16 Alma Street London NW5

Statement on proposed basement lowering.

1.0 INTRODUCTION

1.1 The existing building has a lower ground floor with low headroom of 2.12 metres within the kitchen (at the rear). The floor steps up towards the front of the house providing a headroom of 1.97 metres within the dining area (at the front).

1.2 Conditional planning approval was granted reference: **2013/1611/P, dated 30 May 2013** :

Replacement of a single storey rear extension with part one part two storey full width rear extension located at lower ground level, ***lowering of existing lower ground floor level, enlargement of front lightwell*** *including elevational alterations to front and rear façade and installation of rooflight to main roof of single dwellinghouse (C3).*

1.3 The planning approval included condition 4:

The development hereby approved shall not commence until such time as a suitably qualified chartered engineer with membership of the appropriate professional body has been appointed to inspect, approve and monitor the critical elements of both permanent and temporary basement construction works throughout their duration to ensure compliance with the design which has been checked and approved by a building control body. Details of the appointment and the appointee's responsibilities shall be submitted to and approved in writing by the local planning authority prior to the commencement of development. Any subsequent change or reappointment shall be confirmed forthwith for the duration of the construction works.

1.4 Momentum structural engineers prepared a Basement Impact Assessment dated 12 February 2013 which is referred to in the planning approval and included within the list of approved documents.

1.5 Momentum have been appointed to complete the structural design of the proposal and are appointed to inspect to works. Their letter confirming appointment is at Appendix 1.

1.6 Assent Building Control have been appointed to provide Approved Inspector services with respect to the Building Regulations 2010. Their letter confirming appointment is at Appendix 2.

2.0 INVESTIGATION

2.1 A site investigation was carried out to assess the existing construction and inspect the form of the foundations and the soil strength characteristics.

2.2 Two trial pits were excavated. Trial hole #1 was excavated against the party wall with No. 17 Alma Street at the mid point adjacent to the spine wall. Trial pit #2 was excavated against the party wall with #15 adjacent to the front elevation. After breaking through solid floor slabs the excavations were carried out by hand. The locations and trial pit record notes are included at Appendix 3.

2.3 The trial pit excavations were carried out by a building contractor as part of a package of preliminary investigative works under the direction of 4orm, the project architects. The excavations were inspected by Stephen Coleman & Claire Priest of architects 4orm and Mike Hutchinson of structural engineers Momentum on 1 July 2014.

3.0 OBSERVATIONS

3.1 The existing lower ground floor is a solid ground bearing concrete construction. The floor steps up by 150mm from the kitchen at the rear toward the front of the house.

3.2 Excavations (2 no. trial pits) were hand dug, towards the front of the property on the No 1 party wall side and towards the rear on the No 3 party wall side. The findings are included in Appendix 1, as produced by 4orm, the project architects.

3.3 Results from the trial pits indicate the soil to be London Clay. No ground water was encountered.

4.0 DISCUSSION

4.1 The observations of the trial pits have confirmed the assumptions within the conclusion section 6.0 of the Basement Impact Assessment.

4.2 The detail design drawings for the foundations and underpinning, prepared by Momentum are included at Appendix 4. Their calculations are included at Appendix 5.

4.3 In order to carry out the works to 16 Alma Street a series of underpins to the party walls with Nos. 15 & 17 Alma Street together with the front elevation and other loadbearing walls are required. This work is on a restricted site and adjacent to a neighbouring property, which will require particular care and attention in order to minimise any disturbance and to complete on time. A section drawing prepared by 4orm showing the new foundation depth is shown at Appendix 6.

5.0 METHODOLOGY

4.3 8 no pins to be formed under each party wall to be 1000mm long and 1000mm width and to a depth of at least 1000mm. To be carried out in sequence as set out on structural engineers detail drawings including 1531-101 Lower Ground Floor Plan, 1531-202 Sections B-B & C-C and 1531-301 Lower Ground Floor Details. These are included at Appendix 1

4.4 Excavate each pin by hand to the required depth and length of pins as per the structural engineers specifications. Depending on the soil conditions encountered support the back and sides of the excavation using ply boards and mini props.

4.5 Trim off and clean the underneath of the existing foundation in preparation for the new pin foundation and place a plywood formwork to the front face.

4.6 The excavation to then be offered for inspection to the engineer and building regulations inspector.

4.7 Fill the pin with mass concrete (mix as structural engineers specification), to be left min 75mm below the existing foundation.

4.8 Not less than 24 hours later the gap below existing foundation to be dry packed with sharp sand cement mix to structural engineers details.

4.9 The following pin in the overall sequence may be commenced not less than 24 hours later

4.10 The pins will be connected using reinforcement bars as detailed by the structural engineer.

4orm

Appendix 1

Letter from Momentum structural engineers.

MOMENTUM
structural engineers

51 Scrutton Street . London EC2A 4PJ

Mr Gideon Whittingham
Planning Officer
London Borough of Camden
6th floor
Argyle Street
London
WC1H 8EQ

Sent by email

26 August 2014

Dear Gideon,

Proposed work to 16 Alma Street. Structural engineering appointment and site visits.

Further to your conversation with Stephen Coleman of 4orm regarding the appointment of a structural engineer on the above project.

We write to confirm Momentum Consulting Engineers Ltd. have been appointed as structural engineers on the project - I personally am a Member of the Institution of Structural Engineers (MIStructE) and a Chartered Engineer (CEng) and are therefore suitably qualified and a member of the appropriate professional body.

We can also confirm we have been appointed to undertake regular site visits during the substructure works, during which we will inspect the work and produce a site visit report outlining our findings and recommendations.

We trust this meets with your approval but if you have any questions or would like any further information please do not hesitate to get in touch.

Yours sincerely,

Mike Hutchison BEng CEng MIStructE
mike@momentumengineering.com
07725 209757

cc Stephen Coleman, 4orm

4orm

Appendix 2

Letter from Assent Building

Assent Building Control Ltd.

Richard Gooden
4orm
1-5 Offord Street
London
N1 1DH

Date: 28 May 2014

Our Ref: XL71557/02G

E-Mail Address richard@4orm.co.uk

Dear Richard,

UNDERPINNING REDUCED LEVEL DIG TO LOWER GROUND FLOOR, INTERNAL ALTERATIONS/REMODELLING WITH LOWER GROUND FLOOR AND GROUND FLOOR REAR EXTENSIONS WITH ASSOCIATED WORKS TO EXISTING 3 STOREY DWELLING HOUSE
16 ALMA STREET, LONDON, NW5 3DJ

In accordance with your instructions, I confirm that the Initial Notice for the above property was signed on your behalf and has been submitted to the Local Authority. A copy is attached for your records.

If at any time either prior to or during construction, any amendments are made to the plan or layout of the building you must send us copies of these amendments. This is essential to enable us to ensure compliance with the Building Regulations and keep the local Fire Authority informed.

I also enclose a copy of our Stage Notice Form. Please could you complete this form and return it to me, or telephone me, at each relevant stage so that I can arrange the necessary site inspections.

On completion of construction we will issue a Final Certificate, this must be done within 4 weeks of occupancy of the building or occupancy to which this Initial Notice relates. If the work is not sufficiently complete to enable us to issue the Final Certificate within the 4 week limit, the Initial Notice will cease to be in force, the work may then revert to the local authority who will charge a further fee.

Thank you for this commission, we look forward to being of continuing service to you.

Yours sincerely

Peter Whiteside
Area Manager - London(Central)

E-mail: *peter@assentbc.co.uk*
Mobile No: *07983 563243*

Enc: Initial Notice
Stage Notice Form

Stage Notice Form

Please either complete this form at each relevant stage and return a copy to:
Assent Building Control Ltd
The Hothouse **XL71557**
1-5 Offord Street
London
N1 1DH, Fax : 01924 250387
OR Tel: 0207 6078953 to arrange your inspections. Where the stages outlined below are inappropriate to your project please ring to discuss a suitable inspection programme

PROJECT Underpinning reduced level dig to lower ground floor, internal alterations/remodelling with lower ground floor and ground floor rear extensions with associated works to existing 3 storey dwelling house

ADDRESS 16 ALMA STREET, LONDON, NW5 3DJ
Tel. No. _____

_____

BUILDER
ADDRESS _____

_____ **Tel. No.** _____

SITE NAME _____
CONTACT

_____

_____ **Site Tel. No.** _____

Construction on the above project will be (please provide at least 2 Days notice) COMMENCED ON _____200 _____ ANTICIPATED COMPLETION DATE _____200 _____
The above project has reached the following stage (Please provide at least 1 Days notice)
FOUNDATION EXCAVATIONS — FOUNDATIONS
Ready for inspection on ……. — Ready for inspection on …….
* Please provide piling logs where applicable — * Please provide cube tests
DRAINS OR SEWERS — COVERING TO DRAINS AND SEWERS
Ready for inspection on ……. — Ready for inspection on …….
DAMP PROOF COURSE — DAMP PROOF MEMBRANE
Ready for inspection on ……. — Ready for inspection on …….
OVERSITE COVERING — CLOSURE OF CEILING & ROOF VOIDS
Ready for inspection on ……. — Ready for inspection on …….
OCCUPATION
Ready for inspection on …….
* Please provide certificates for active fire precautions measures, e.g. alarms, lighting, sprinklers, intumescent paint etc.
COMPLETION
Ready for inspection on …….

4orm

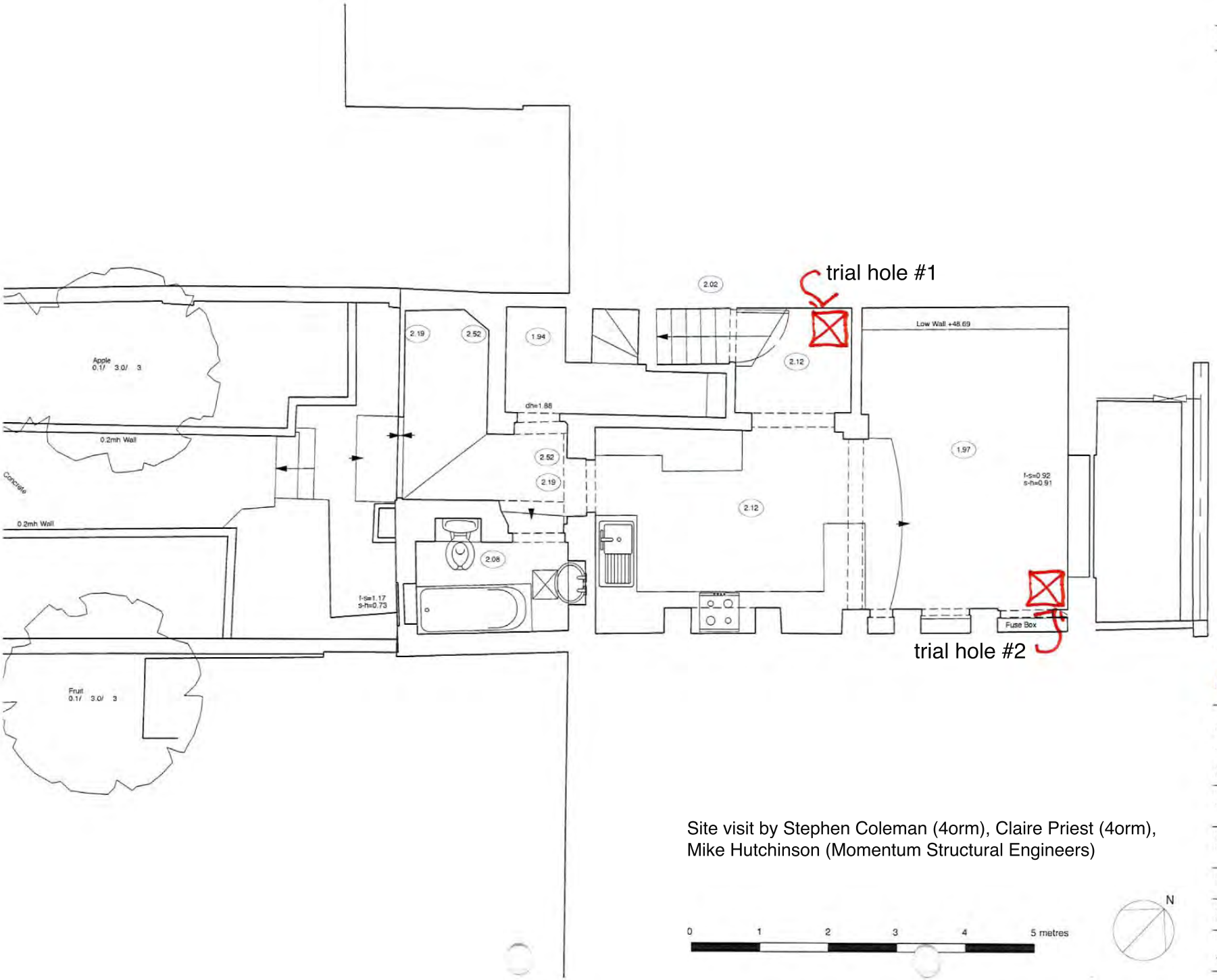
Appendix 3

Trial pit locations and record drawings.

485-X.03 TRIAL HOLES

Trial Hole No. 1 to 17 Alma Street

Trial Hole No. 2 to 15 Alma Street



Site visit by Stephen Coleman (4orm), Claire Priest (4orm), Mike Hutchinson (Momentum Structural Engineers)

0 1 2 3 4 5 metres

N

Do not scale from this drawing.
Dimensions are to be verified on site prior to construction.

Notes

Revisions

1 JULY 2014

4orm

1-5 Offord Street London N1 1DH

studio@4orm.co.uk
www.4orm.co.uk

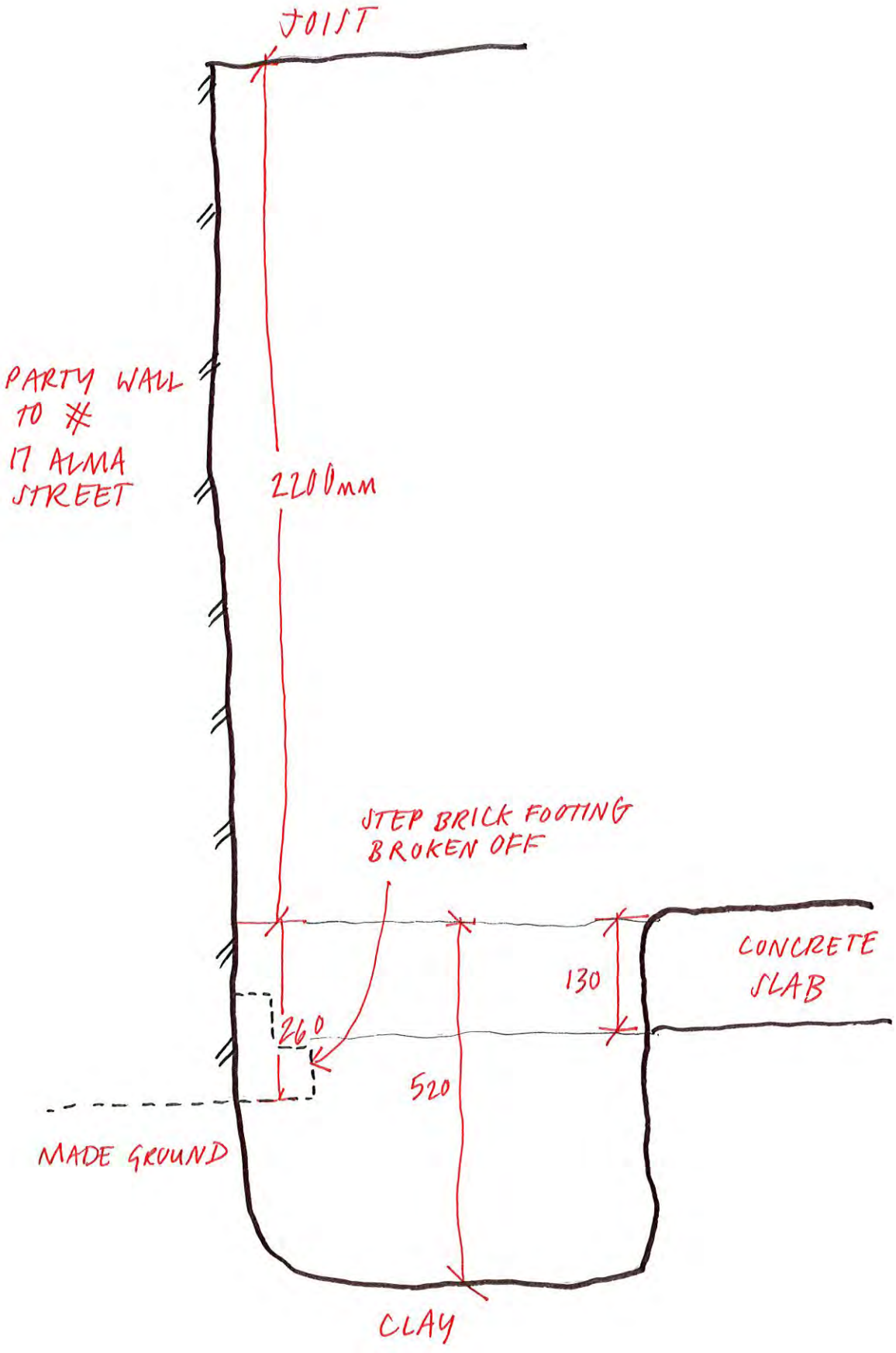
Project
16 Alma Street

Drawing Title
Existing lower ground

Drawing Status

Date	Scale @ A3	Drawn
March 14	1:50	XX

Drawing Number
485-X.03 Trial Holes



TRIAL HOLE ADJACENT TO STAIR
SITE VISIT 01.07.14 CP/SC

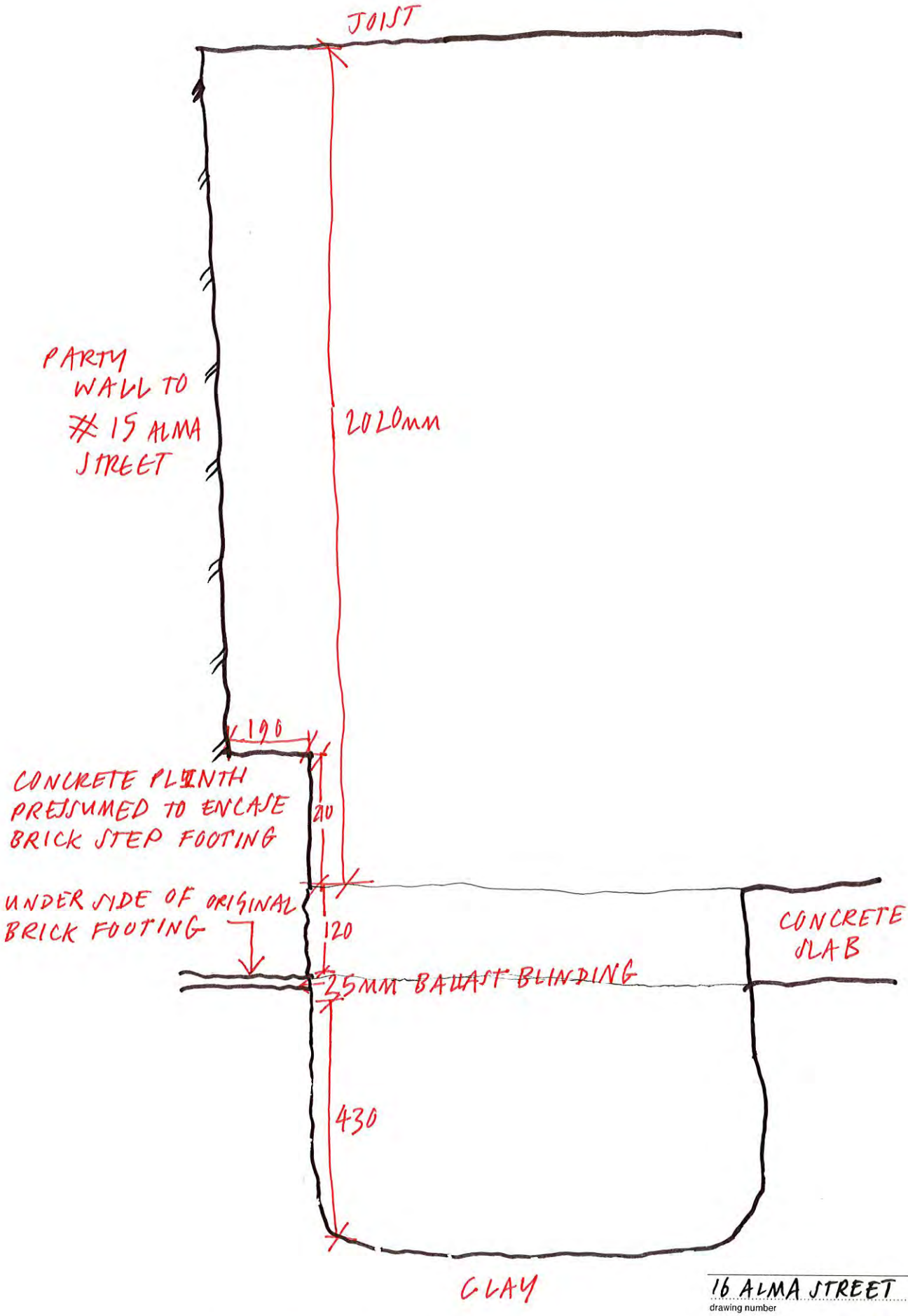
16 ALMA STREET
drawing number

4851 SK1

scale NOT TO SCALE

date 02.07.14

4orm
1-5 Offord Street London N1 1DH
+44(0)2071837045
studio@4orm.co.uk
www.4orm.co.uk



TRIAL HOLE AT FRONT

SITE VISIT 01.07.14 CP/SC

16 ALMA STREET

drawing number

4851 .sk2

scale NOT TO SCALE

date 02.07.14

4orm
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+44(0)2071837045
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www.4orm.co.uk

4orm

Appendix 4

Design drawings by Momentum structural engineers.

1531 101 [T02]

1531 201 [T02]

1531 202 [T02]

1531 301 [T02]

A3

Key.

- New masonry/brick wall.
- New timber stud wall. (150 x 50 C16 studs @ 400 c/c uno).
- New reinforced concrete wall.
- New timber beam.
- New steel beam (typ' within depth of floor).
- New RC padstone. (750 lg x 250 h x 100 w uno).
- Presumed span of joists/rafters.

B 202

C 202

17 ALMA STREET

Note.
Party wall underpinning to be done in sequential strips.
1 → 5

Composite retaining wall. Brick-RC-brick, all 100mm thick. B10 L-bars @ 200mm c/c in concrete. Brickwork fully bonded and tied into existing party wall

New loadbearing blockwork walls to be toothed 100mm into existing party wall.

Existing party wall.

New stairs to architects details.

New lower ground floor slab to be 150mm thick RC slab on 50mm concrete blinding on min 150mm well compacted type 2. Slab reinforced with A393 mesh, min' 400mm laps. Waterproofing to architects details.

New timber stud wall.

0.1
301

0.2
301

0.3
301

A
201

350

254UC frame

Break out existing foundations. New 500mm dp. x 500mm wd. thickening to slab with 254UC cast in

600

Movement joint

400

Existing chimney breasts to be removed.

Existing party wall.

Composite retaining wall. Brick-RC-brick, all 100mm thick. B10 L-bars @ 200mm c/c in concrete

New external slab to be 200mm thick RC slab on 50mm concrete blinding on min 150mm well compacted type 2. Reinforced using A393 mesh T&B. External walls either to be demolished and re-built or underpinned and supported off new slab.

Min' 400 wide x 400mm dp slab edge thickening.

New loadbearing blockwork walls to be toothed 100mm into existing party wall. Shot fired wall ties to UC's.

New 1000 wide x 400 dp mass concrete pad foundation.

New 100mm thick loadbearing blockwork wall, toothed into existing party wall. Form new 600x400mm dp thickening within new lower ground floor slab.

New slab to be 250mm thick RC slab on 50mm concrete blinding on min 150mm well compacted type 2. Slab reinforced with B16 @ 200 c/c each way top & bott'. Waterproofing to architects details.

ALMA STREET

15 ALMA STREET

B 202

C 202

General Notes

This drawing has been prepared for the sole benefit of the project named below. The liability of Momentum Consulting Engineers Ltd, its directors and employees in respect to this information will not extend to any other project.

Do not scale from this drawing or use digital data. Work only to figured dimensions.

All dimensions are in millimetres.

All levels are in metres.

[T02] Tender 11.07.14
Revision Date of Revision
Revision History

ACE Work Stage
TENDER DOCUMENTATION
Project title
Alma Street

Client
Mr and Mrs R Sofer

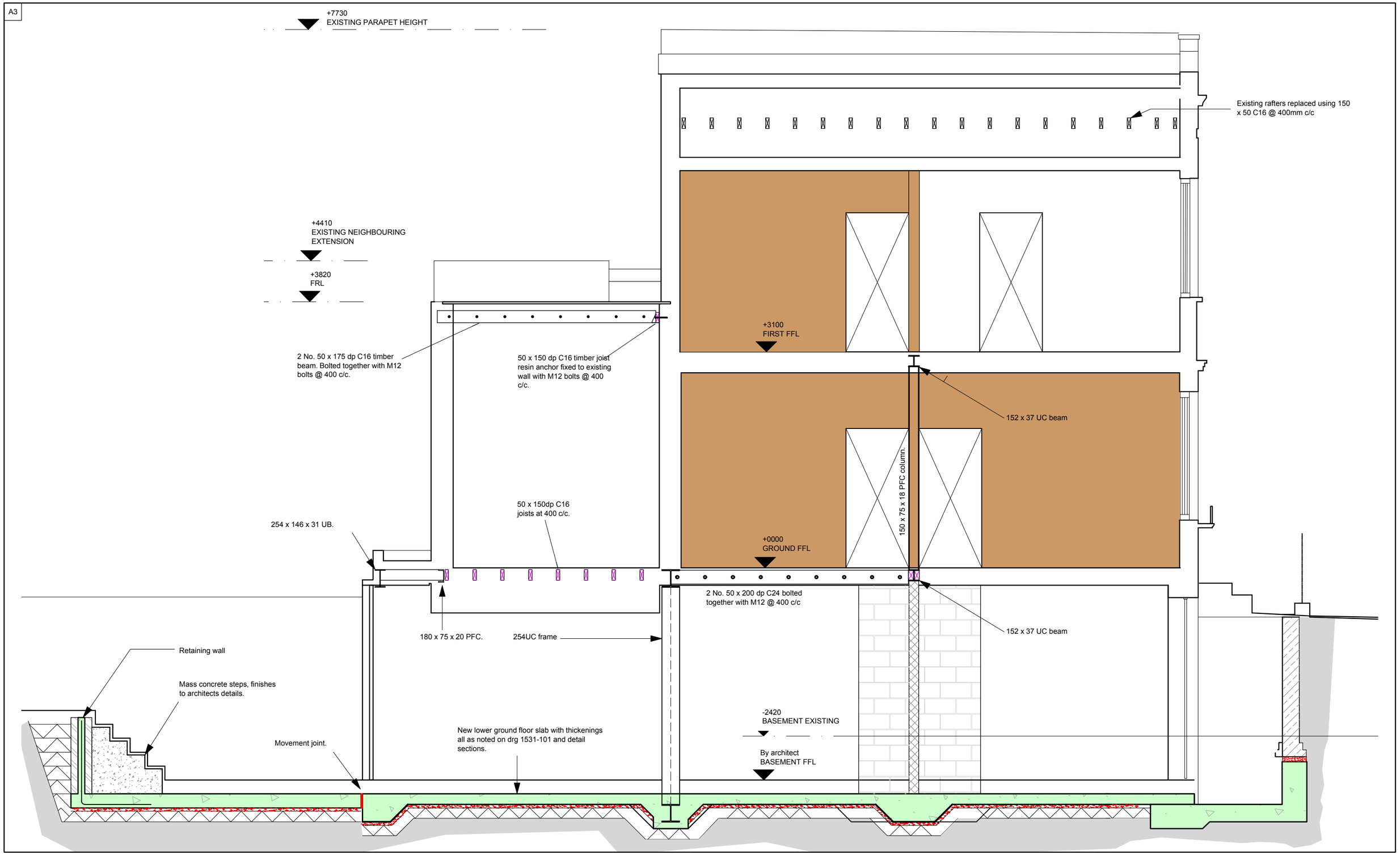
Architect
4orm
Drawing title
Proposed Plan
Lower Ground Floor

Scale at A3 1 : 50
Drawn JP
Checked MH

MOMENTUM structural engineers
90 Walcot Street Bath BA1 5BG 01225 444194
51 Scrutton Street London EC2A 4PJ 020 77396939
www.momentumengineering.com

Drawing Reference
1531 101 [T02]

A3



General Notes

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All levels are in metres.

[T02]	Tender	11.07.14
Revision		Date of Revision

Revision History

ACE Work Stage: TENDER DOCUMENTATION

Project title: Alma Street

Client: Mr and Mrs R Sofer

Architect: 4orm

Drawing title: Section A-A

Scale at A3: 1 : 50 | Drawn: JP | Checked: MH

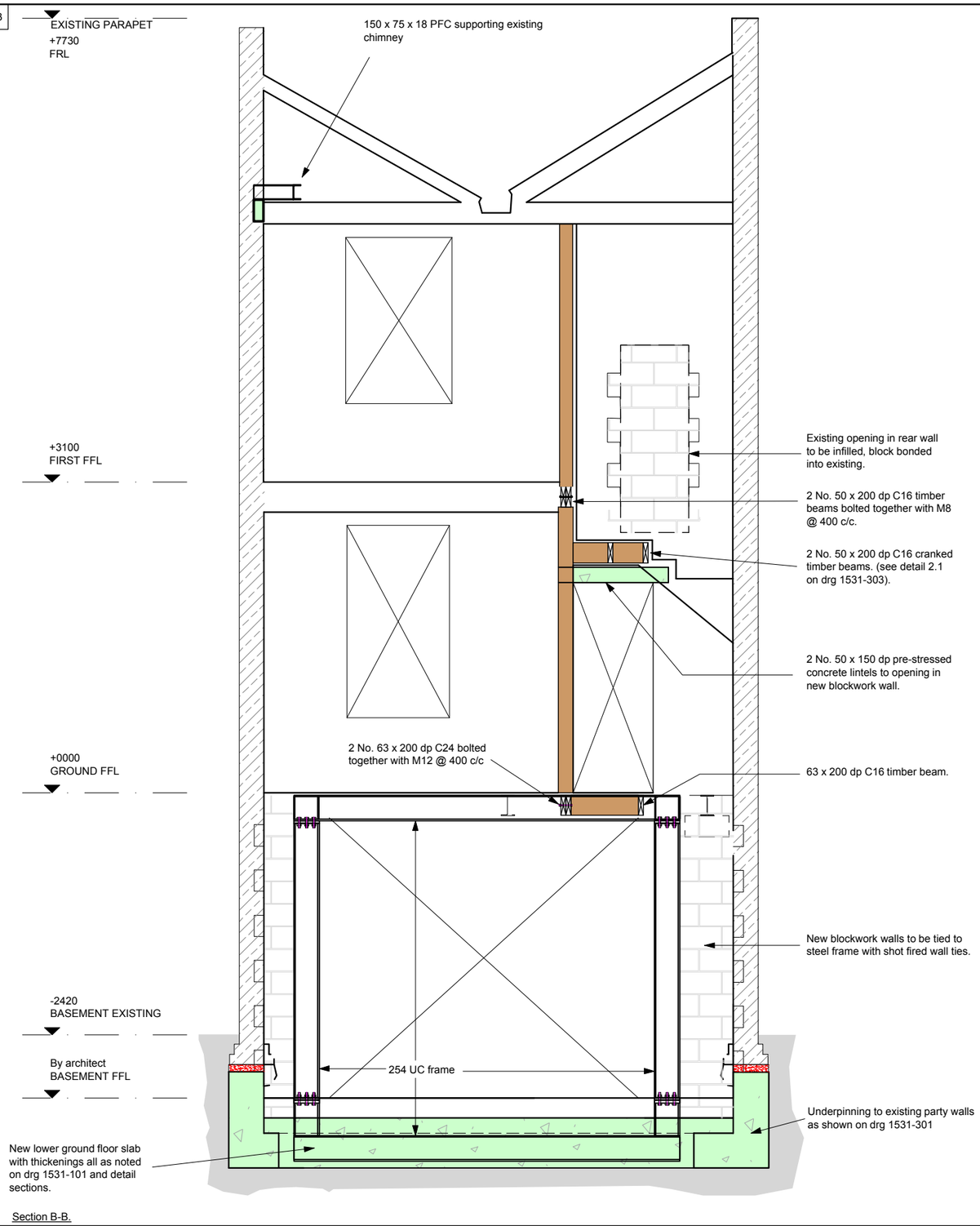
MOMENTUM structural engineers

90 Walcot Street, Bath BA1 5BG, 01225 444194 | 51 Scrutton Street, London EC2A 4PJ, 020 77396939

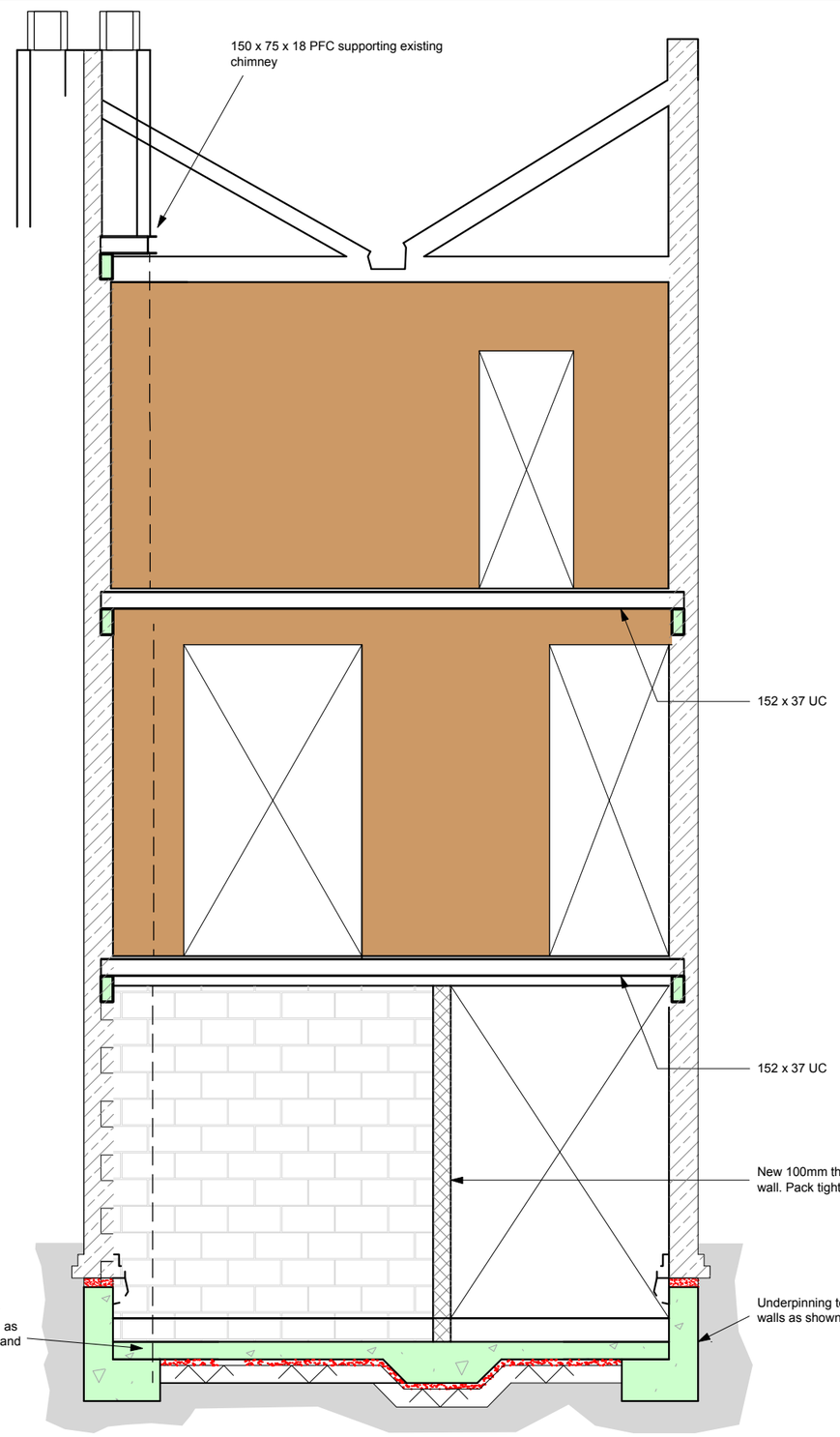
www.momentumengineering.com

Drawing Reference: 1531 201 [T02]

A3



Section B-B.



Section C-C.

General Notes

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Do not scale from this drawing or use digital data. Work only to figured dimensions.

All dimensions are in millimetres.

All levels are in metres.

[T02]	Tender	11.07.14
Revision		Date of Revision

Revision History

ACE Work Stage: TENDER DOCUMENTATION

Project title: Alma Street

Client: Mr and Mrs R Sofer

Architect: 4orm

Drawing title: Section B-B & C-C

Scale at A3	Drawn	Checked
1 : 50	JP	MH

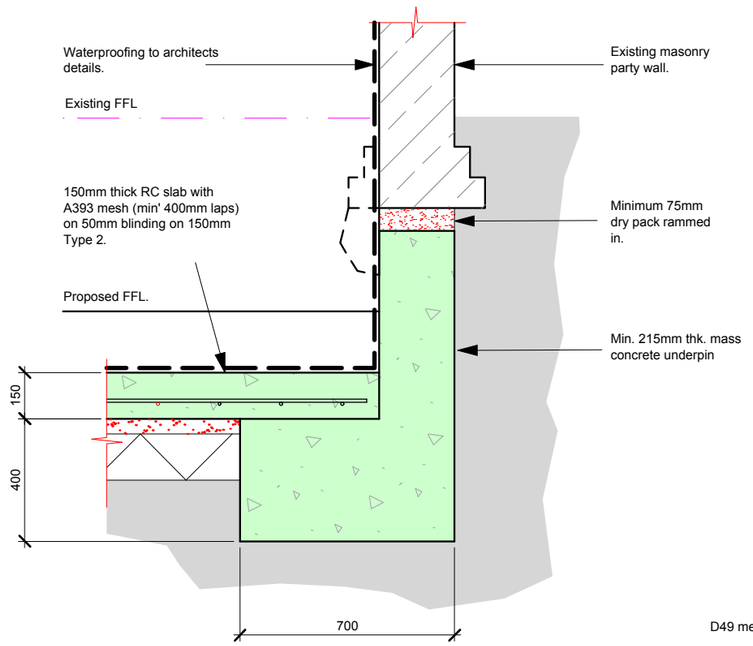
MOMENTUM structural engineers

90 Walcot Street, Bath BA1 5BG, 01225 444194 | 51 Scrutton Street, London EC2A 4PJ, 020 77396939

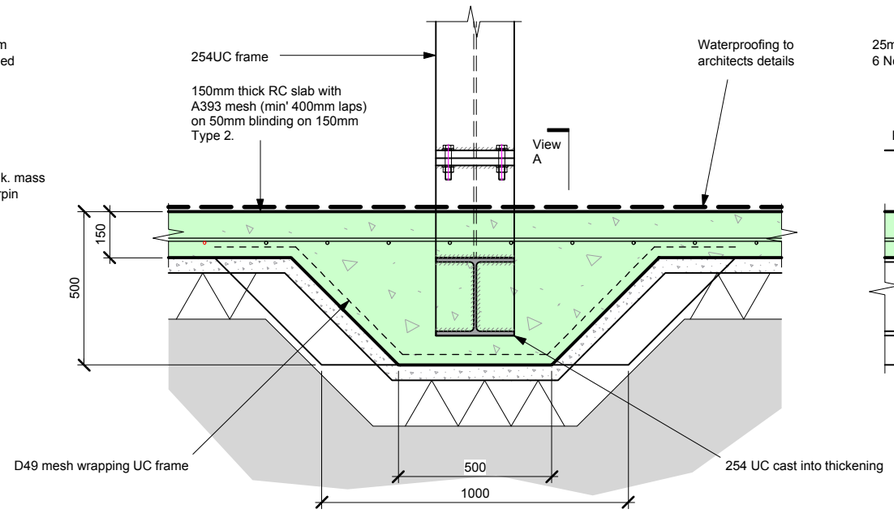
www.momentumengineering.com

Drawing Reference: 1531 202 [T02]

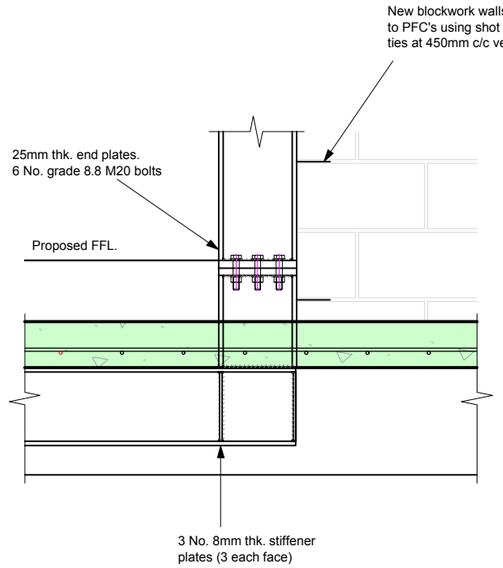
A3



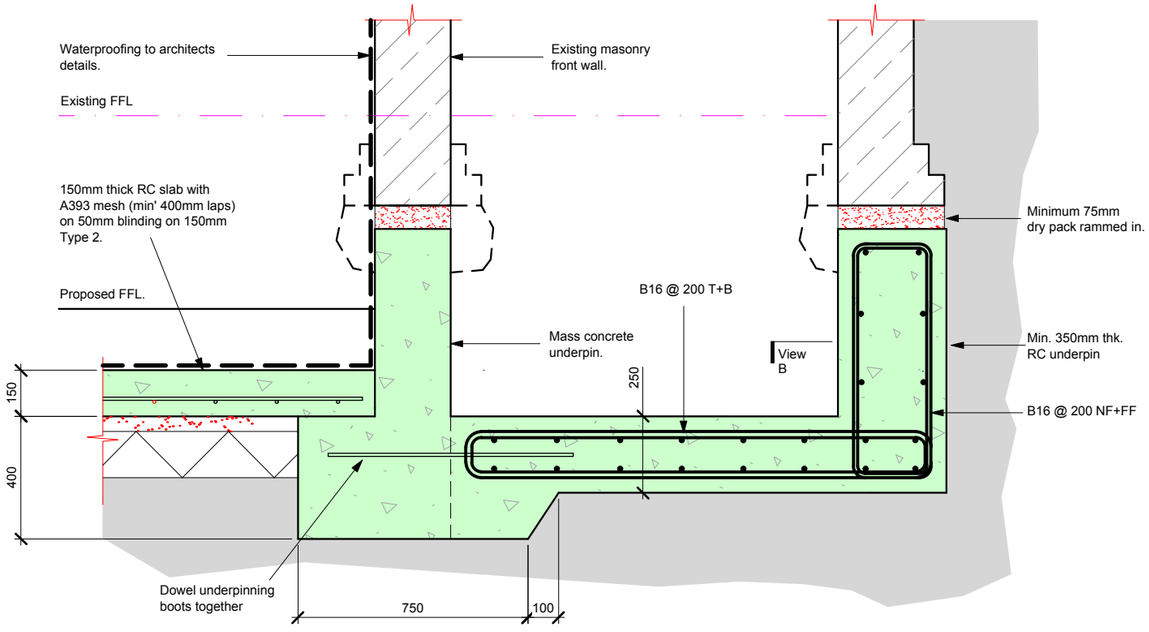
0.1 Underpinning/slab to Party Wall.
1:20



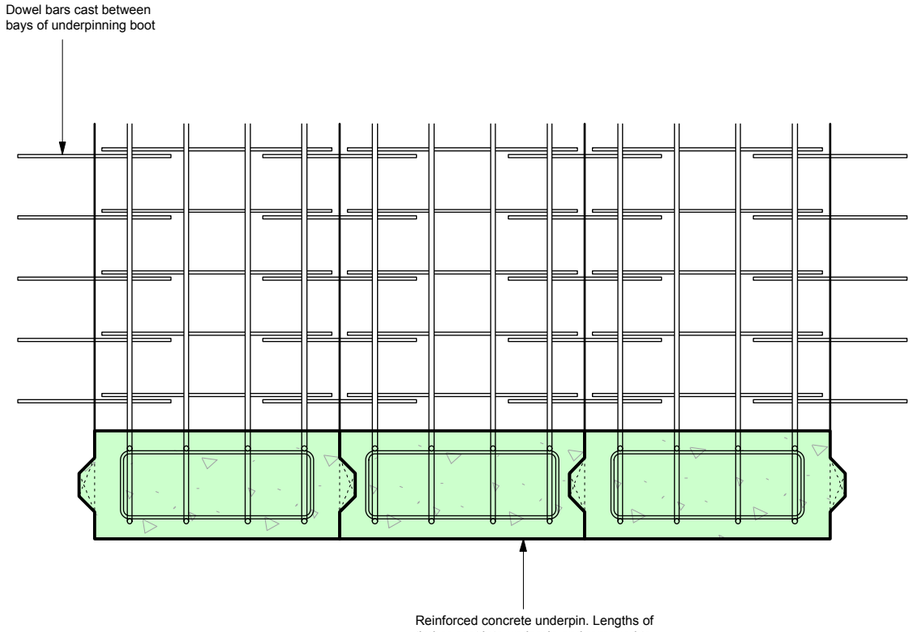
0.2 Foundation/slab to UC frame.
1:20



View A
1:20



0.3 Underpinning/slab to Front Wall & Lightwell.
1:20



View B
1:20

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All dimensions are in millimetres.

All levels are in metres.

[T02] Tender 11.07.14
Revision Date of Revision

Revision History

ACE Work Stage
TENDER DOCUMENTATION

Project title
Alma Street

Client
Mr and Mrs R Sofer

Architect
4orm

Drawing title
Section/Details
Lower Ground Floor
Sheet 1

Scale at A3 | Drawn | Checked
1 : 20 | JP | MH

MOMENTUM structural engineers
90 Walcot Street Bath BA1 5BG 01225 444194 | 51 Scrutton Street London EC2A 4PJ 020 77396939
www.momentumengineering.com

Drawing Reference
1531 301 [T02]

4orm

Appendix 5

Basement and Foundation Design calculations by Momentum structural engineers.

4.0 Basement and foundations

4.1 Typical wall along adjacent properties

It is proposed to lower the existing rear slab area by approximately 800mm. Wall will be underpinned along gridlines A and B. Adjacent basements are inhabited floor space, conservatively assume highest floor level (and retained earth) is as per existing (i.e. with 2m headroom). Check vertical dead load is sufficient to resist overturning.

Height of retaining wall		= 0.80 m
Assumed minimum wall thickness above		= 0.215m
γ		= 18 kN/m^3
K	= 1-sin24	= 0.6
Surcharge (domestic live loading)		= 1.5 kN/m^2

Calculate overturning forces:

$M_{surcharge}$	= 1.5 x 0.6 x 0.8 x (0.8/2)	= 0.29 kNm
M_{soil}	= 0.5 x (18-10) x 0.6 x 0.8^2 x (0.8/3)	= 0.4 kNm
M_{water}	= 0.5 x 10 x 0.8^2 x (0.8/3)	= 0.85 kNm
M_{total}		= 1.54 kNm/m

Calculate resistance due to dead load:

$w_{DL\ vertical}$	= 0.215 x 18 x 9	= 35 kN/m
$M_{resistance}$	= 35 x (0.215/2)	= 3.8 kNm/m
Factor of safety for overturning	= 3.8/1.54	= 2.5, therefore OK

Check existing loading on foundations:

$w_{DL\ roof}$	= 1.1 x 2.5/2	= 1.4 kN/m
$w_{LL\ roof}$	= 0.6 x 2.5/2	= 0.75 kN/m
$w_{DL\ wall}$	= 0.215 x 19 x 10	= 40.9 kN/m
w_{total}	= 1.4 + 0.75 + 40.9	= 43.2 kN/m
σ = F/A	= 43.3/(1 x 0.43)	= 100 kN/m^2

Check new loading on foundations. New point loads applied from beams will be spread out over whole wall.

$w_{DL\ roof}$	= 1.1 x 5/2	= 2.8 kN/m

$w_{LL\ roof}$	= 0.6 x 5/2	= 1.5 kN/m
$w_{DL\ floors}$	= 2 x 0.7 x 5/2	= 3.5 kN/m
$w_{LL\ floors}$	= 2 x 1.5 x 5/2	= 7.5 kN/m
$w_{DL\ wall}$	= 0.215 x 19 x 10	= 40.9 kN/m
w_{total}	= 2.8 + 1.5 + 3.5 + 7.5 + 40.9	= 56.2 kN/m
σ = F/A	= 56.2/(1 x 0.7)	= 80 kN/m^2

Bearing pressure is less than existing therefore OK.

4.2 Typical wall adjacent to road

Check wall under front elevation of building adjacent to road. Assume loads from existing wall are transferred into new wall below.

Ht of existing masonry above new wall		= 2.4 m
Ht of new wall		= 0.8 m
Ht of water from GFL		= 1.0 m
Thickness of wall		= 0.4m
K	= 1-sin24	= 0.6
Surcharge (pedestrian traffic only)		= 5 kN/m^2

Calculate forces at top of new wall

$w_{DL\ vertical}$	= 0.4 x 18 x 9	= 65 kN/m
$F_{surcharge}$	= 5 x 0.6 x 2.4	= 7.2 kN
F_{soil}	= 0.5 x (18-10) x 0.6 x 2.42	= 13.9 kN
F_{water}	= 0.5 x 10 x 2.42	= 28.8 kN
$F_{total\ lateral}$		= 50 kN

See Appendix 1 for Tedds calculation.

Adopt RC retaining wall under existing masonry wall. Stem thickness as per existing (B12@200mm c/c) and 200mm thick base (B16@200mm c/c)

4.3 Typical foundation under steel moment frame

Check bearing pressure under steel moment frame:

$F_{per\ 0.5m}$	From Staad model	= 30 kN
$\sigma = F/A$	= 30/(0.5 x 0.6)	= 100 kN/m^2 OK

Adopt 600 wide strip footing under UC frame

4orm

Appendix 6

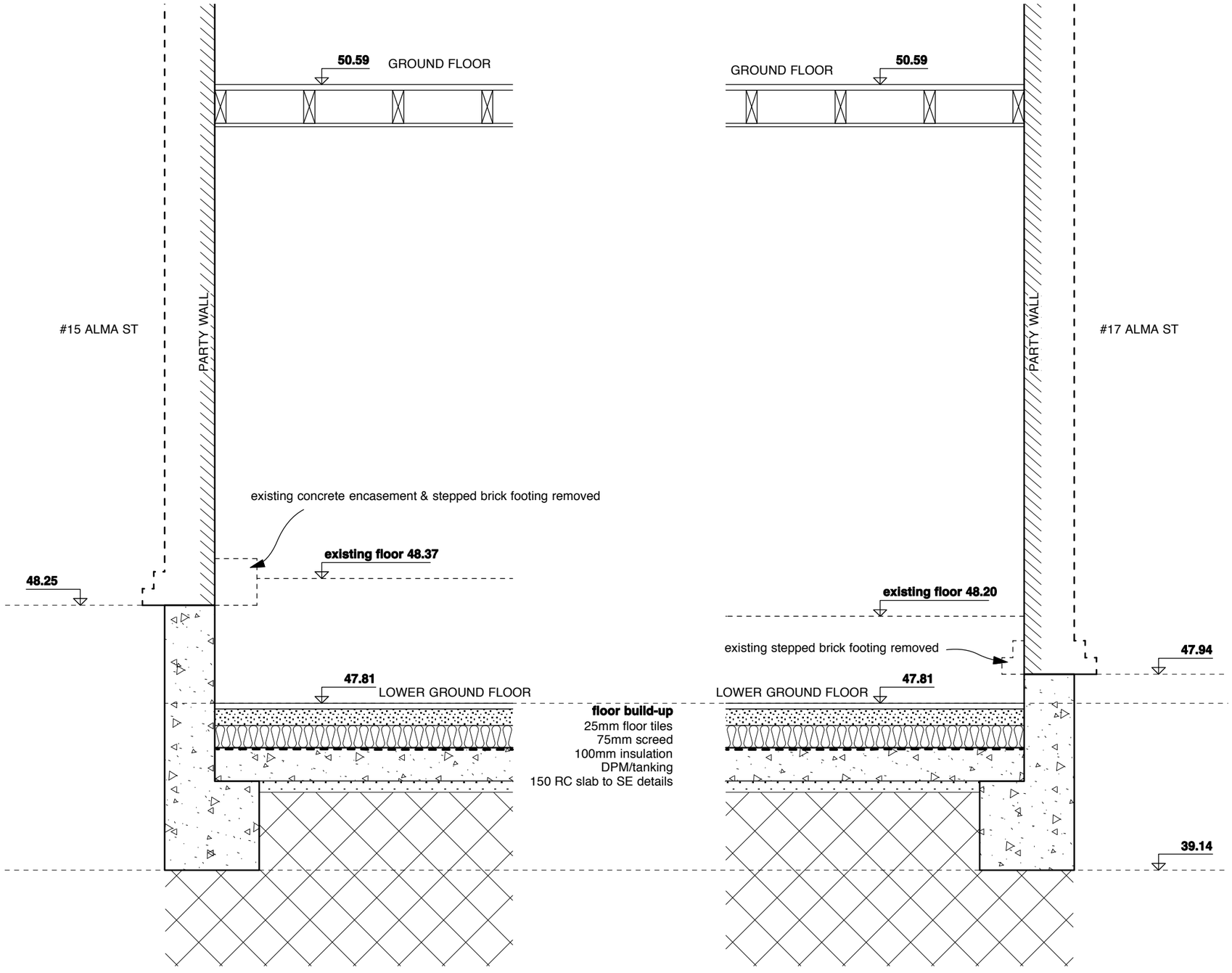
Section drawing prepared by 4orm showing the new foundation depth

485-L.30

Do not scale from this drawing.
Dimensions are to be verified on site prior to construction.

Notes

Levels relate to AOD



detail to party wall with #15 Alma Street

detail to party wall with #17 Alma Street

Revisions

4orm

1-5 Offord Street London N1 1DH

studio@4orm.co.uk
www.4orm.co.uk

Project

16 Alma Street

Drawing Title

Section through lower ground

Drawing Status

CONSTRUCTION

Date	Scale @ A3	Drawn
August 2014	1:20	JW

Drawing Number

485-L.30