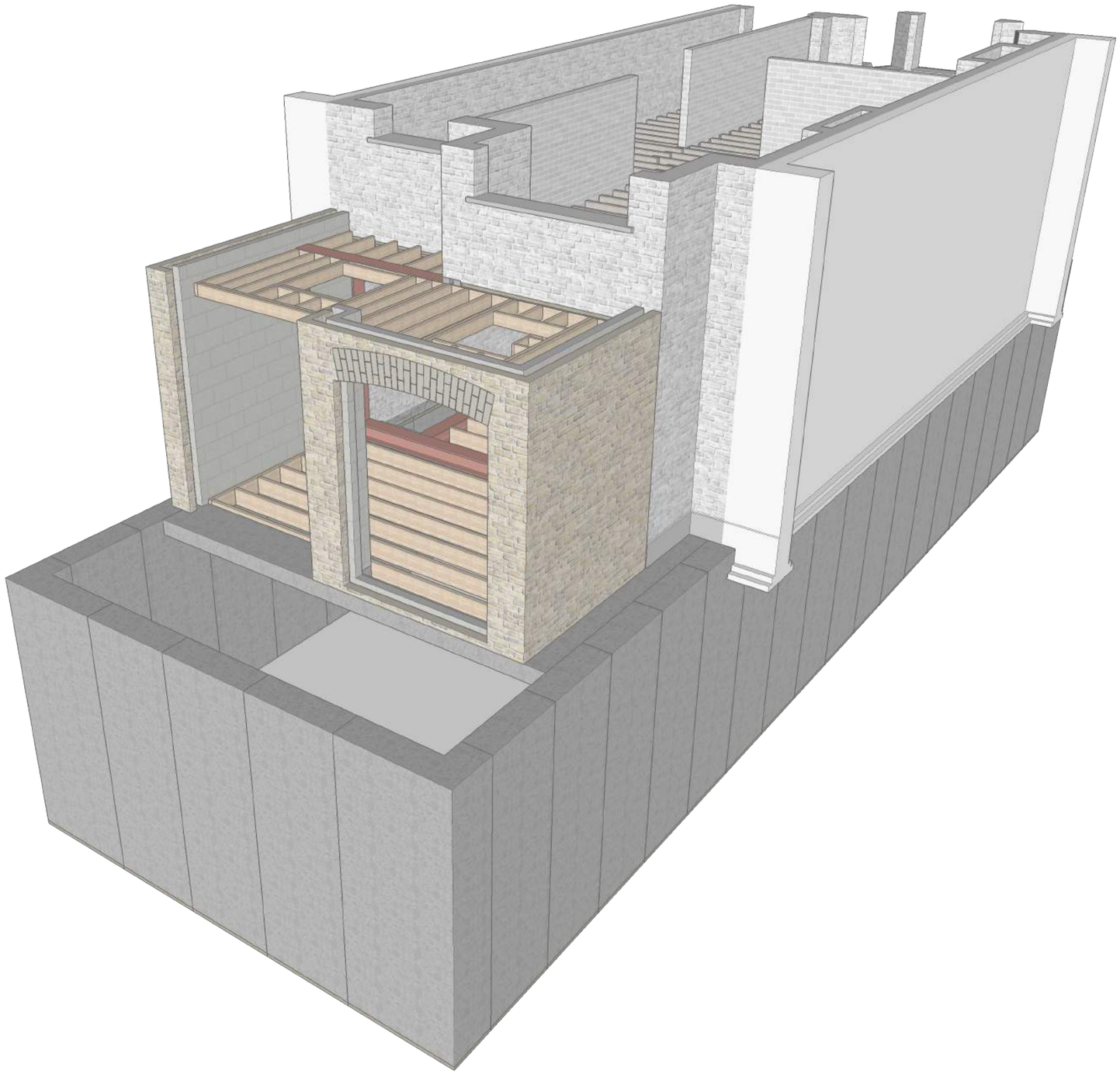
Appendix A1

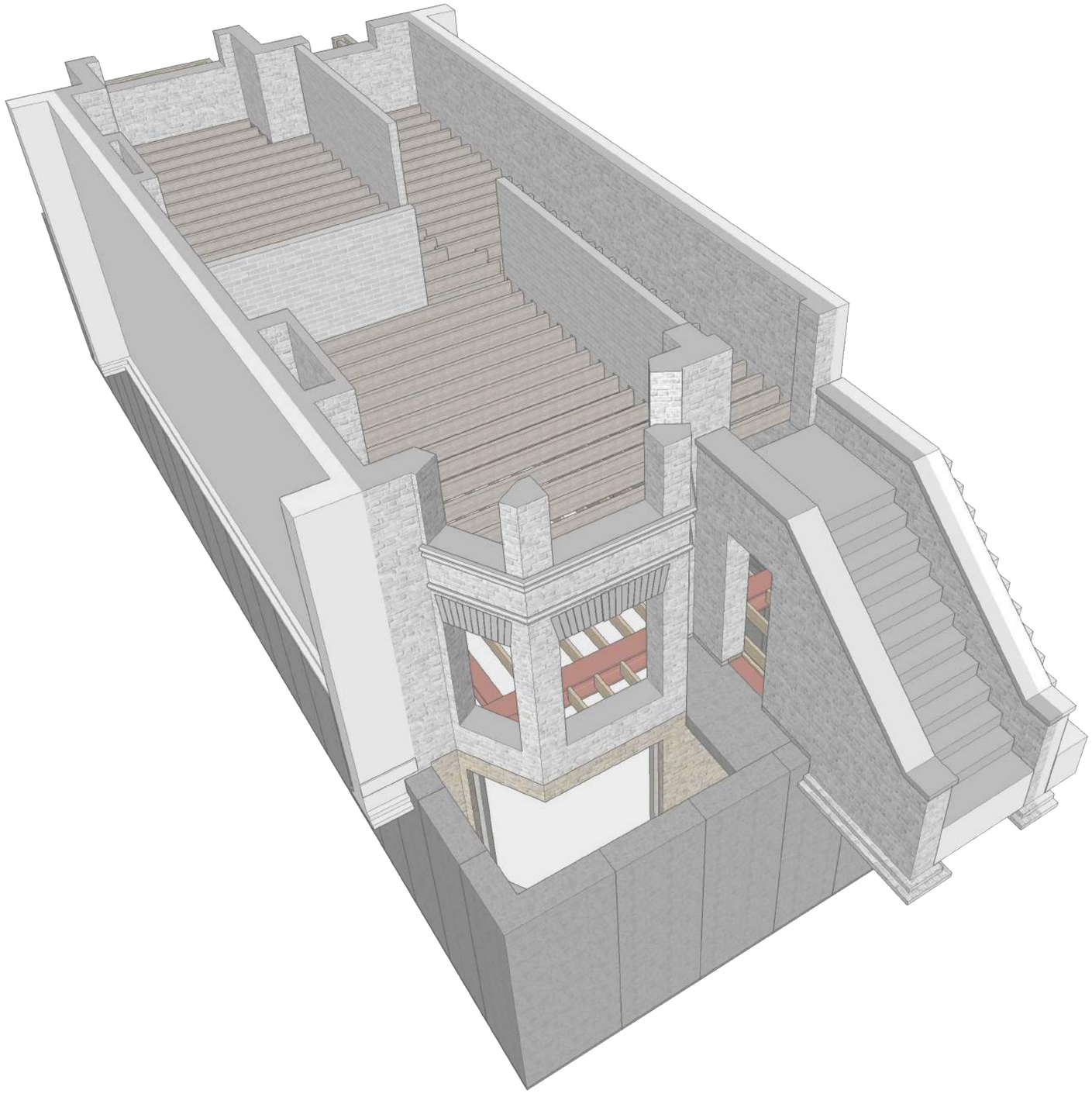
Structural Proposals



View 1 - Rear Perspective

SolidGeometry
STRUCTURAL ENGINEERS

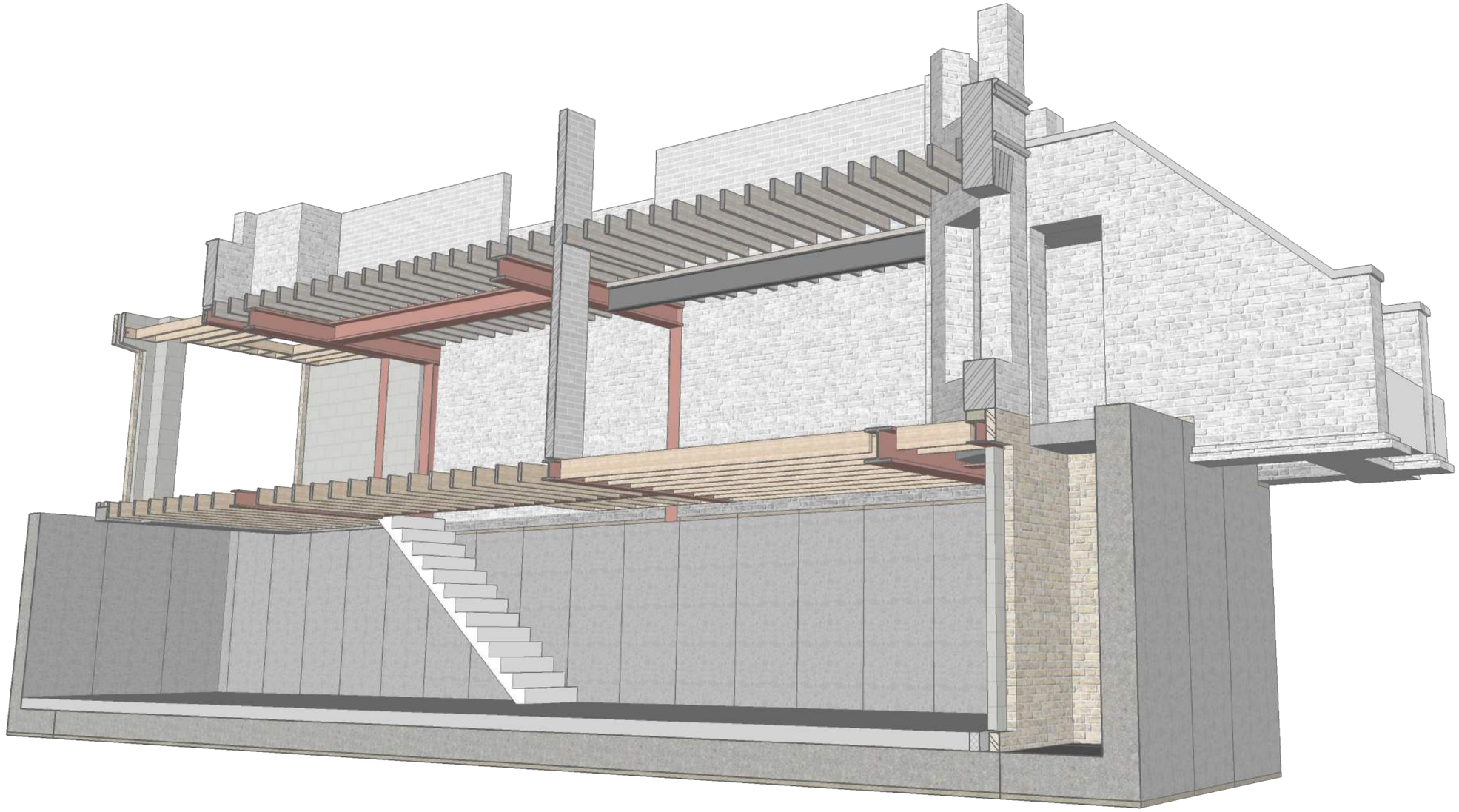
Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT	Notes See general notes drawing S001	Rev. -	Date 07/11/2017	Details First Issue	By AG	Title	Perspective View 1		
Architect	Kokorelia Architects						Scale	n.a		
							Drawing No.	00285/S051	Rev.	-



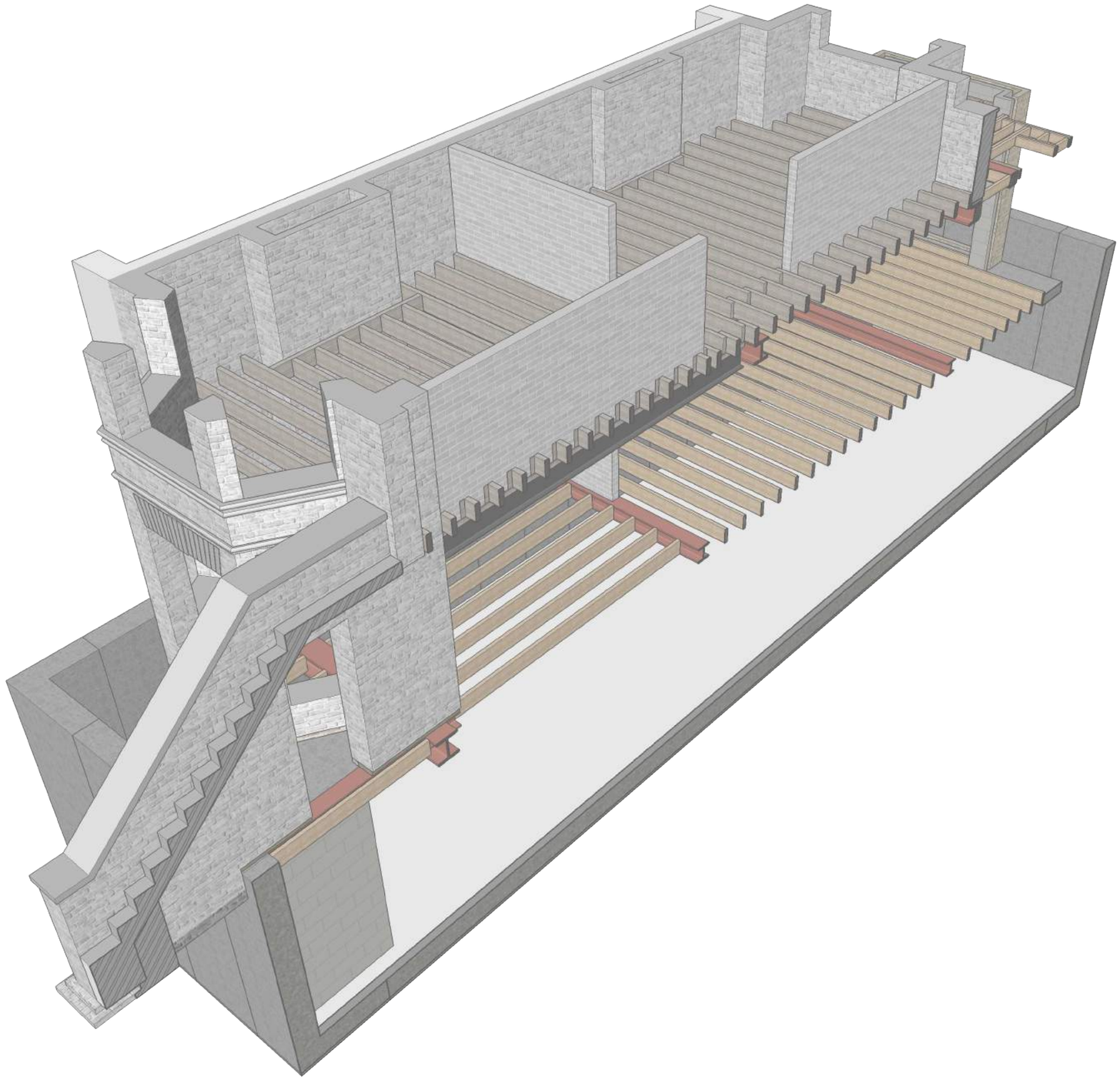
View 2 - Front Perspective

SolidGeometry
STRUCTURAL ENGINEERS

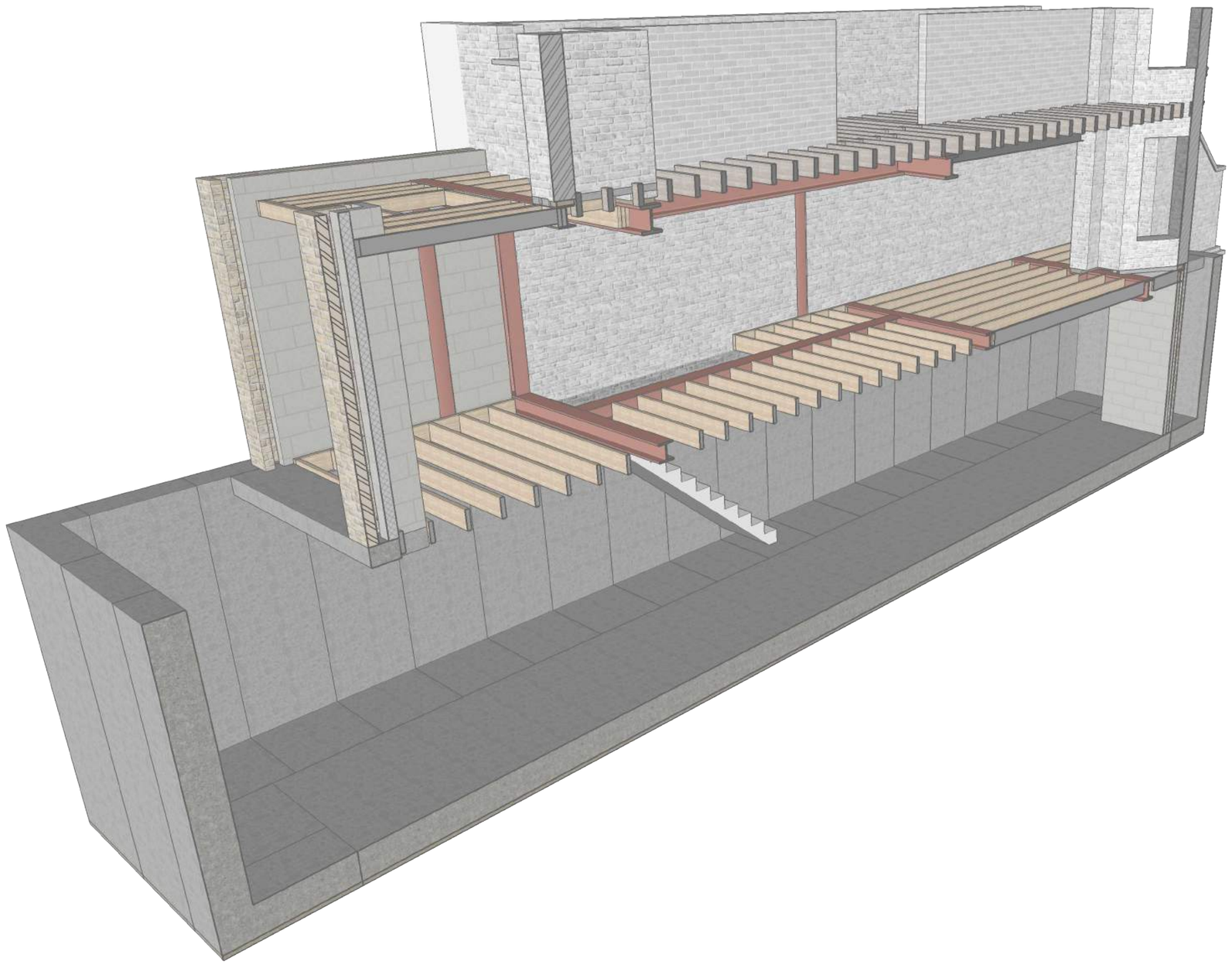
Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT	Notes See general notes drawing S001	Rev. -	Date 07/11/2017	Details First Issue	By AG	Title	Perspective View 2			
Architect	Kokorelia Architects						Scale Drawing No.	n.a 00285/S052	Rev.	-	



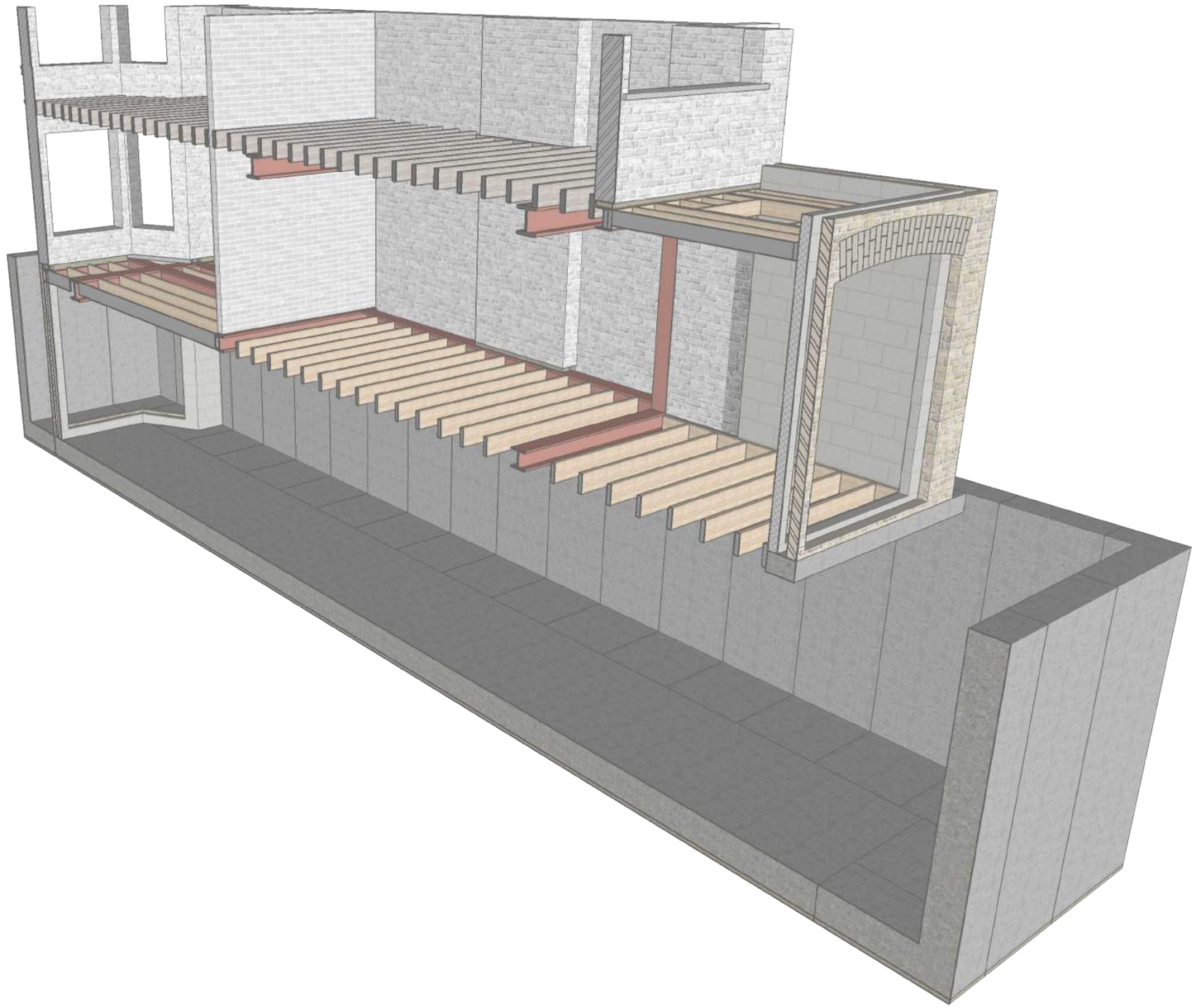
3D Section A-A



3D Section B-B



3D Section C-C



3D Section D-D

RC sump cast integrally with base slab. Dimensions to be confirmed by Architect. Location of drainage points in slab to be confirmed.

4 S303

New cavity wall to architects specification 100 blockwork, Thermalite Shield (3.6N/mm2)

New underpinning beneath existing walls to be greater of 340mm thick or thickness of supported wall (approx 340mm), to be checked on site. Reinforced underpins to cantilever vertically from 350thk slab in permanent condition.

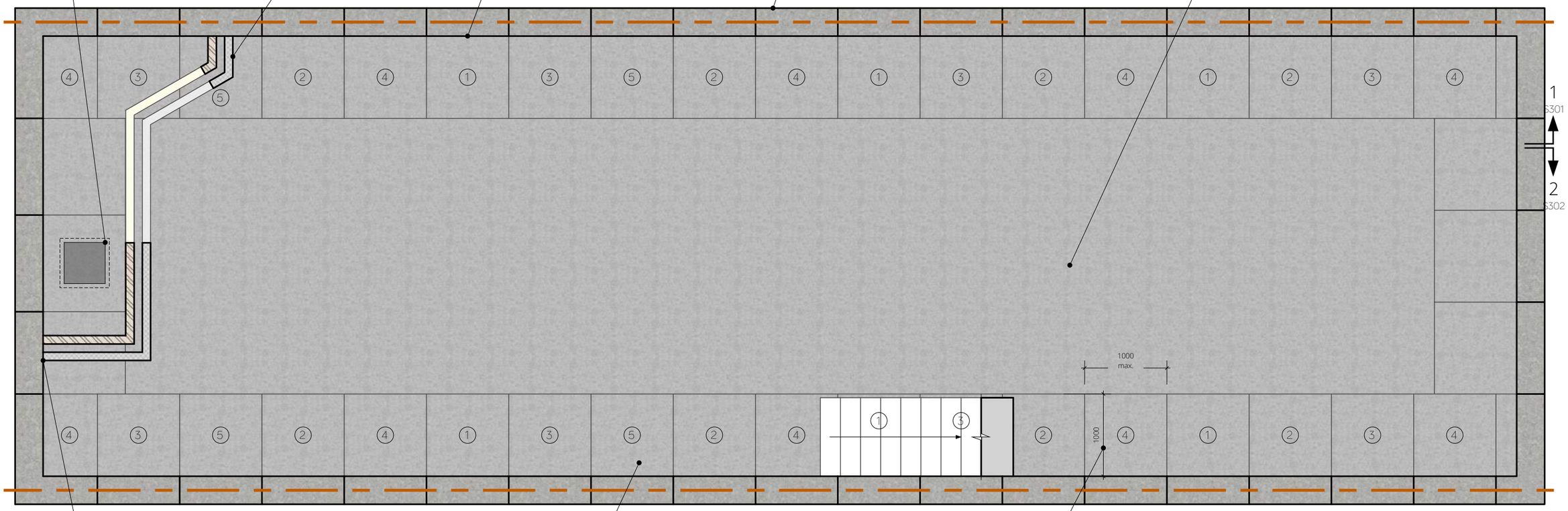
De-bonded non-compressible water resistant cementitious board liner to back of underpins.

3 S303

350 thk. reinforced concrete slab throughout, on 50 blinding. To be continuous with underpin toes in final condition.

1 S301

2 S302



1 S301

2 S302

Stafix Universal Wall Starter system by Ancon with ties at 225 vertical centres between basement wall and new cavity wall

4 S303

Final underpinning layout and sequence to be agreed with contractor.

Extent of toe of each underpin base prior to casting of slab.

3 S303

Underpinning Notes

- To be carried out in lengths not exceeding 1m.
- Drypacking not to commence within 24hrs of casting base.
- No base to be excavated within 48hrs of concreting and packing neighbouring bases.
- Exposed brickwork to be temporarily supported on underpinning jacks if required to maintain integrity of existing structure and prevent falling masonry.
- Drypack to be 1:3 cement:sand mixed so as to bind easily under hand pressure.
- Excavations to be temporarily supported as required by temporary works drawings
- All underpinning to be propped horizontally in accordance with temporary works drawings.
- Underpinning sequence to be agreed with contractor/temporary works engineer prior to commencement.
- Back face of underpinning on party walls to be cast against de-bonded non-compressible water resistant cementitious board liner to ensure clean face in line with face of neighbours wall.

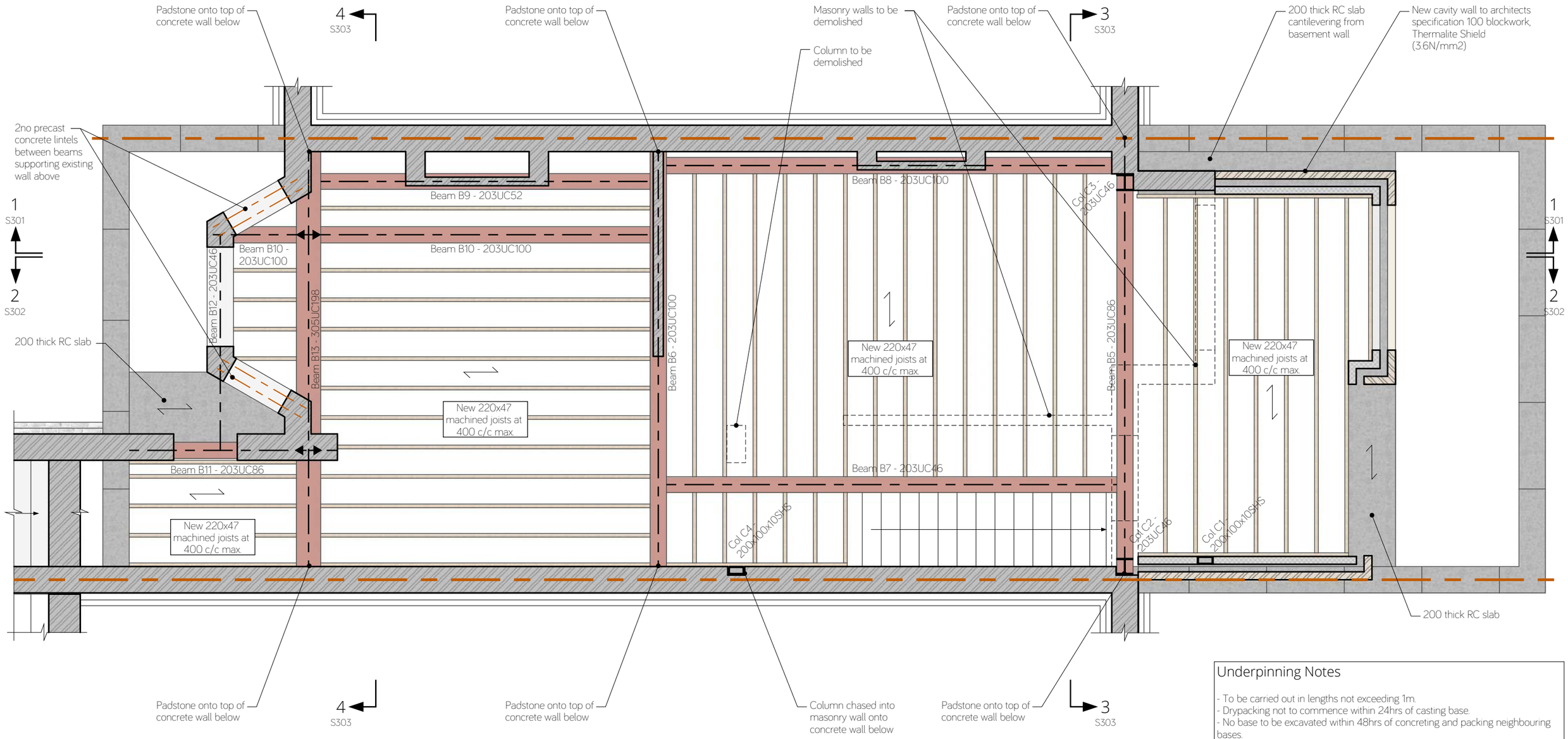
SolidGeometry STRUCTURAL ENGINEERS

Project: Flat 1, 44 Goldhurst Terrace, London, NW6 3HT
Architect: Kokorelia Architects

Notes: See general notes drawing S001

Rev.	Date	Details	By
-	07/11/2017	First Issue	AG

Title: Basement General Arrangement
Scale: 1:50 @ A3
Drawing No. 00285/S098
Rev. -

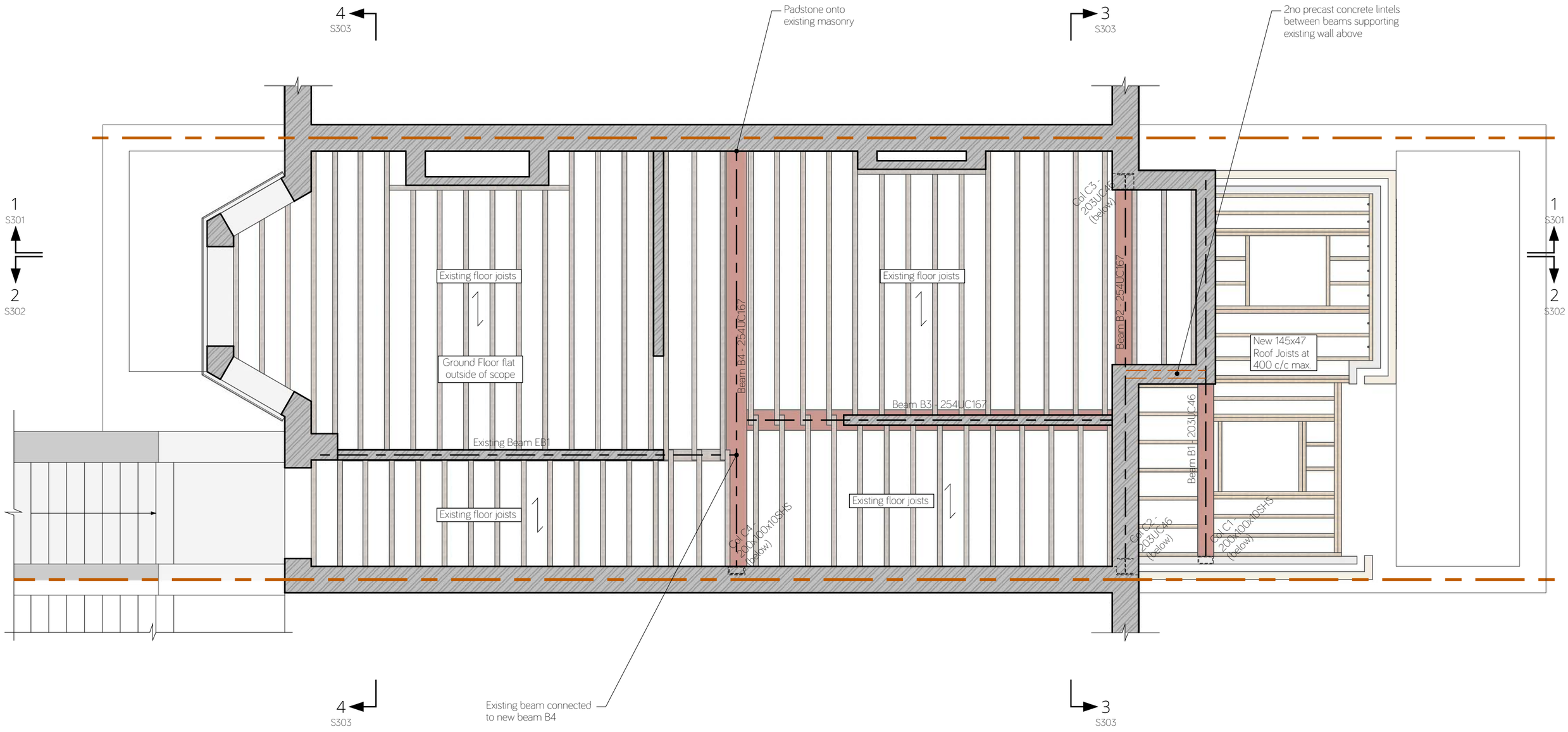


Underpinning Notes

- To be carried out in lengths not exceeding 1m.
- Drypacking not to commence within 24hrs of casting base.
- No base to be excavated within 48hrs of concreting and packing neighbouring bases.
- Exposed brickwork to be temporarily supported on underpinning jacks if required to maintain integrity of existing structure and prevent falling masonry.
- Drypack to be 1:3 cement:sand mixed so as to bind easily under hand pressure.
- Excavations to be temporarily supported as required by temporary works drawings
- All underpinning to be propped horizontally in accordance with temporary works drawings.
- Underpinning sequence to be agreed with contractor/temporary works engineer prior to commencement.
- Back face of underpinning on party walls to be cast against de-bonded non-compressible water resistant cementitious board liner to ensure clean face in line with face of neighbours wall.

SolidGeometry STRUCTURAL ENGINEERS

Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT	Notes	Rev.	Date	Details	By	Title	Lower Ground Floor General Arrangement	
Architect	Kokorelia Architects	See general notes drawing S001	-	07/11/2017	First Issue	AG	Scale	1:50 @ A3	
							Drawing No.	00285/S099	Rev. -

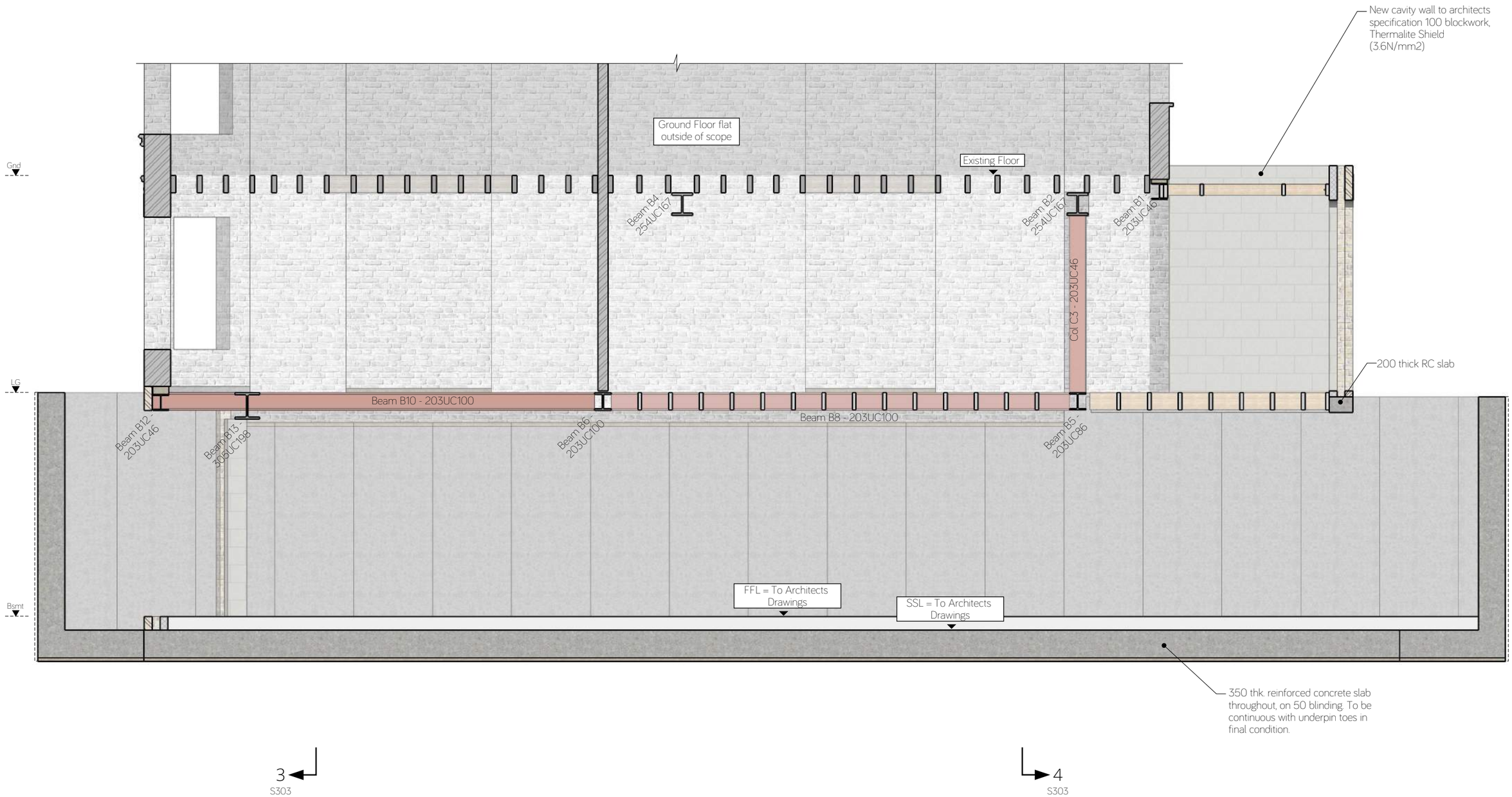


SolidGeometry
STRUCTURAL ENGINEERS

Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT	Notes See general notes drawing S001	Rev. -	Date 07/11/2017	Details First Issue	By AG	Title	Ground Floor General Arrangement	
Architect	Kokorelia Architects						Scale Drawing No.	1:50 @ A3 00285/S100	Rev. -

3
S303

4
S303



3
S303

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S303

Section 1-1

SolidGeometry STRUCTURAL ENGINEERS

Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT
Architect	Kokorelia Architects

Notes
See general notes drawing S001

Rev.	Date	Details	By
-	07/11/2017	First Issue	AG

Title: Section 1-1
Scale: 1:50 @ A3
Drawing No.: 00285/S301
Rev. -

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S303

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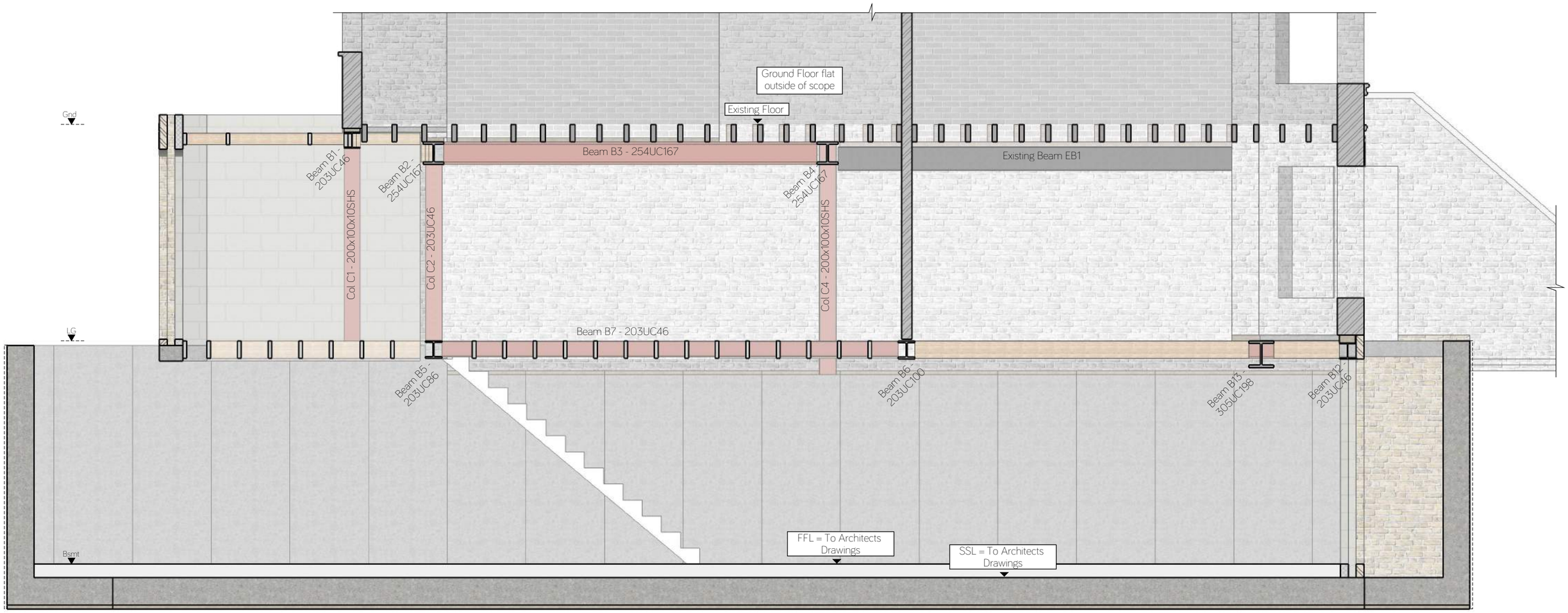

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S303

3
S303

Section 2-2

SolidGeometry STRUCTURAL ENGINEERS

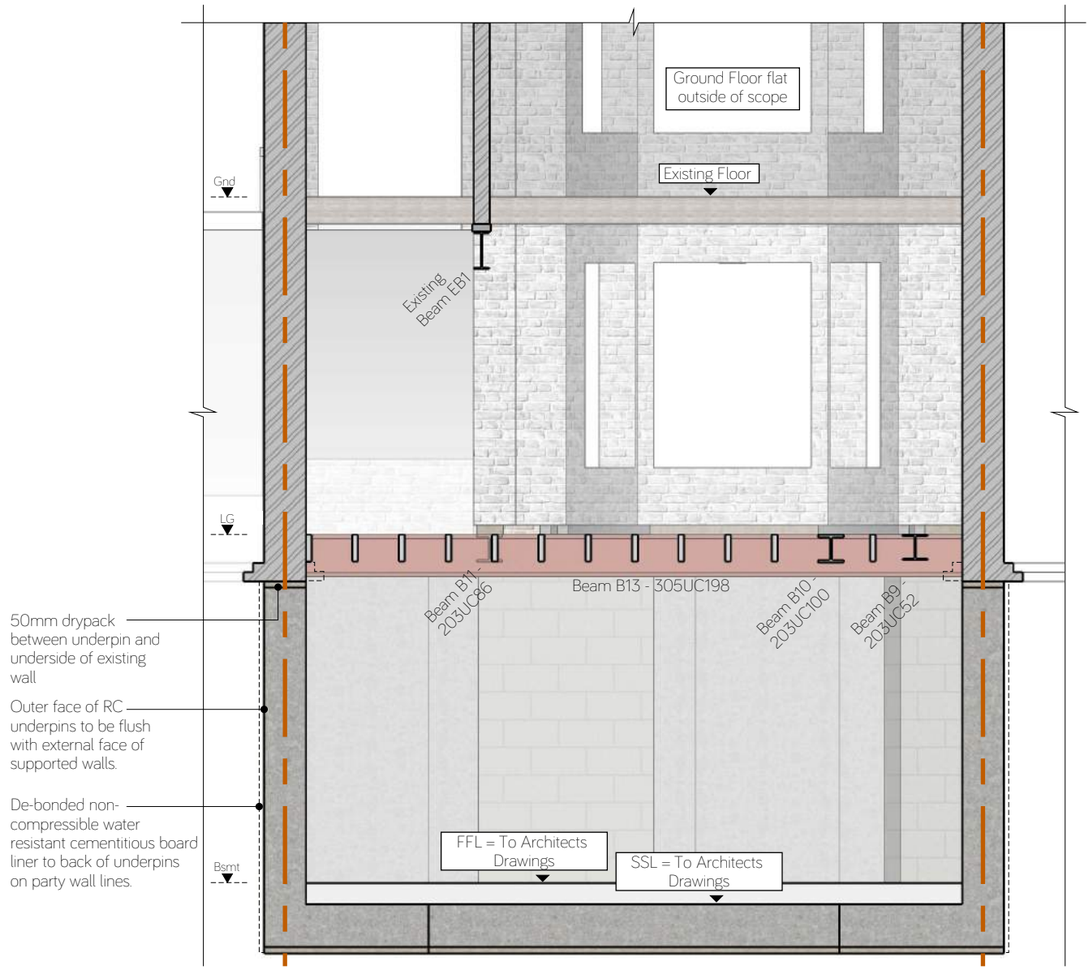
Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT
Architect	Kokorelia Architects

Notes: See general notes drawing S001

Rev.	Date	Details	By
-	07/11/2017	First Issue	AG

Title: Section 2-2
Scale: 1:50 @ A3
Drawing No.: 00285/S302
Rev. -

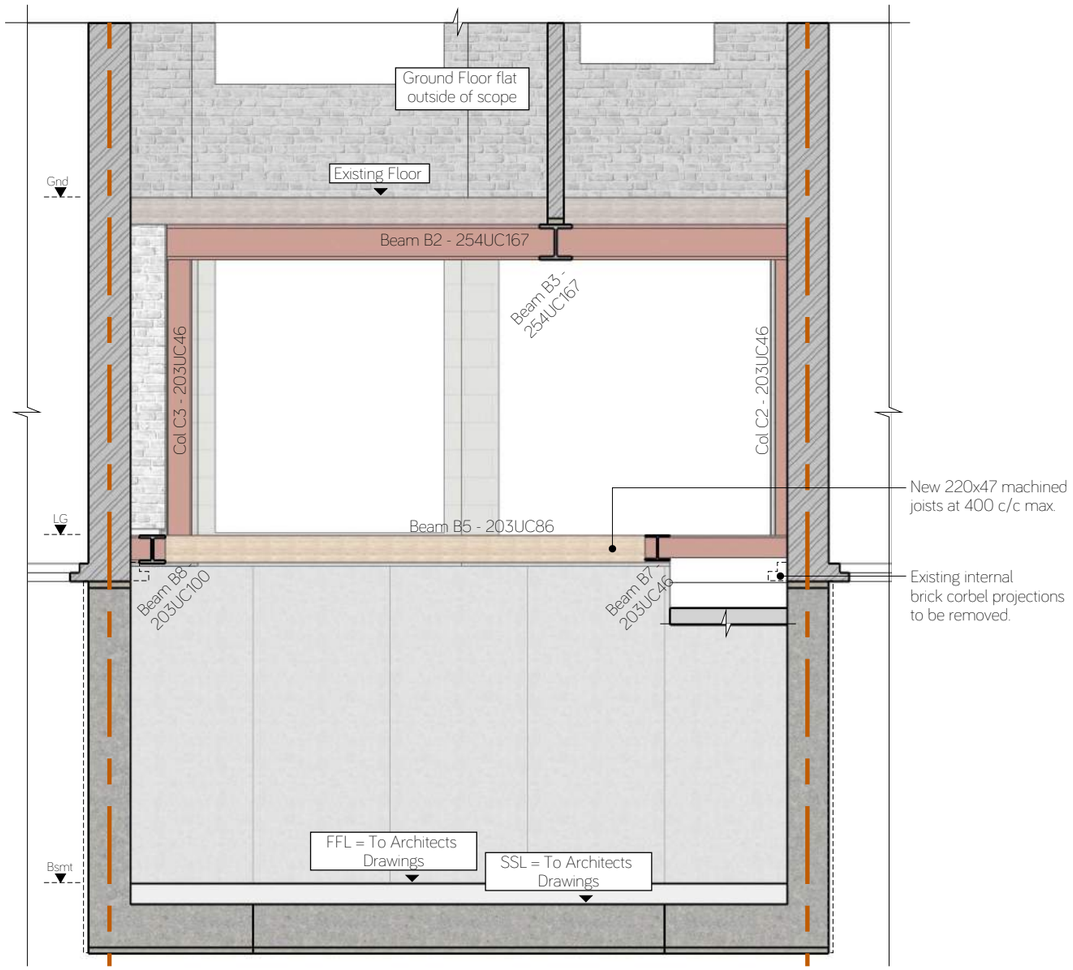
2 S302 ◄ ► 1 S301



2 S302 ◄ ► 1 S301

Section 3-3

1 S301 ◄ ► 2 S302



1 S301 ◄ ► 2 S302

Section 4-4

SolidGeometry STRUCTURAL ENGINEERS

Project	Flat 1, 44 Goldhurst Terrace London NW6 3HT
Architect	Kokorelia Architects

Notes: See general notes drawing S001

Rev.	Date	Details	By
-	07/11/2017	First Issue	AG

Title: Section 3-3 & Section 4-4
Scale: 1:50 @ A3
Drawing No. 00285/S303
Rev. -

Appendix A2

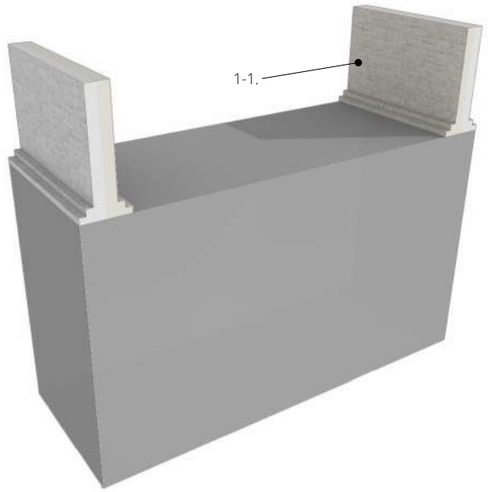
Underpinning Principles

Note: The following diagrams are generic for the purpose of illustrating the sequence of operations to be employed. The existing building details and propping configuration indicated are not exactly as per 44 Goldhurst Terrace, but the operations listed and their sequence is applicable.

Stage 1

Building Stripout

1-1. Strip out building and remove existing ground floor



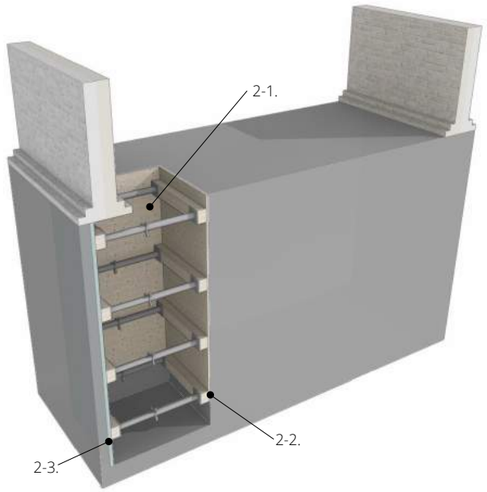
Stage 2

Excavate Underpins

2-1. Commence excavation for first stage of underpins in accordance with agreed sequence.

2-2. Install shoring and sheeting as excavation proceeds

2-3. Install de-bonded non-compressible water resistant cementitious board liner to back of underpins. Internal face of board liner to be flush with face of wall above so that concrete pin does not project into neighbouring site beyond face of existing masonry above ground level.

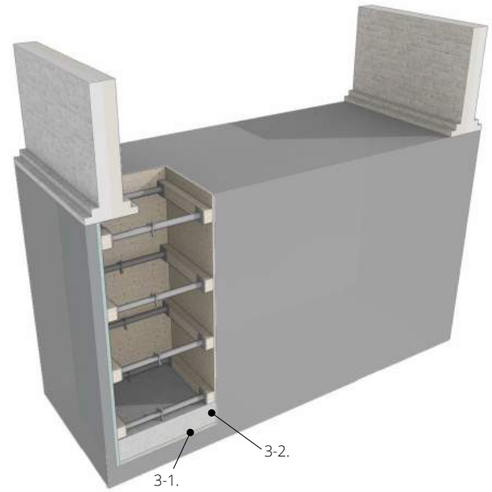


Stage 3

Cast Base to Underpin

3.1. Cast concrete blinding to first stage of underpins in accordance with agreed sequence

3-2. Fix rebar and cast bases to first stage of underpins in accordance with agreed sequence



Stage 4

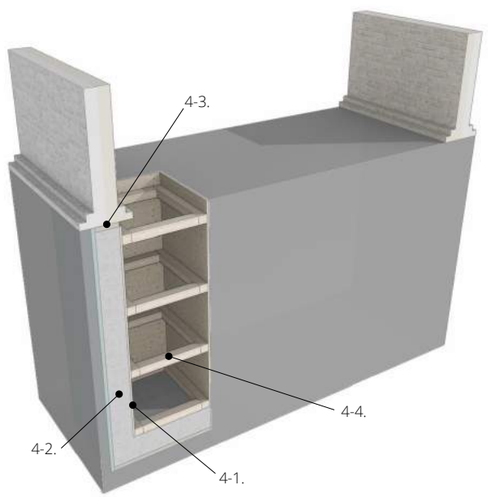
Cast Retaining Wall to Underpin

4-1. Fix rebar and erect formwork for in-situ concrete wall

4-2. Cast wall to first stage of underpins in accordance with agreed sequence

4-3. Dry-pack between top of underpin and underside of existing masonry in accordance with agreed sequence. Min. 24hrs after concreting.

4-4. Strike formwork once concrete has gained sufficient strength. Re-prop wall and excavation.

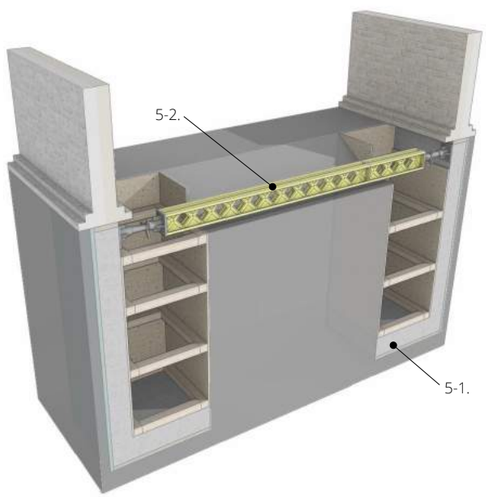


Stage 5

Install High Level Props

5-1. Repeat Stages 2 to 4 in accordance with agreed underpinning sequence

5.2. Install high level propping upon completion of opposing underpins.

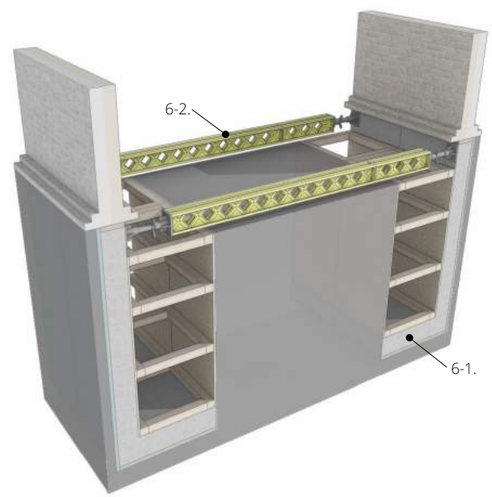


Stage 6

Complete Underpinning

6-1. Complete underpinning in accordance with agreed sequence.

6-2. Complete installation of high-level propping

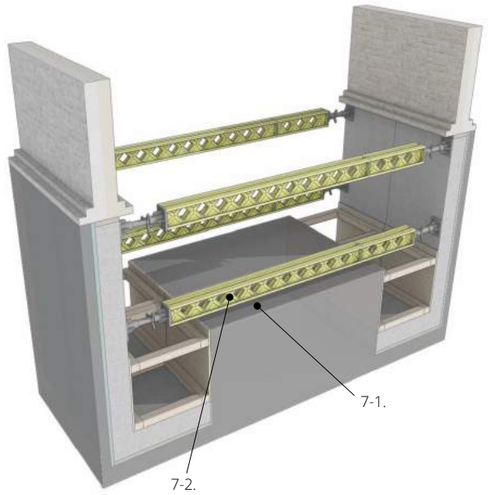


Stage 7

Reduce Central Berm

7-1. Commence excavation reducing central berm.

7-2. Install additional levels of propping in accordance with temporary works engineers requirements as excavation proceeds

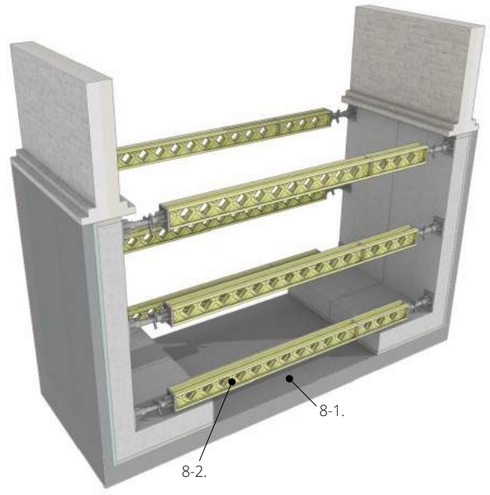


Stage 8

Complete Excavation of Central Berm

8-1. Complete excavation of central berm.

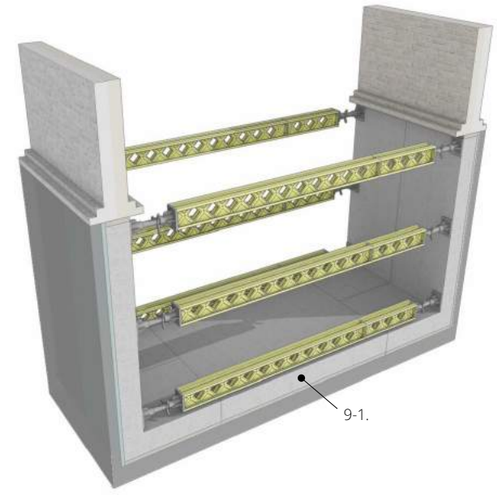
8-2. Install additional propping in accordance with temporary works engineers requirements as excavation proceeds



Stage 9

Cast Basement Slab

9-1. Cast basement slab so that rebar fully lapped and slab continuous with retaining wall



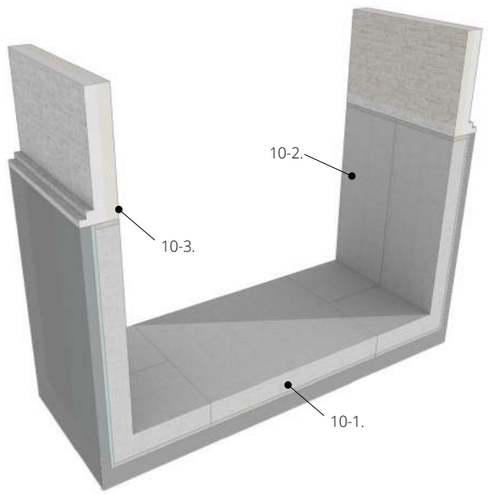
Stage 10

De-prop Retaining Walls

10-1. Allow concrete to gain sufficient strength

10-2. Remove propping to retaining walls

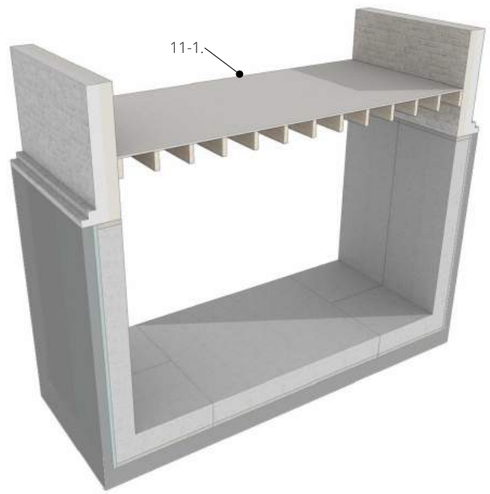
10-3. Break-back existing foundation corbels to internal face of underpin



Stage 11

Construct New Ground Floor

11-1. Install new ground floor



Notes

- The above construction sequence is provisional pending temporary works design by the contractor.

- All temporary works design and construction sequencing is the responsibility of the contractor. See general notes drawing.

Appendix B

Chartered Geologist CV

Curriculam Vitae
Nigel Thornton
B.Sc, C.Eng, MICE, MCIHT, FGS.

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environmental and geotechnical consultants

Qualifications

- Awarded degree in Civil Engineering., City University, London in 1980
- Elected Member of the Institution of Civil Engineers in 1983 (Chartered Civil Engineer)
- Member of the Chartered Institution of Highways and Transportation since 1984
- Fellow of the Geological Society since 1986

Employment History

• Northampton Borough Council	1975 - 1980
• Northamptonshire County Council	1980 - 1989
• The John Parkhouse Partnership	1989 - 1989
• Associate Partner	1989 - 1993
• Partner	1993 - 2005
• JPP Consulting (Director)	2005 to date
• Soiltechnics (Director)	1993 to date

Note

- In 2005, the John Parkhouse Partnership was incorporated into JPP Consulting Ltd (current complement 45 staff)
- Founding Director of Soiltechnics Ltd, a company specialising in geotechnical and geo-environmental matters. (Current complement 45 staff)

Relevant Experience

Bridgeworks	General design, contract administration and site supervision of various highway bridges and retaining structures.
Geotechnical and Geo-environmental	As Geotechnical Project Manager for Engineering Services Laboratory at NCC (ESL). (1985 - 1989) Control of ground investigations for major highway schemes for local authority including implementation of fieldwork, direction of laboratory testing and production of factual and interpretative reports, following and satisfying geotechnical certification procedures for Department of Transport (schemes up to £15m) Generally, at ESL, Soiltechnics and JPP. Design and specification of earthworks, including determination of slope stability. Investigation and remediation of unstable slopes. Control, implementation of fieldwork and production of geotechnical reports for industrial and commercial developments, housing schemes and water authority infrastructure (scheme values up to £80m). Investigations for outline designs of landfill sites. Investigations for redevelopment of chemically contaminated sites, assessment of the same, design and verification of remediation works. Production of tender and contract documents for ground investigations.

Curriculam Vitae
Nigel Thornton
B.Sc, C.Eng, MICE, MCIHT, FGS.

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	Investigations into mine workings and assessment of their stability. Specifications for ground improvement works (vibrotreatment) and piling. Investigations and reporting on a wide range of basement constructions for commercial and residential buildings 1 to 4 stories deep. Producing basement impact reports. Lecturing to other professionals on the investigation assessment and remediation of contaminated land, and EPA part IIA Lectures to local ICE branch on geotechnical aspects.
Materials Management	Production of construction material specifications, primarily in concrete, aggregates and bituminous mixtures, but including masonry, timber, steel and protective systems. Control and implementation of investigations into failures of construction materials including scheduling and analysing test data, and production of technical reports providing specifications for appropriate remedial measures.
Building Structures	Structural inspections and surveys on a wide range of commercial, domestic, industrial and military buildings including direction of appropriate investigations and production of details repairs/construction specifications. Design and checking of building structures in timber, steel, concrete and masonry including supervision of works on site. Design works carried out both manually and using computerised systems following current British Standards and other recognised design standards.
Road Pavement Structures	Direction and implementation of condition surveys and investigations of road pavement using falling weight deflectometer, deflectograph bump integrator and coring. Direction of testing regimes for bituminous and cement bound and unbound pavement materials. Production of reports on condition and assessment of load carrying capacity of existing roadways and specification and structural design for new roadways for both highway and industrial use. Design of various road pavement structures (flexible and rigid) using Highways Agency and British Ports Federation guidelines.
Drainage and Flood Risk Assessments	Design of main (adoptable) and private foul and stormwater infrastructure for housing, commercial and industrial schemes, including detention basins, infiltration systems, pumping stations etc. Production of flood risk assessment reports.
Quality Assurance	Assisting in production of main laboratory procedures to obtain NAMAS accreditation for large spectrum of soils and materials testing. Geotechnical contributions to Quality Assurance Manual for Soiltechnics/JPP and implementation of procedures.
CPD and Health and Safety	Attendance of in house CPD Seminars and production of Health and Safety Plans/files for building works. Author of in house risk assessment and Practice policies.
Litigation	Acting as expert witness on numerous construction related matters.
Publications	Co-author of a book entitles 'Cracking and Building Movement' published by the Royal Institution of Chartered Surveyors, in late 2004.

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Statement of experience on basements

Soiltechnics have carried out a large number of investigations for basement constructions throughout the UK and in more recent years outside the UK

The following table provides a limited number examples (for illustration purposes) of investigations carried out for basements which include interpretative reports providing parameters for detailed design such as settlement / heave, ground movements around basements, hydrological effects and in some cases preliminary design of piles.

Location	ground conditions	Basement	Approx size (m)	Date
Northamptonshire	Glacial Till	Single storey archive store for Rolls Royce. Part open excavation for construction of reinforced concrete box subsequently backfilled	10 x 8	Circa 1992
Central London (Kings Road)	Terrace sands and gravels over London Clays	Two storey deep car park with gardens at ground level. Contiguous pile wall with subsequent insitu concrete box	40 x 20	Circa 2000
Central London (Finsbury square)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings. Contiguous pile wall with subsequent insitu concrete box	30 x 20	Circa 2002
Central London (Union Street)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings including tube tunnels. Contiguous pile wall with subsequent insitu concrete box	40 x 30	2009
Central London (Blackfriars)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings including railway viaduct . Contiguous pile wall with subsequent insitu concrete box	40 x 20	2005
Central London (Imperial College)	Terrace sands and gravels over London Clays	Single storey deep basement below multi storey residential block. Sheet pile walls with subsequent insitu concrete box	60 x15	2005
Coventry University	Mercia Mudstones	Single storey deep basement with three storey building over. Part cut and part sheet piled with subsequent insitu concrete box	50 x50	2010
Rabat Grand theatre Bouregrerg Morrocco	Alluvial gravels over sandstone	Single storey deep basement. Open excavations and sheet piles walls with subsequent insitu concrete box. Piled foundation for super structure. Area subject to earthquakes and liquefaction. Outline design of piles, specification for piling and testing.	50 x50	2012
Central London (various locations)	London Clays occasionally overlain with terrace sands and gravels	Various existing terraced semi and detached domestic properties. New single and two storey deep basements under building foot prints and extending into gardens. Construction using traditional underpinning techniques and contiguous / secant piled walls	Various	2000 to date
Central London (Holland Park)	London Clays	Two locally three storey deep basement below new four storey block of flats. Secant piled walls and insitu concrete box	70 x 20	2014