works.

Erect plywood hoarding with vertical standards, anchored to the ground. The hoarding will be fully secure with a lockable door for access.

Depending on the requirements of the local governing authority, construct a plywood bulkhead onto the pavement. The hoarding to have plywood roof covering, night-lights and safety notices.

Install temporary electrical and water supplies from Clients permanent connections.

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2. Temporary support to excavated faces

Of prime concern during the basement works will be the control of ground movement and ground water to ensure that the effect on adjacent buildings and infrastructure is minimal and within acceptable limits.

Ground conditions will be continuously assessed by a competent person to determine the means and method of supporting any face of any excavation. Our highly trained, experienced and competent Foreman shall ensure that every part of every excavation is inspected at the start of each shift.

Ground water was not encountered during the geotechnical investigation. However in the unlike event that water becomes present a filtered sump and pump system will be installed to ensure that no undue movement within the ground takes place.

Our temporary works proposal for the support of clay soils is typically as follows:

Note: Existing foundation corbel (if applicable) are to be removed prior to any excavation is carried out below the existing foundations, alternatively they may be removed after the underpinning has been carried out. The corbels must not be removed during the excavation period.

Hand excavate a preliminary pit approximately 1.00m wide x 1.00 m long to underside of existing foundation approximately 1.00 m deep. Install 2 No horizontal trench props at top and bottom of the excavation spanning across onto the central soil mass (dumpling excavation); use scaffold boards as spreaders at both ends of the props.

Hand excavation the pit to formation level of new re concrete toe, provide at all times adequate lateral support and propping as excavations progresses to maintain acceptable levels of safety. See attached illustration. Rear of excavation is not to remain unsupported for longer than 48 hours and must be propped when the site is unattended.

3. Temporary support to floors and walls

Supporting existing timber floors above basement excavation:

Should the timber floor will remain in situ, it will be supported by a series of steel beams that will support the floors, to provide the open areas in the basement.

Position 100x100mm temporary timber beam lightly packed to underside of joists either side of existing sleeper wall and support with vertical Acrow props @ 750 centres.

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Remove sleeper walls and insert steel beam as a replacement. Beams to bear at masonry walls onto concrete padstones (refer to Structural Engineer's details for padstone & beam sizes). Dismantle props and remove timber plates.

Supporting existing walls above basement excavation:

Where steel beams need to be installed directly under load bearing walls, temporary works will be required to enable this work. Support consist the installation of steel needle beams at high level, supported on vertical props, to enable safe removal of brickwork below, and installation of the new beams.

Once the props are fully tightened, the brickwork will be broken out carefully by hand. All necessary platforms and crash decks will be provided during this operation.

Decking and support platforms to enable handling of steel beams will be provided as required. Once full structural bearing is provided via beams down to the new basement floor level, the temporary works will be redundant and can be safely removed.

Any voids between the top of the permanent steel beams and the underside of the existing walls will be packed out as necessary. Voids will be dry-packed with a 1:3 (cement: sharp sand) dry-pack layer, between the top of the steel and underside of brickwork above.

Any voids in the brickwork left after removal of needle beams can at this point be repaired by bricking up and/or dry-packing, to ensure continuity of the structural fabric.

4. Reinforced concrete underpinning

This stage consists of the construction of the reinforce concrete underpinning.

The following is to be read in conjunction with the Structural Engineers drawings in respect of reinforcement, dimensions and all associated notes covered on their drawing.

Note: Unsafe foundation corbel and loose masonry a removed prior to any excavation is carried out below existing foundations to allow for a safe working environment. Otherwise the existing foundation corbel or masonry may be removed after the underpinning has been carried out. The corbels must not be removed during the excavation period.

The walls to the perimeter of the basement will be underpinned in reinforced concrete. The underpins will take the vertical loads from the walls and horizontal loads from the earth.

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*The sequence of construction of the underpinning will be in accordance with the sequence on the engineer's drawings. The sequence of the underpinning will be such that any given underpin will be completed, dry-packed, and a minimum period of 48 hours lapsed before an adjacent excavation commenced to form another underpin.

The access pit is first excavated, directly underneath the wall to be underpinned. The width of any base is individually assessed on site with due regard to the type and condition of the foundation, and structural geometry above. The maximum width of any underpinning base will be 1000 mm.

Hand excavate the pit to formation level of new reinforced concrete toe, provide at all times adequate lateral support and propping as excavations progress to maintain acceptable levels of safety.

Insert to each side of the 1000mm wide excavated pit 200x40mm softwood C16 walling planks (see engineering drawing).

The propping to the walling planks will be left in place, until 24 hours after the completion of the underpins. This method ensures that at all times the excavation is controlled, and indeed the integrity of the surrounding soil and structure above is maintained, to enable permanent works construction.

In the event that the existing foundations to the wall are found to be unstable, sacrificial jack props will be installed underneath the foundation to prop the bottom few courses of bricks. These jack props will be left in place and will be incorporated into the concrete stem.

Once the excavation is completed to the design depth and length, the stratum at the proposed founding depth is confirmed as being appropriate by our Forman or the Building Control Inspector.

The design steel reinforcement will be fixed in the toe section of the underpinning base. This will be checked by the Building Control Inspector prior to concreting.

Following construction of the toe, the design steel reinforcement will then be fixed in the stem (or wall) section. This will be checked by the Building Control Inspector prior to concreting. A single sided shutter is then erected, and concrete poured to form the underpinning base up to within 50mm to 75mm of the underside of the existing wall foundations.

Concrete will be chuted into a 'bath' within the excavated basement and placed by wheelbarrow and/or bucket, or mixed on site. The exact arrangement will be finalised when works commence on site.

Excavation for an underpin section will be dug in a day, and the concrete to the base poured by the end of the same day. The concrete to the stem of the underpin will be poured the following day.

On the following day, the gap between the concrete and the underside of the existing foundation will be dry- packed with a mixture of sharp sand and cement (ratio 3:1).

Once the dry-pack has gained sufficient strength, any protrusions of the footings into the site will be carefully trimmed back using hand or mechanical tools. The protrusions will be trimmed back to be flush in-line with the face of the wall above.

A minimum of 48 hours will be allowed before adjacent sections will be excavated to form a new underpin.

5. **Installation of new steel beams**

The steel beams will be delivered and unloaded by the delivery lorry into the hoarding within the garden area. Materials will be checked off against delivery notes, and any discrepancies advised to the Project Manager.

*Steel beams will be erected progressively as the underpinning and excavation progresses.

Lightweight steels will be moved and erected by hand and installed by fitters working from scaffolds.

6. **Excavation, drainage and basement slab construction**

Once the underpinning is complete to all walls, the bulk excavation can be completed.

Depending on the structural design it may be a requirement to implement propping to resist sliding forces (as per structural engineering requirements) at the base of the underpins, prior to construction of the new basement slab, and to allow for excavation to formation level. Generally, the underpinning works are completed around the perimeter walls, with the central soil mass (dumpling) left intact as detailed on the attached sheet.

This enables the earth mass to act as a firm support for the underpinning stem single sided shutters, and also to provide a prop force at the base of the pins.

The pump sump units and associated underground drainage will then be installed in conjunction with the mechanical and electrical details and architectural layouts.

Once excavation to formation level has been completed, and the slab cast any temporary shoring can be safely removed.

The design steel reinforcement will then be fixed in the slab. This will be checked by the Structural Engineer and Building Control Inspector prior to concreting.

7. **Internal waterproofing membrane and screed**

Generally the waterproofing membrane will be in accordance with the manufacturer's recommendation.

Once the basement slab is complete, the DELTA internal waterproofing cavity membrane will be installed as per the architectural layouts and manufacturers technical specification.

The floor finishes which may include insulation and under floor heating, can be laid as per the final architectural details.

A cement and sand screed will be applied on the slab surface.

This completes the structural work by Basements Masters, in preparation for the fit out works.

8. **Potential impact on the adjoining properties**

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

Is not expected to exceed Burland category 1, provided an experienced contractor is appointed who undertakes the works using good practice in accordance with the structural design and follows all agreed method statements, installing all necessary temporary vertical and lateral supports required. In practice some settlement is possible but this should be no worse than 'aesthetic', according to the Category 1 on the Burland Scale. If these conditions are met, any settlement that occurs will be minimal and will be accommodated in the elasticity of the superstructure. This has been borne out by past projects on similar properties.

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

9. Neighbourhood liaison

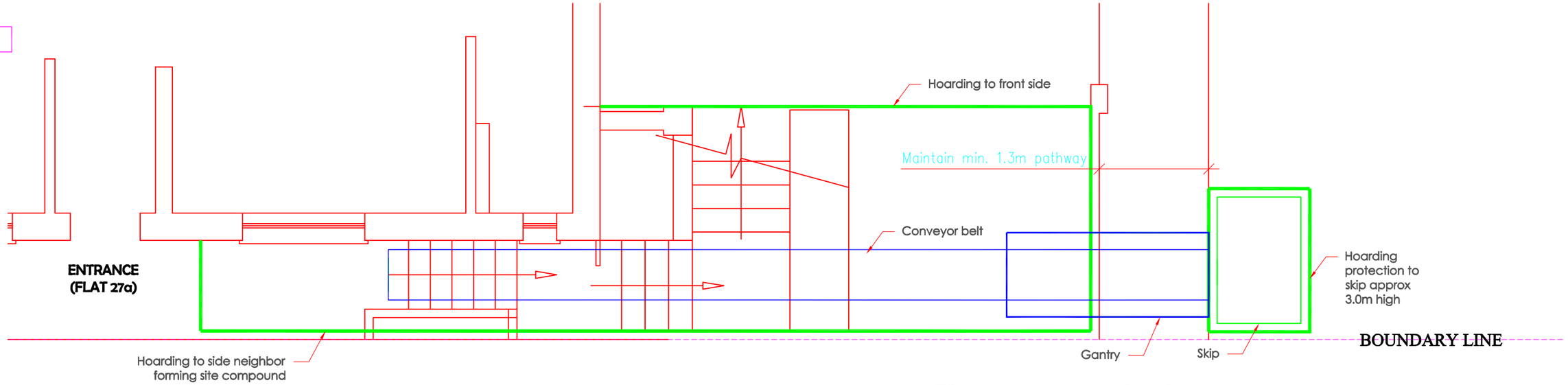
The contractor will understand the sensitive nature of the site and recognise the importance of the neighbourhood liaison role in ensuring the smooth running of site activities and their relation to the local residents and general public's welfare.

During the excavation and construction works he will ensure that all works are carried out safely and in such a manner that it will not inconvenience pedestrians or other road users and with a positive consideration to the needs of the local residents, site personnel and visitors as well as the general public.

Footways and carriageways will be kept tidy and in a safe condition. Hoardings, safety barriers, lights and other features will be maintained in a safe and tidy condition. The site is to be kept clean and in good order at all times, with surplus materials and rubbish controlled within the site and not allowed to spill over into the surroundings.

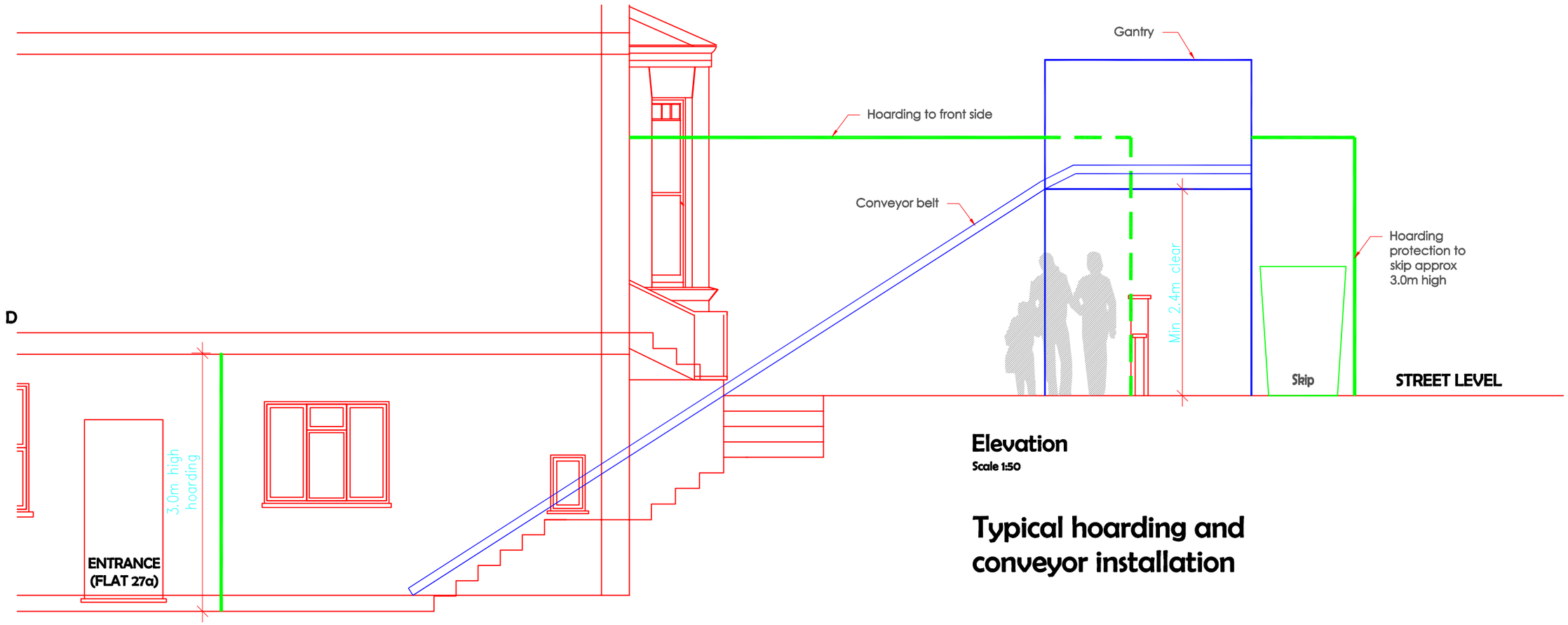
Disturbance from site operations due to the effects of noise and dust emissions will be minimised by the use of plant and equipment fitted with suitable noise suppression facilities in accordance with the manufacturer's recommendations.

A3 Original



Plan at pavement level

Scale 1:50



Elevation

Scale 1:50

Typical hoarding and conveyor installation

Rev	Date	Drawn By	Appr. By	Description
A	13/04/16	AI	AI	First issue

Notes:

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
3. DO NOT SCALE FROM THIS DRAWING. Use figured dimensions only.
4. **Construction (Design and Management) Regulations 2007 (CDM 2007) - Client's roles and responsibilities**
   To comply with CDM 2007, the Client (unless a domestic client) will need to:
   - 4.1. Check competence and resources of all appointees
   - 4.2. Ensure there are suitable management arrangements for the project welfare facilities
   - 4.3. Allow sufficient time and resources for all stages
   - 4.4. Provide pre-construction information to designers and contractors

   Where projects are notifiable under CDM 2007, clients must also:
   - 4.5. Appoint a CDM co-ordinator
   - 4.6. Appoint a principal contractor
   - 4.7. Make sure that construction work does not start unless a construction phase plan is in place and there are adequate welfare facilities on site
   - 4.8. Provide information relating to the health and safety file to the CDM co-ordinator
   - 4.9. Retain and provide access to the health and safety file

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Project
27a Lambolle Road
London

Drawing Title
Hoarding & conveyor installation

Drawn By AI
Date Draw 13/04/1
Project Number 813
Scale(s) @ A3 SCALE

Drawing Status	Drawing Number	Revision
CONSTRUCTION	813/102	A


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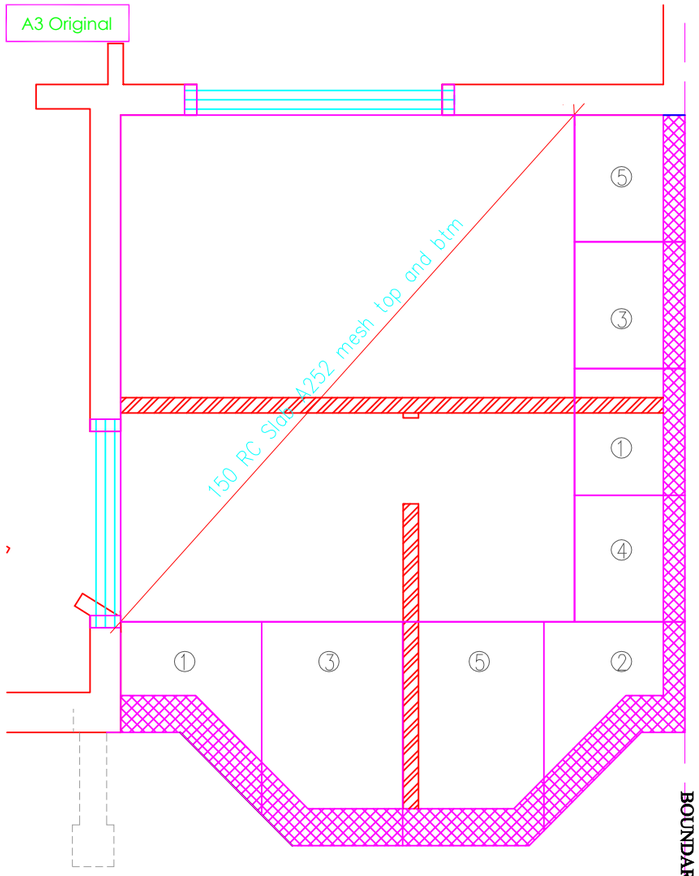
A3 Original



Basement construction sequence
Scale 1:50

1. Excavate base and walls for units marked 1.
2. Blind base, fix reinforcement and place concrete.
3. After 24 hours fix wall reinforcement, position formwork and place concrete.
4. After 72 hours tightly pack dry mix mortar between concret and underside of wall's footing.
5. Repeat steps 1 to 4 for units marked 2.
6. Repeat steps 1 to 4 for units marked 3.
7. Repeat steps 1 to 4 for units marked 4.
8. Repeat steps 1 to 4 for units marked 5.

General Notes

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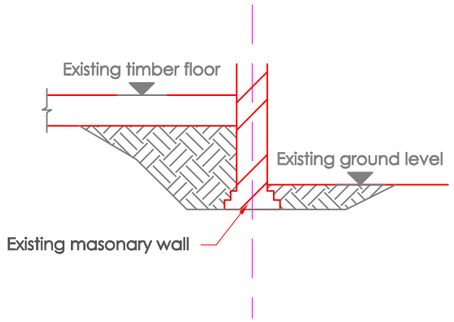
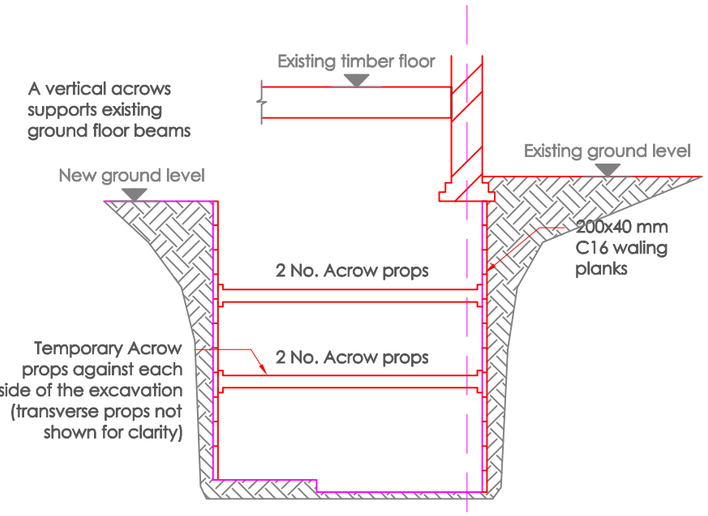
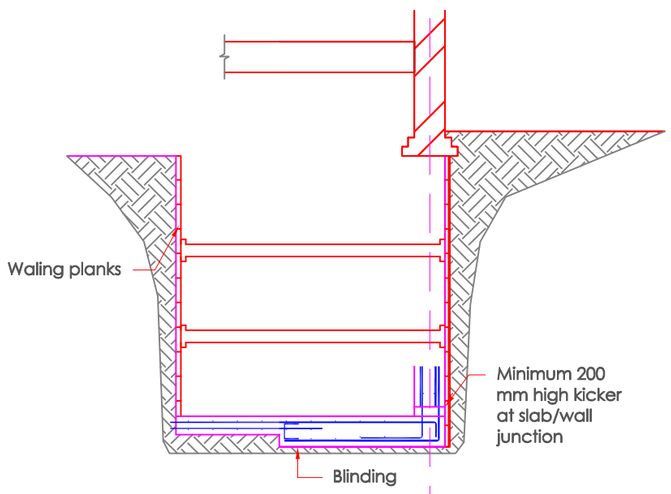


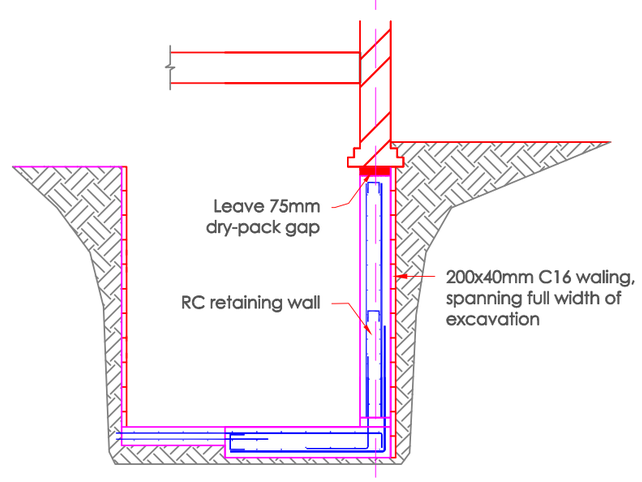
STAGE A
Remove existing slab and reduce site level to achieve suitable working area.



STAGE B
Excavate maximum 1m wide pit, installing temporary shoring to all sides of the excavation progressively as the depth increases



STAGE C
Blind the base of the excavation, tie reinforcement and pour the base of the retaining wall



STAGE D
Install wall reinforcement, wall shuttering (not shown) and cast RC wall. Props to remain as required to stabilise the excavation

Rev	Date	Drawn By	Appr. By	Description
A	13/04/16	AI	AI	First issue

Notes:

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
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Project
27a Lambolle Road
London

Drawing Title
Construction sequencing

Drawn By AI
Date Drawn 13/04/16
Project Number 813
Scale(s) @ A3 SCALE

Drawing Status	Drawing Number	Revision
CONSTRUCTION	813/101	A

KNIGHTWOOD
STRUCTURAL
DESIGN
76 Knightwood Crescent
New Malden
Surrey KT3 5JW
0208 949 2867 / 0753 942 8056
knightwooddesign@gmail.com

Feasibility Statement for Basement Extension at 27a Lambolle Road NW3 4HS.

Description

The property is a Victorian semi-detached house that has been converted into flats. There is a small, paved front garden and a large rear garden. There are mature trees in the front and rear gardens. The garden boundaries are brickwork walls. The house is typical for the period and the area, and the neighbouring properties are similar. Access to the rear garden is by a path alongside the flank wall of the house. This path links the front and the rear gardens.

The house has a basement, ground floor, first floor and a second floor. The ground levels are such that the rear garden is at the basement floor level and the front is at street level. The existing basement does not cover the full area of the house.

Proposed Alterations

It is proposed that the existing basement be extended. At present the basement covers approximately three quarters of the plan area of the house. It is to the full width at the rear and about half the width at the front. The extension will be to the remaining quarter of the house. The rear and side appearance of the house will not be changed. Only the front of the house will be altered by the addition of the basement extension within its wall.

Access to the property will be unchanged. The front entrance, at ground level, will still be from Lambolle Road. The rear access from the garden will be the same as it is now. The side path linking the gardens will remain. The alterations are internal and, apart from new doors into the new basement extension, the existing basement will remain the same as it is now. Existing services in the house, drains, water, gas and electricity, will not be altered. The new part of the basement will be a living room, dressing room and wardrobe. It will have various services extended into it.

The existing buildings, routes and spaces will be maintained. Safety and security of the property will be maintained during and after the building works.

Appearance

Only the internal to the front elevation of the property will be altered. The new basement extension will fill the gap between the existing front basement and the party wall. It will have a bay to match the existing bay window over. The new extension will be roughly 4m by 5m, plus the bay. The floor to ceiling height will be that same as the existing basement. Floors will be level and unchanged.

All the alterations are internal apart from the changes to the front wall of the basement. There are no changes to the landscaping of the front garden. The existing trees will be unaffected by the proposed works.

The construction will have brickwork walls, concrete foundations and basement floor slab, and timber ground floor with steel beams. Lintels may be steel or concrete.

Heritage Assets

The building is not listed nor is it known to be in a conservation area. There is no archaeological significance to the property. All external works will be to the front and will be in keeping with the rest of the house and the neighbourhood. The type of brickwork and mortar, the brick bond, etc. will match the existing construction.

The view of the house from the public road will not be altered.

Construction Procedure

The method of construction of the new part of the basement will be standard underpinning procedures to the party wall and front wall. The two internal walls of the new part of the basement already exist and will not require any change except, perhaps, an increase in the width of the footing.

The party and front walls will be underpinned in nominally one metre long units. Pits will be excavated under the walls and reinforced concrete underpins will be installed. The underpins will support the wall over and act as retaining walls to the basement. No more than one in five pins will be constructed at one time. Pins will not be excavated alongside previous pins that have not been active for less than two days. Each new pin being excavated will be adjacent to a two day old pin. The sequence of underpinning will be shown on the drawings that detail the pins. This procedure will ensure that at least 80% of the walls will be supported at any time during the operation.

The existing internal basement walls are acting as retaining walls and will have the lateral load from the ground removed when the basement is excavated. The existing wall will be able to carry the vertical loads alone when the lateral loads are removed. The vertical loads will increase slightly because the ground floor will now span onto the walls instead of bearing on sleeper walls. This increase will be compensated for by the soil removal. If the increase in load is greater than 10% then the existing walls will require underpinning. The bearing capacity of London clay is about 150kN/m2 at one metre depth. The capacity at 3m depth will be about 200kN/m2. If the bearing on the soil below the footing is kept less than 100kN/m2 then settlement should not occur. See attached calculation pages 01 to 08.

The above procedures should ensure that cracking will not be worse than Category 1 on the Burland Scale. That is cracks will not exceed 1mm wide. Decoration and some repointing may be required.

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The removal of soil from the new basement area will relieve pressure on the sub-strata. This will allow the clay to expand and allow heave to occur. The basement base slab is to be in reinforced concrete. It will be attached to the basement walls and be reinforced sufficiently to contain this heave.

Seals Between Existing and New Basement Walls.

The new basement will be of waterproof construction with an internal waterproof membrane. The junction of the new basement to the existing will have a seal. Volclay Waterstop RX is proposed. This is a montmorillonite based clay product that expands in the presence of moisture. If it is contained so that expansion is restricted then it forms a gel that is watertight and seals to the surface that contains it. A watertight seal is formed.

Conclusion

The new basement will be adequately designed and constructed to minimise the effect on the existing structure. Damage will be to Burland Category One or less. The construction will carry the loads applied to it from the building above and the soil around it.

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