29 Inglewood, London SW3 3TQ

Construction Method Statement

For

Jyothin Sethi

Val Pseneac BSc MSc CEng MIStructE
DVP Structures Ltd

Contents

Appendices

1.0 INTRODUCTION

1.1. This report has been produced by DVP Structures in conjunction with Milvum Engineering Services Ltd to summarise the structural and geotechnical aspects relating to the proposed basement redevelopment works at 29 Inglewood Rd, London NW6 1QT (hereafter referred to as the site); and to provide an overview of the new basement construction methodology and sequence.

1.2. The report should be read in conjunction with the main Basement Impact Assessment (BIA) (MES/2311/RESI053) prepared by Milvum.

1.3. This document is only intended to be used for planning purposes. It should not be used for costing, procurement or construction purposes.

2.0 EXISTING BUILDING DESCRIPTION

2.1. The existing property is a 4-storey (part-lower ground, ground, level 1 and mansard level 2) mid-terrace private residential dwelling. It is assumed that the property was constructed at the beginning of the 20th century.

2.2. The site, which is generally flat, is bound by Inglewood Road to the north; and neighbouring gardens and properties.

2.3. The property has been constructed using traditional materials and techniques used at the time. The external main house walls are of load-bearing solid masonry anticipated to be 330mm in thickness at ground level, based on the initial site observations and survey information.

2.4. The ground floor comprises suspended timber construction with a ventilated sub-floor void. The joists span side to side and are supported by the Party and internal basement walls (refer to Appendix 1 for drawings). The sub-floor void, within areas beyond the existing part lower ground floor, is likely to vary between 600 and 1000mm.

2.5. The upper floors construction comprise suspended timber joists with boarding on top, similarly to the ground floor. The mansard roof is assumed to also comprise timber construction, possibly supported via internal walls or steel beams.

2.6. There is a two storey extension to the rear of the property. Similarly to the main house, the external walls are formed in loadbearing solid masonry. The ground floor is assumed to comprise ground bearing concrete slab construction. The first floor and roof comprises timber construction.

2.7. The existing lower ground floor is set approximately 2.0m below ground level.

2.8. A site specific ground investigation has been undertaken. As part of the investigation, trial pits have been dug at the front and rear of the property; and within the existing lower ground floor in order to expose the existing foundations and establish the ground conditions.

2.9. Inspection foundation pits identified that the existing front elevation wall foundations, adjacent to the Party Wall with nr. 31 Inglewood Rd, are founded c. 1.05m below external ground level. The foundations were confirmed to be formed using corbelled masonry on concrete strip, which is approximately 175mm in thickness. The overall width was estimated to be approximately 850mm. Trial pit excavations within the part lower ground floor confirmed foundation depths of approximately 2.6m below ground floor level (c. 600mm below lower ground floor level).

2.10. It is noted that there is an existing neighbouring lower ground floor at no. 27 Inglewood Rd. For the purposes of the BIA, it is assumed that there is no lower ground floor at no. 31 Inglewood Rd; and the existing Party Wall foundation depth is assumed as 1.05m bgl, in line with the foundation inspection pits findings.

2.11. A borehole has also been sunk as part of the ground investigation. The borehole log indicates that the existing soils comprise Made Ground up to a depth of c. 1.0m; underlain by firm becoming stiff clay (London Clay).

2.12. No significant groundwater was noted during the investigation nor during the subsequent Reference should be made to chapters 6.0 and 7.0 of the main body of the BIA report for a detailed geo-environmental assessment.

3.0 PROPOSED WORKS

3.1. The redevelopment works include the enlargement and deepening of the existing part-lower ground floor to offer habitable space; and extension works at ground floor to the rear. (Refer to the architect's drawings; and Appendix 1 for structural drawings).

3.2. Limited internal remodelling is proposed at ground level. Small sections of the existing load-bearing walls are proposed to be removed. Steel beams will be installed at level 1 to safely transfer the loads down to new and existing foundations.

3.3. The new basement area is proposed to be accessed via a set of internal stairs, in line with the existing stair arrangement.

3.4. The new basement slab level is proposed to be formed c. 3.0 below external ground level, whilst the basement formation level is anticipated to be generally no deeper than 3.5m bgl, except for the perimeter basement slab thickening or underpin toe (founded at c. 3.6m bgl).

3.5. Where the existing wall foundations are relatively shallow, the basement wall will primarily comprise a reinforced concrete (RC) underpin to the full width of the existing walls. A minimum 200mm thick RC section will be constructed above the existing footing up to ground floor level. Careful cutting into the Party Wall (PW) will be undertaken to facilitate the RC stem wall construction.

3.6. The underpinning works will be carried out in a non-consecutive order (i.e. traditional "hit and miss" sequence). The excavation for the underpins will be supported at all times.

3.7. Where the walls form the existing lower ground floor, mass concrete underpinning in combination with a 200mm thick RC liner wall will be adopted.

3.8. Partial backfilling of the excavation is to be undertaken as the mass and RC underpinning works are completed in the agreed order.

3.9. Stiff temporary propping is to be employed during basement wall and slab construction. This will be achieved via a set of temporary works (steel walers and struts) set just under the proposed ground floor slab level; and above the proposed basement slab level. Diagonal struts may be required to minimise the transfer of out-of-balance lateral forces from the Party Wall with no. 31 Inglewood Rd into the Party Wall with no. 27 Inglewood Rd.

3.10. In the permanent condition, the basement wall is to be fully propped by the basement and ground floor concrete slabs.

3.11. The RC basement walls will be designed to resist the lateral forces arising from surcharge loadings, and soil pressure; and gravitational loads acting at ground floor. In addition, the RC basement wall design will give consideration to lateral forces due to hydrostatic pressures, generated by a an equivalent ground water table at 1m bgl.

3.12. The basement slab is to be formed using RC construction. The slab will be cast such that a monolithic connection is achieved with the RC underpin toe; the slab will be designed as ground-bearing and, therefore, cast directly on the ground.

3.13. Heave protection is not currently proposed to be incorporated underneath the basement slab. This will be designed to resist any potential long term heave and hydrostatic pressures. The latter will be calculated based on an assumed head of water set at the level of the existing lower ground floor slab (c. 2.0m bgl).

3.14. Any internal walls at basement level are generally anticipated to be of lightweight construction.

3.15. The existing ground floor timber structure is to be replaced with a new composite slab comprising normal weight concrete cast on profiled metal decking. The decking will span simply supported between new steel beams running along the width of the basement. It is anticipated that the slab will be set within the depth of the steel beams to maximise the headroom within the basement; and minimise the basement dig level.

3.16. The new lightwell is to comprise RC retaining walls constructed in a "hit and miss" sequence, similar to that employed during underpinning. No temporary propping of the lightwell wall is anticipated during construction, in addition to the usual excavation support structure; as the wall can span horizontally between the stiff return sections at the ends.

3.17. The lateral movement due to excavation and other basement construction works, will be minimised by adopting high stiffness propping, as outlined in 3.8 (refer to Appendix 1 drawings for the proposed construction sequence).

3.18. A Ground Movement Assessment (GMA- see Chapter 9 of the BIA Report) has been undertaken to estimate likely movements during basement construction. The results indicate that maximum horizontal and vertical movements in the region of 8mm and 5mm respectively are anticipated during construction.

3.19. A movement monitoring regime will be implemented in order to monitor displacement during construction and limit any neighbouring building damage to Category 1 on the Burland Scale.

3.20. Reference can be made to Appendix 1 for drawings outlining the indicative basement layout and sequence of underpinning; and basement construction sequence.

3.21. Appendix 2 includes diagrammatic construction sequence of a typical RC underpin.

4.0 DESIGN CONSIDERATIONS

4.1. This chapter outlines the loading requirements which will need to be accounted for as part of the structural design of the basement.

4.2. The design and relevant loadings are generally established in line with the relevant Eurocode design standard, including:

- BS EN 1990 Basis of Design
- BS EN 1991 Actions on Structures
- BS EN 1992 Design of Concrete Structures
- BS EN 1993 Design of Steel Structures
- BS EN 1997 Geotechnical Design

4.3. The basement slab will require design verification taking into account likely heave and hydrostatic pressures. Approximate calculations have been undertaken to determine likely forces acting on the basement slab below.

4.4. For the purposes of RC basement wall design, the level of the ground water table has been taken as 1.0m below ground level, resulting in an approximate hydrostatic pressure of 28kN/m2 at the base of the wall (c. 2.8m hydrostatic head).

4.5. For the purposes of basement slab design, an equivalent hydrostatic pressure of c. 18kN/m2 will be assumed. This corresponds to an equivalent hydrostatic head of 1.8m, which is the depth of the proposed basement excavation.

4.6. It is noted that the current lower ground floor is approximately 2.0m bgl and has not been known to suffer from ground water flooding; thus suggesting that any perched ground water is at the level of or below the existing lower ground floor slab.

4.7. Given that heave protection measures are not adopted, the pressure on the basement slab may be expressed as an equation whereby:

Slab pressure = soil heave pressure + hydrostatic pressure – any pressure dissipated during slab deflection

4.8. The pressure dissipation due to the slab deflection is a function of stiffness, with more flexible slabs allowing for more pressure dissipation compared to stiffer slabs.

4.9. Allowing for a relatively flexible slab, an "f" factor accounting for dissipation due deflection of 0.75 can be taken, which may result in c. 25% reduction in the total long-term heave.

4.10. The excavation of the basement could potentially result in a total maximum overburden pressure relief of c. 47.5kPa (maximum of 1.8m of soil @ 19kN/m3 within the existing lower ground floor; and 3.2m of soil@19kN/m^3 with the remaining basement footprint - assumed 600mm void below the existing suspended ground floor)

4.11. The approximate theoretical heave pressure can be estimated by applying the effective stress method, giving the following:

$$\sigma' = (1.8m+3.2m)/2*19kN/m^3-1.8m*10kN/m^3 = 29.5kN/m2$$

4.12. Considering a typical construction programme, it can be assumed that 50% of the long-term soil heave pressure dissipates upon excavation; thus resulting in a potential long term soil heave pressure of 14.8kN/m^2 acting on the slab.

4.13. Following on from the expression in para. 4.7, the total theoretical upwards pressure acting on the basement slab is calculated as:

Slab pressure = 14.8kN/m2 (heave) + 18kN/m^2 (hydro) - 0.25*14.8kN/m^2 (heave dissipation)
= 29.1 kN/m^2

4.14. It is noted that the maximum pressures due to heave occur towards the middle of the basement; and reduces considerably towards the perimeter. Assuming a minimum of 300mm thick basement slab (min. 350mm RC underpin toe) the net upward pressure (unfactored) the slab will need to be designed for is c. 20kN/m^2 (limited finishes accounted for).

4.15. A detailed quantitative assessment has not been conducted in order to estimate possible mid-span deflections of the basement slab due to heave and hydrostatic pressure; however, these are anticipated to be within acceptable limits, given the additional gravitation loads transferred by the internal columns into the slab; and the stiff underpin toes. Assuming the detailed analysis and design determines that a 300mm thick slab may not be adequate for ultimate or serviceability limit states, consideration will be given to either increasing the slab thickness or adopting heave protection measures.

4.16. To minimise long-term vertical displacements, the ground bearing stresses beneath the RC toes and slab will be limited to 100kPa, as advised by the geotechnical assessment report.

4.17. For the calculation of the lateral soil pressure acting on the earth side of the retaining wall, active pressure coefficients are appropriate for use.

4.18. With regards to the surcharge loadings, it is likely that a value of 2.5-5kPa of surface pressure acting on the external ground will be used for retaining wall verification.

5.0 WATER-RESISTING PROTECTION

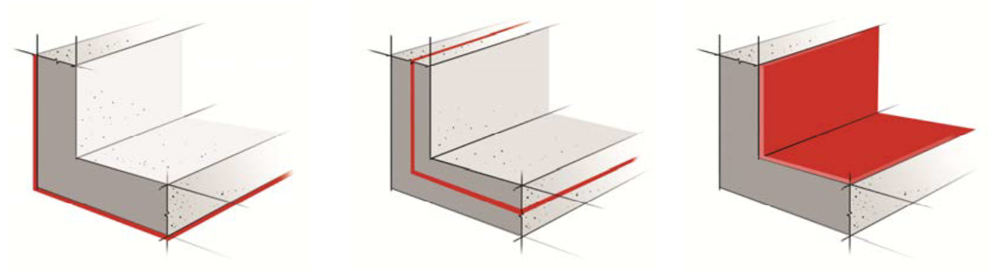
5.1. The proposed basement is intended to offer habitable space for the building occupants. Therefore, this will likely require two forms of protection against water ingress in accordance with BS 8102: 2022 Protection of Below Ground Structures Against Water Ingress

5.2. It is assumed that a dry environment with no leakage permitted (Tightness Class 3 in accordance with BS EN 1992-3) will be required for the project; and suitable waterproofing measures will need to be employed to achieve high levels of protection.

5.3. Three methods of protection against water ingress are typically considered for basement design (see Table 1 below and Figs. 1 to 3):

Table 1: Basement Waterproofing – Methods of Protection as per BS 8102

Type	Method of Protection	Operation
A	Barrier	A membrane is used to keep water physically outside the usable space
B	Structurally Integral	The basement walls and slabs are designed to specific crack width and/or special additives are used to obtain waterproof concrete
C	Drained Cavity	An inner cavity membrane lines the basement wall and slab; any water penetrating the wall and slab is directed behind the cavity membrane into a drainage channel and a sump chamber where water is removed by a pump.



a. External b. Sandwiched c. Internal

Fig. 1 – Barrier Protection Waterproofing Options

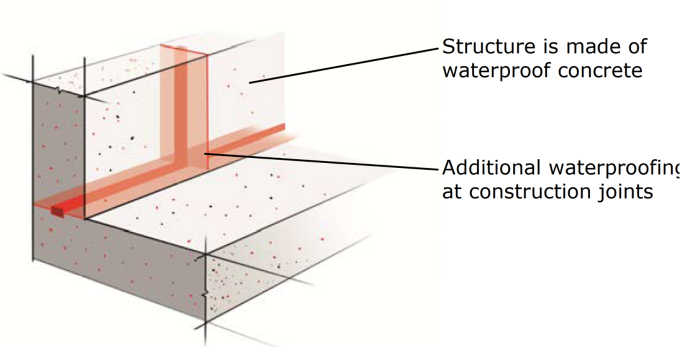


Fig. 2 – Structurally Integral Waterproofing

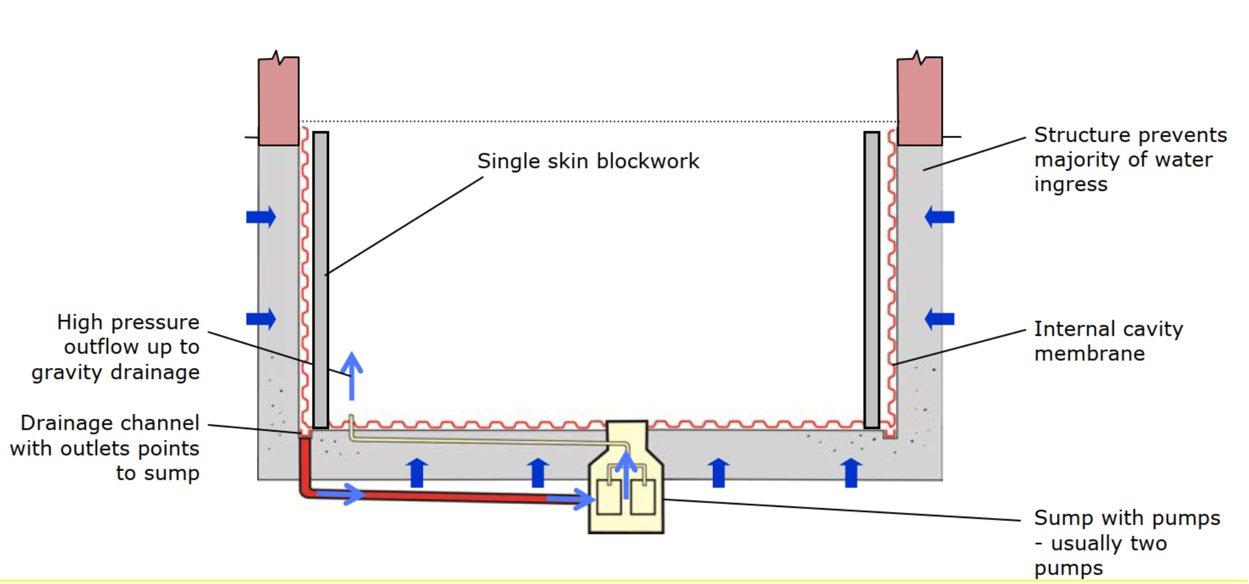


Fig. 3 – Drained Cavity

5.4. Types A and B measures are often combined to achieve high levels of waterproofing resistance; Type C is also common with habitable basements.

5.5. The final waterproofing strategy will be decided collectively by the design team, client and a specialist waterproofing contractor.

5.6. Dewatering is unlikely to be required during the basement construction works, based on the current site investigation findings. However, it may be prudent that the prospective contractor makes appropriate allowances for sump pumping or well-point dewatering.

6.0 MOVEMENT MONITORING AND CONTROL

6.1. A competent contractor experienced with this type of works will be appointed to undertake the basement construction. Early input from the contractor will be required in order to establish the optimal sequence of construction and co-ordination of temporary works.

6.2. Two levels of stiff temporary propping will be employed during the construction of the basement. The propping system is anticipated to comprise a waling beam (steel UB or UC sections) running horizontally along the basement walls. Props, consisting of proprietary sections or UC/UB steel elements, are to be installed such that these run the full width of the basement horizontally or diagonally; and act in compression to resist the lateral forces acting on the basement wall.

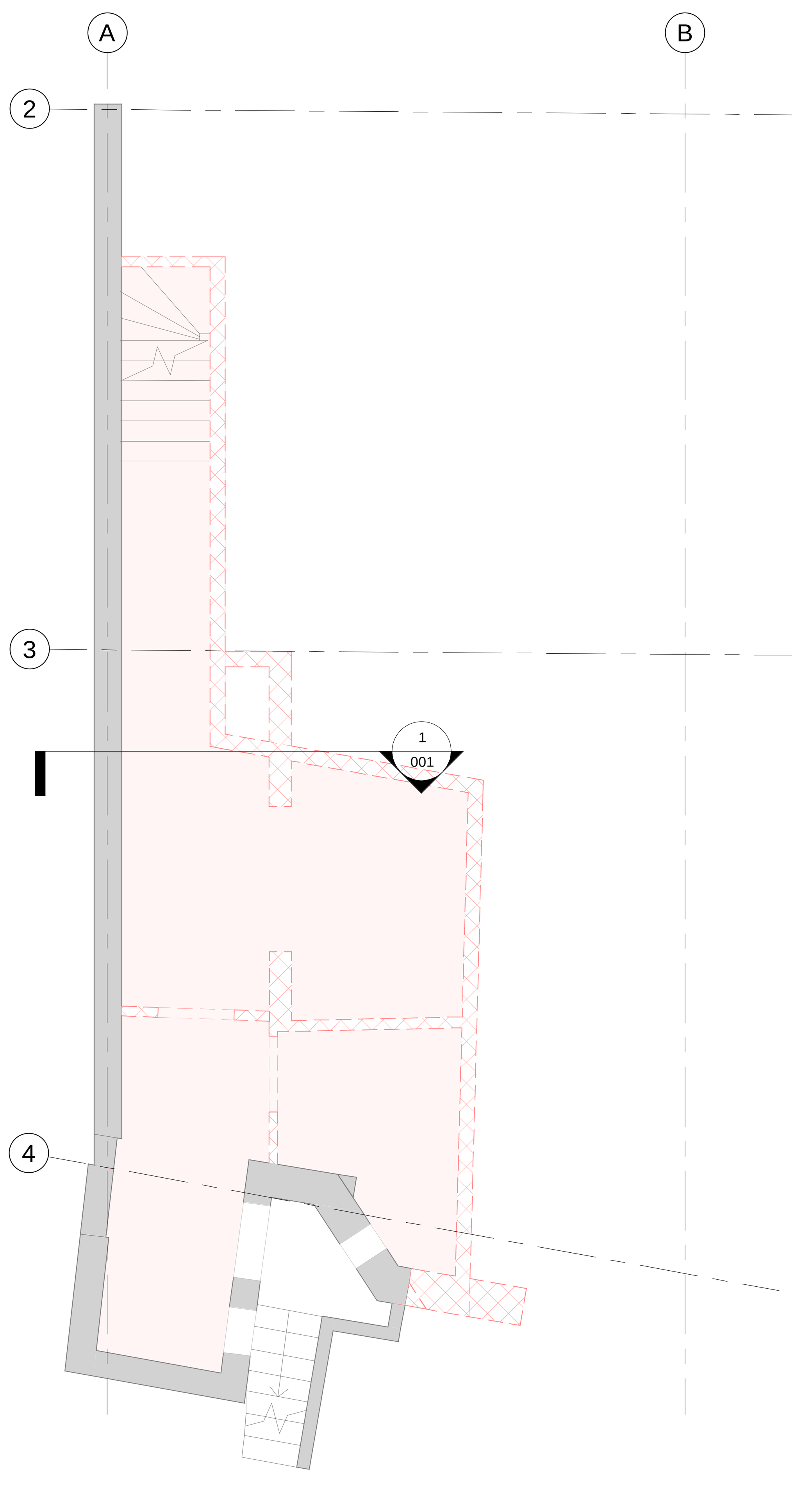
6.3. A movement monitoring regime with a traffic light system ("green" – no action; "amber" – increase frequency of readings and notify relevant parties; and "red" – implement agreed measures and/or stop work) will be employed during construction. The aim of monitoring will be to establish the amount of vertical and horizontal structural movement such that any structural damage recorded can be no worse than Category 1.

6.4. Movement trigger levels are to be agreed with the Party Wall Surveyors and implemented accordingly.

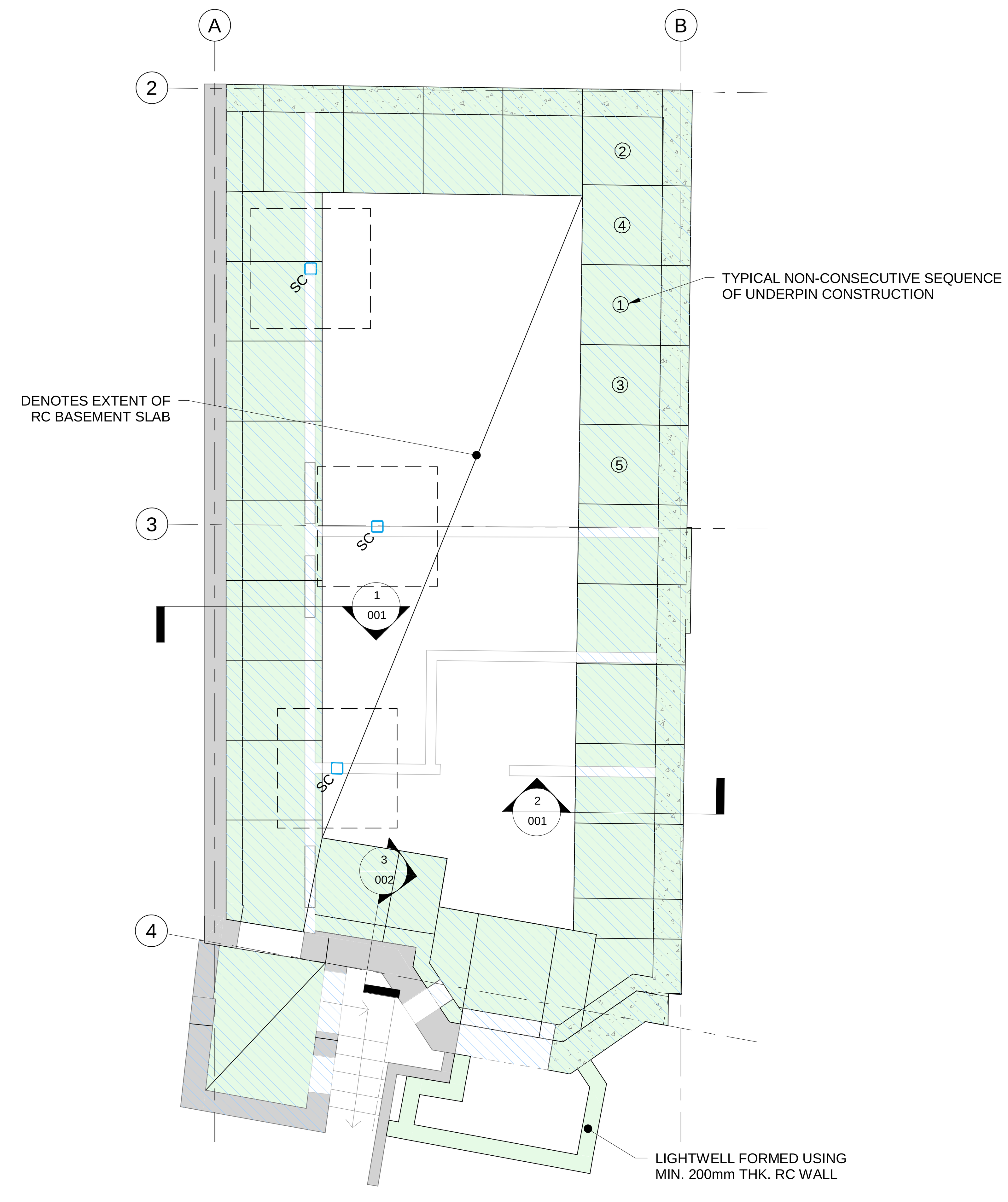
6.5. Assuming high standards of workmanship, close co-ordination between the temporary and permanent works engineer and the correct implementation of movement monitoring, minimal ground and structural movement is anticipated during construction.

Appendix 1:

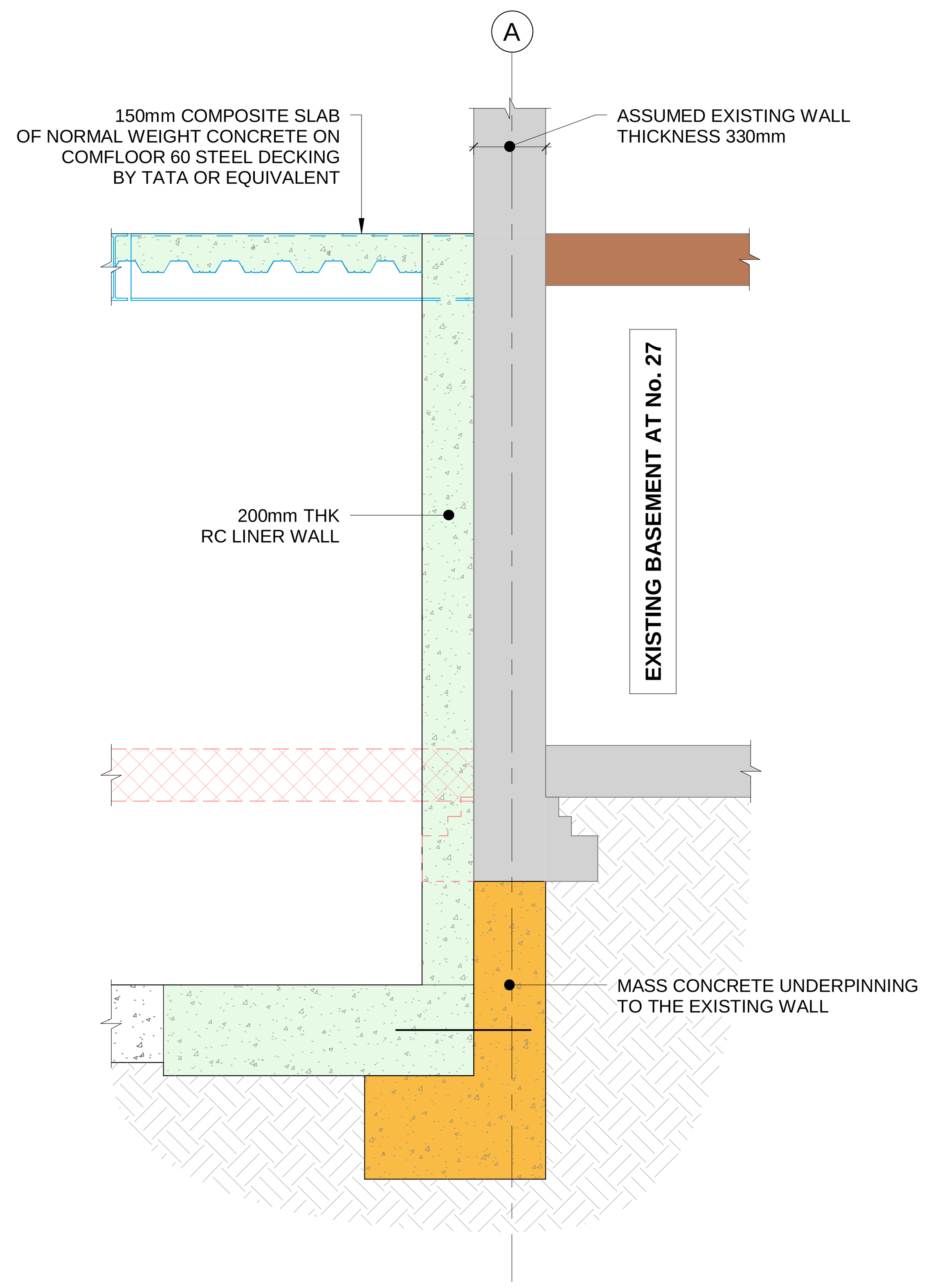
Preliminary Structural Drawings



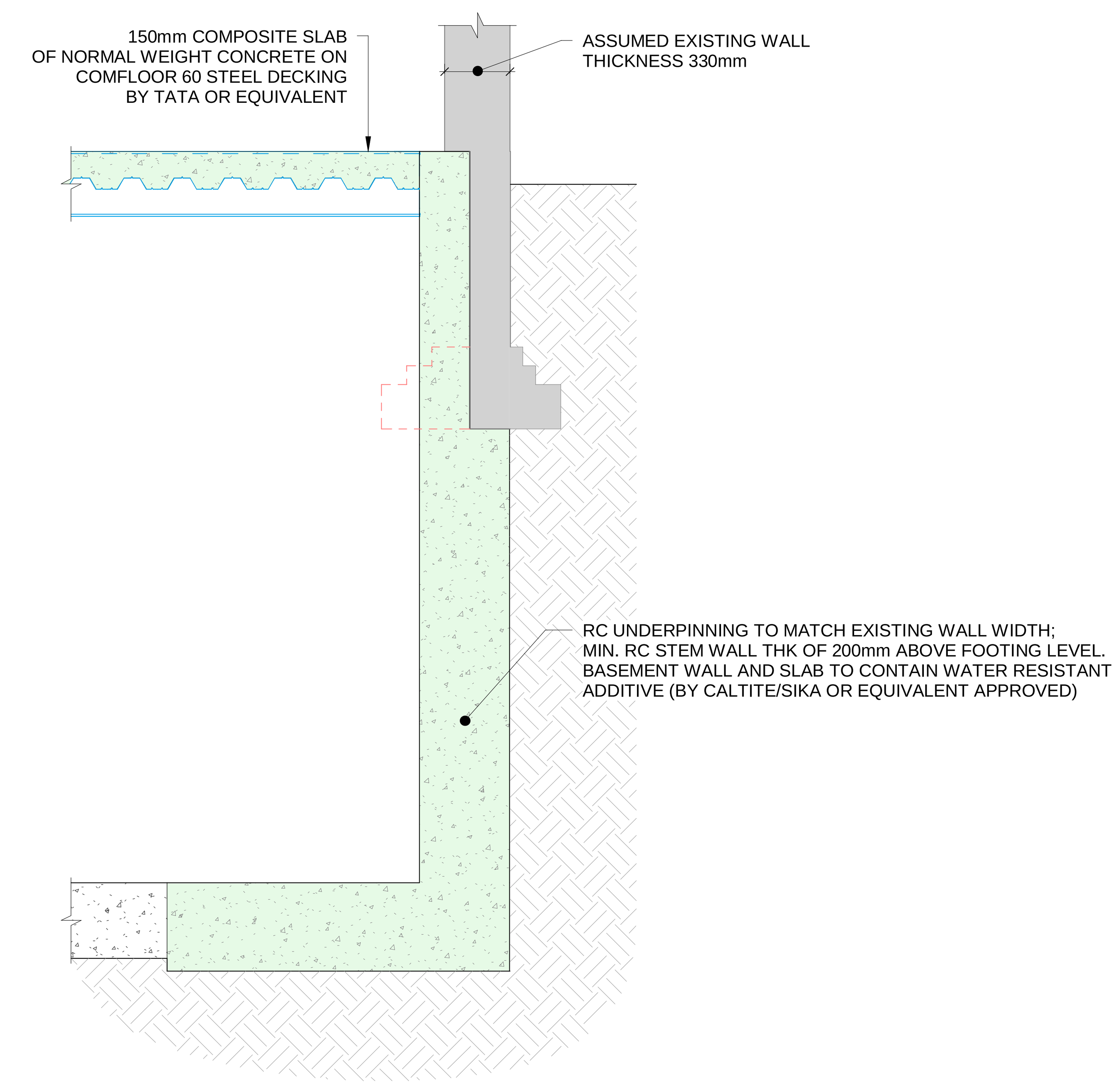
Existing Basement Plan
1 : 50



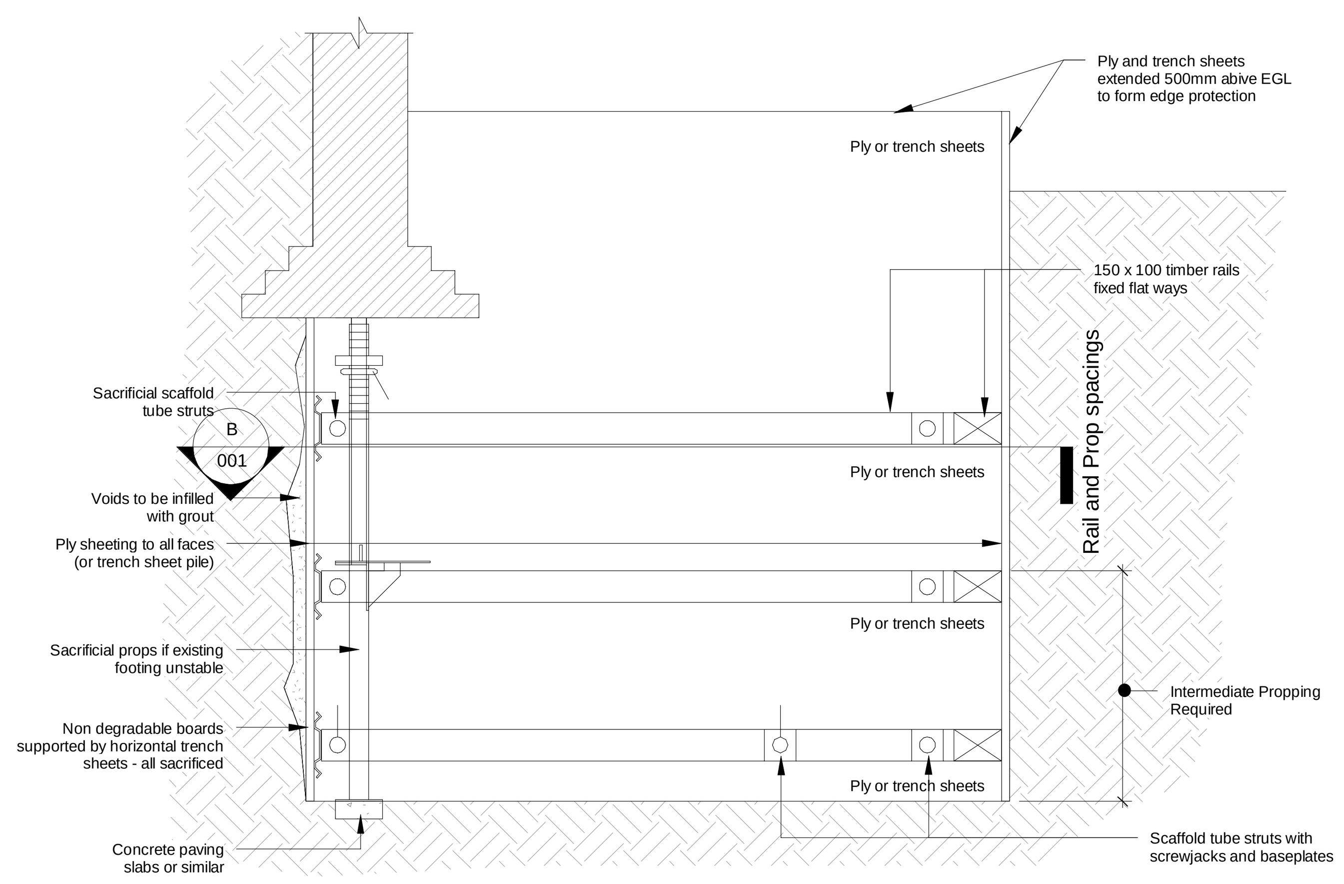
Proposed Basement Plan
1 : 50



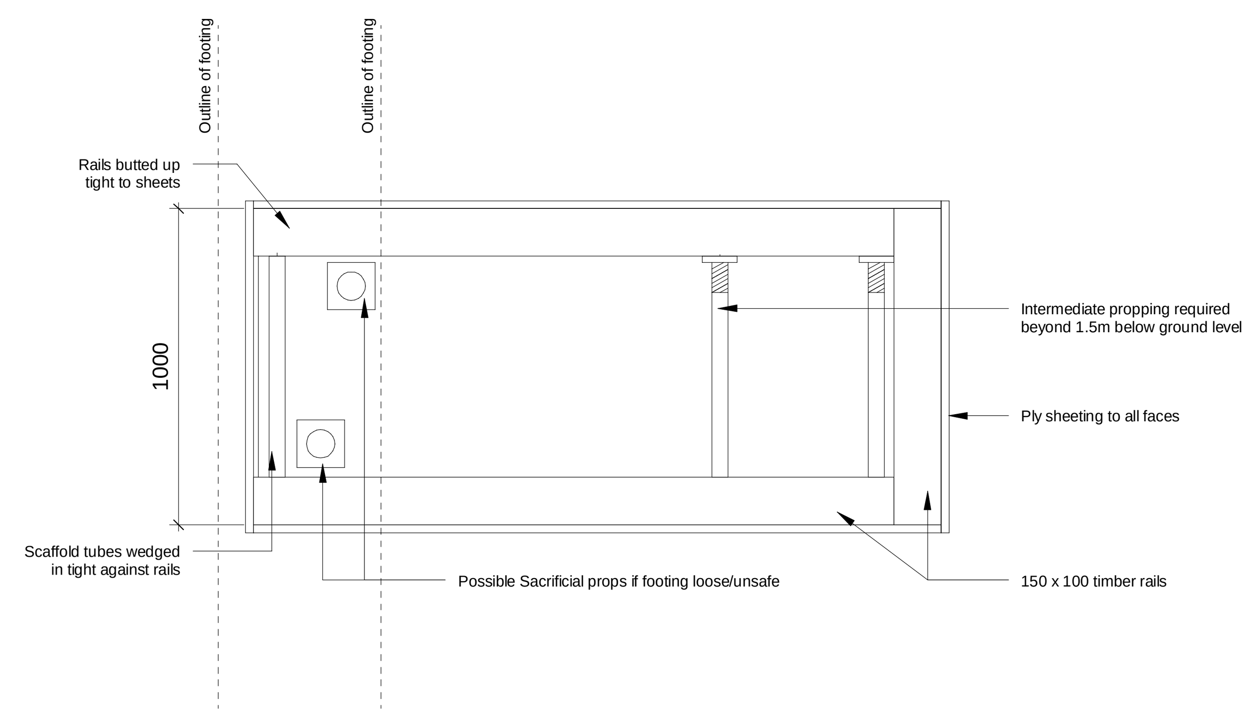
1 Section 1
1 : 20



2 Section 2
1 : 20



Indicative underpinning temporary works for existing walls
1 : 20



B Section
1 : 20

NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALL WORK FROM FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS ON THIS DRAWING IS ALLOWED WITHOUT DVP PRIOR PERMISSION IN WRITING.
3. READ THIS DRAWING WITH ALL ARCHITECT'S, SERVICE ENGINEER'S AND DVP RELEVANT DETAILS AND DRAWINGS.
4. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS ISSUED BY DVP STRUCTURES, BRITISH STANDARD CODES OF PRACTICE, STATUTORY REQUIREMENTS AND THE CONTRACT DOCUMENTS.
5. DRAWING STATUS:

P : **PRELIMINARY** - EVOLVING DRAWINGS FOR APPROVALS, TENDERS, BILLINGS, ETC.

C : **CONSTRUCTION** - FULLY DEVELOPED DRAWINGS ISSUED UNDER INSTRUCTION FOR CONSTRUCTION

ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.

Key	
	Existing Structure
	Structure to be demolished
	New Steelwork
	Reinforced Concrete Wall
	Denotes R.C. underpin forming the basement wall
	Span direction of existing joists
	New min. 150mm composite slab of normal weight concrete on Comflor60 steel profiled decking by TATA or equivalent; reinforced with mesh in the top face
	Denotes new suspended timber joists
	Denotes moment resisting connection

SB - Steel Beam
SC - Steel Column

Revision	Date	Description	Issuer
P1	11.10.23	ISSUED FOR COMMENTS	TV

not for construction

PDG GEO-STRUCTURAL EXPERTISE

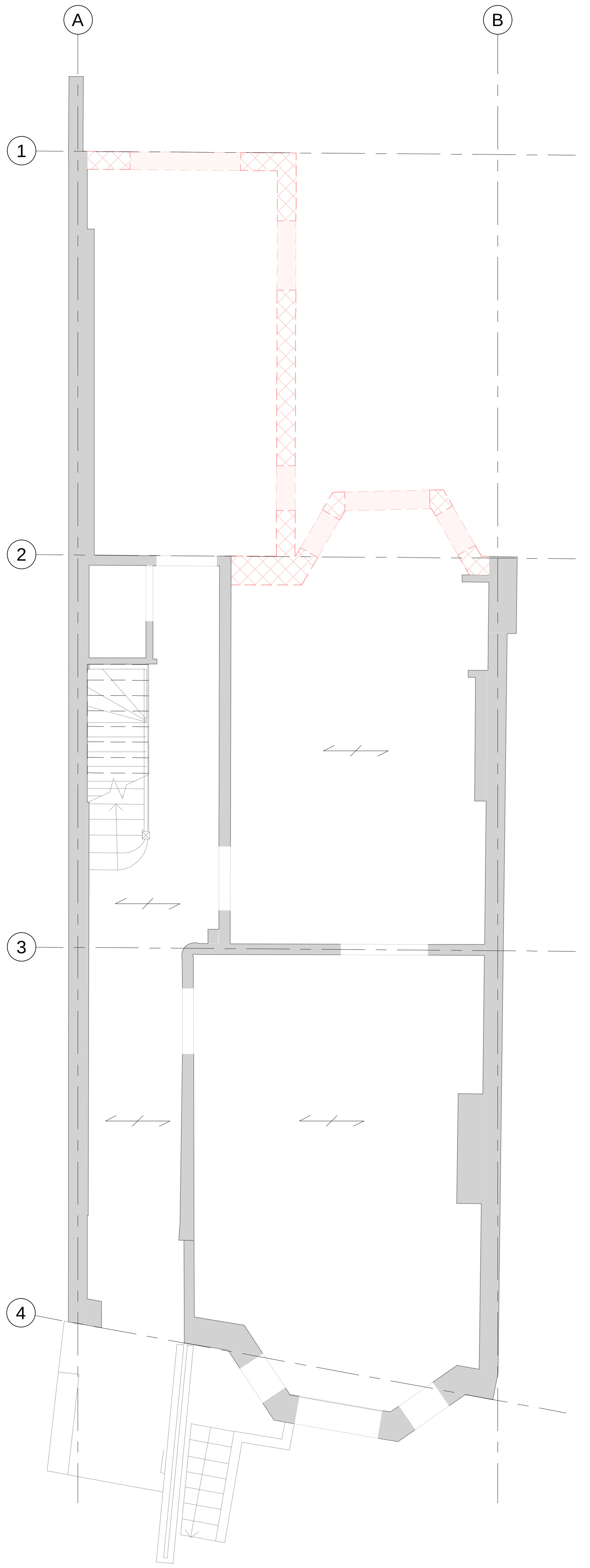
dvp structures

Registered office address: 85 Great Portland St. London, W1W 7LT Tel: 020 3633 4483
info@dvpstructures.com www.dvpstructures.com

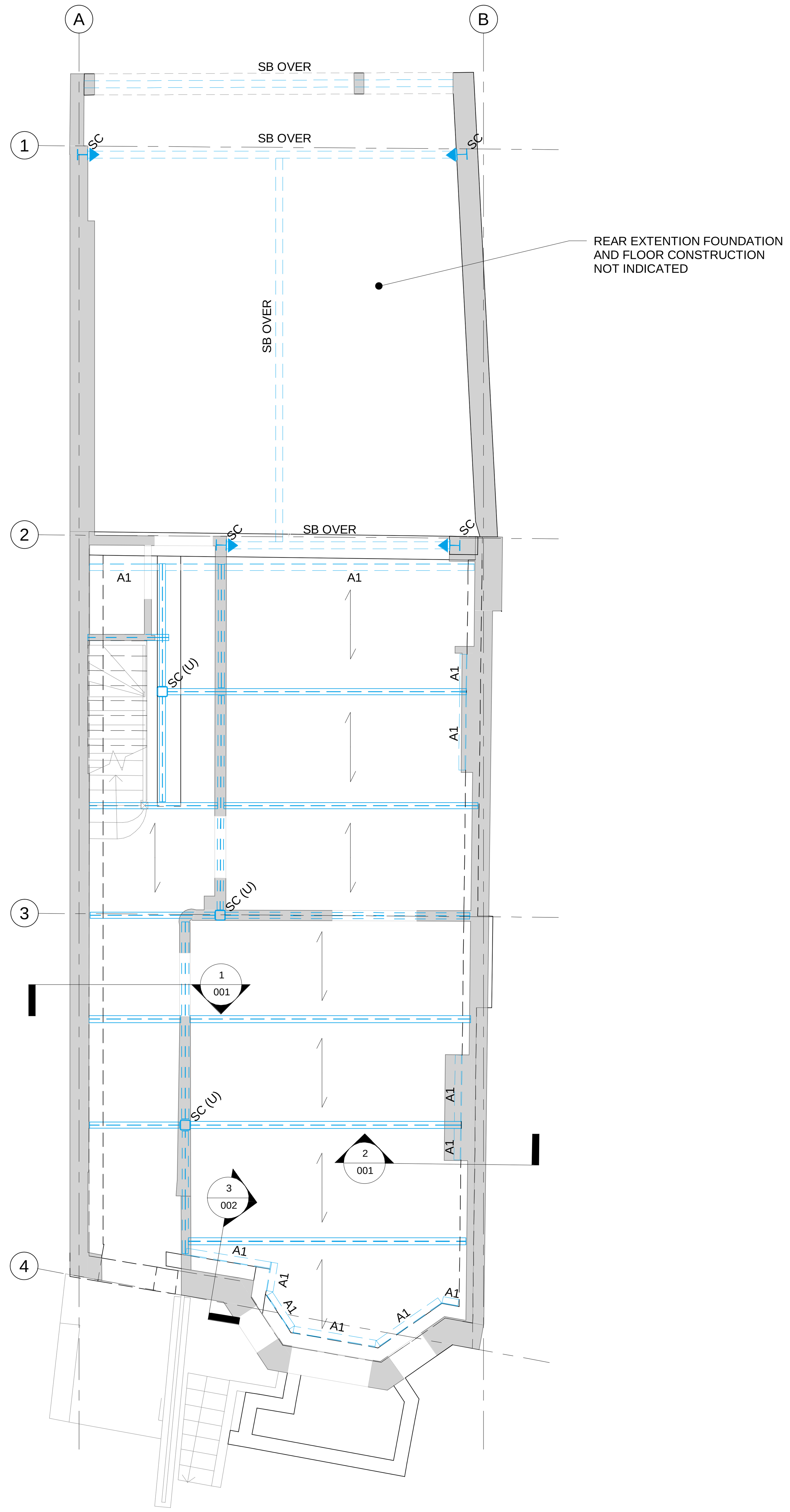
Client	Jyotin Sethi
Project	29 Inglewood Rd, NW6 1QT
Title	Existing/Proposed Basement Plans

Drawn by	Checked by	Scale	Sheet Size
ANM	VP	As indicated	A1

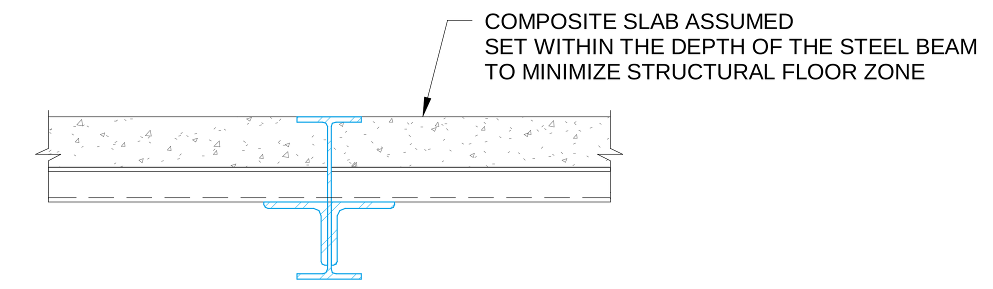
Proj. No.	Doc. Type	Drg. No.	Rev
23106	D	001	P1



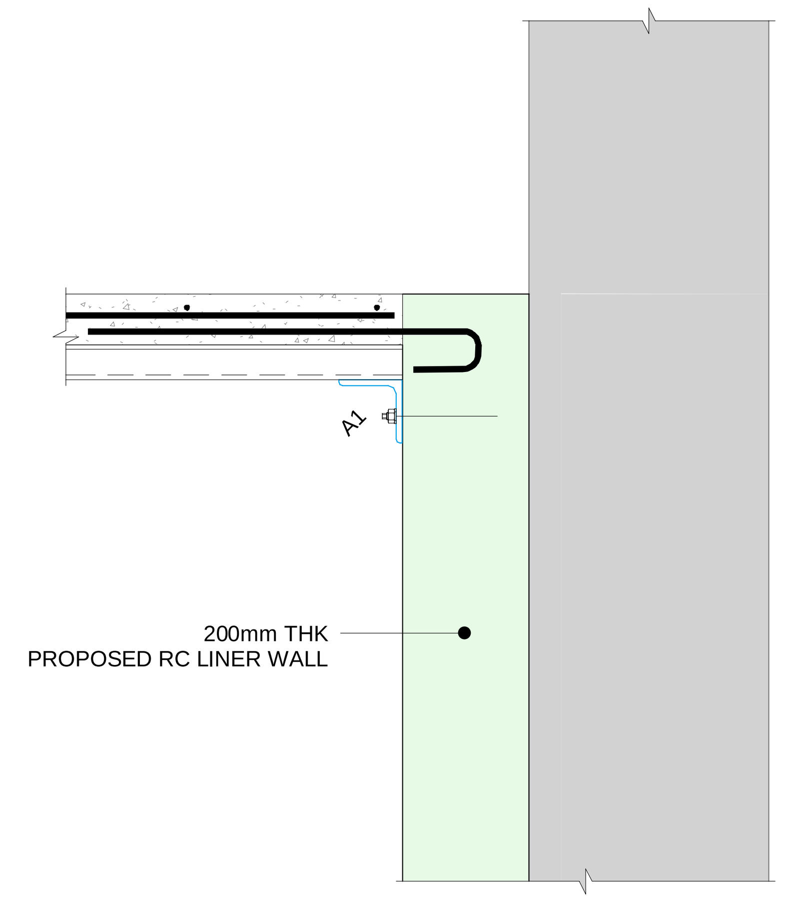
Existing Ground Floor Plan
1 : 50



Proposed Ground Floor Plan
1 : 50



Typical Section Through Steel Beam
1 : 10



3 Section 3
1 : 10

NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALL WORK FROM FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS ON THIS DRAWING IS ALLOWED WITHOUT DVP PRIOR PERMISSION IN WRITING.
3. READ THIS DRAWING WITH ALL ARCHITECT'S, SERVICE ENGINEER'S AND DVP RELEVANT DETAILS AND DRAWINGS.
4. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS ISSUED BY DVP STRUCTURES, BRITISH STANDARD CODES OF PRACTICE, STATUTORY REQUIREMENTS AND THE CONTRACT DOCUMENTS.
5. DRAWING STATUS:

P : PRELIMINARY - EVOLVING DRAWINGS FOR APPROVALS, TENDERS, BILLINGS, ETC.

C : CONSTRUCTION - FULLY DEVELOPED DRAWINGS ISSUED UNDER INSTRUCTION FOR CONSTRUCTION

ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.

Key

	Existing Structure
	Structure to be demolished
	New Steelwork
	Reinforced Concrete Wall
	Denotes R.C. underpin forming the basement wall
	Span direction of existing joists
	New min. 150mm composite slab of normal weight concrete on Comflor60 steel profiled decking by TATA or equivalent; reinforced with mesh in the top face
	Denotes new suspended timber joists
	Denotes moment resisting connection

SB - Steel Beam
SC - Steel Column

Revision	Date	Description	Issuer
P1	11.10.23	ISSUED FOR COMMENTS	TV

not for construction

PDG
GEO-STRUCTURAL EXPERTISE

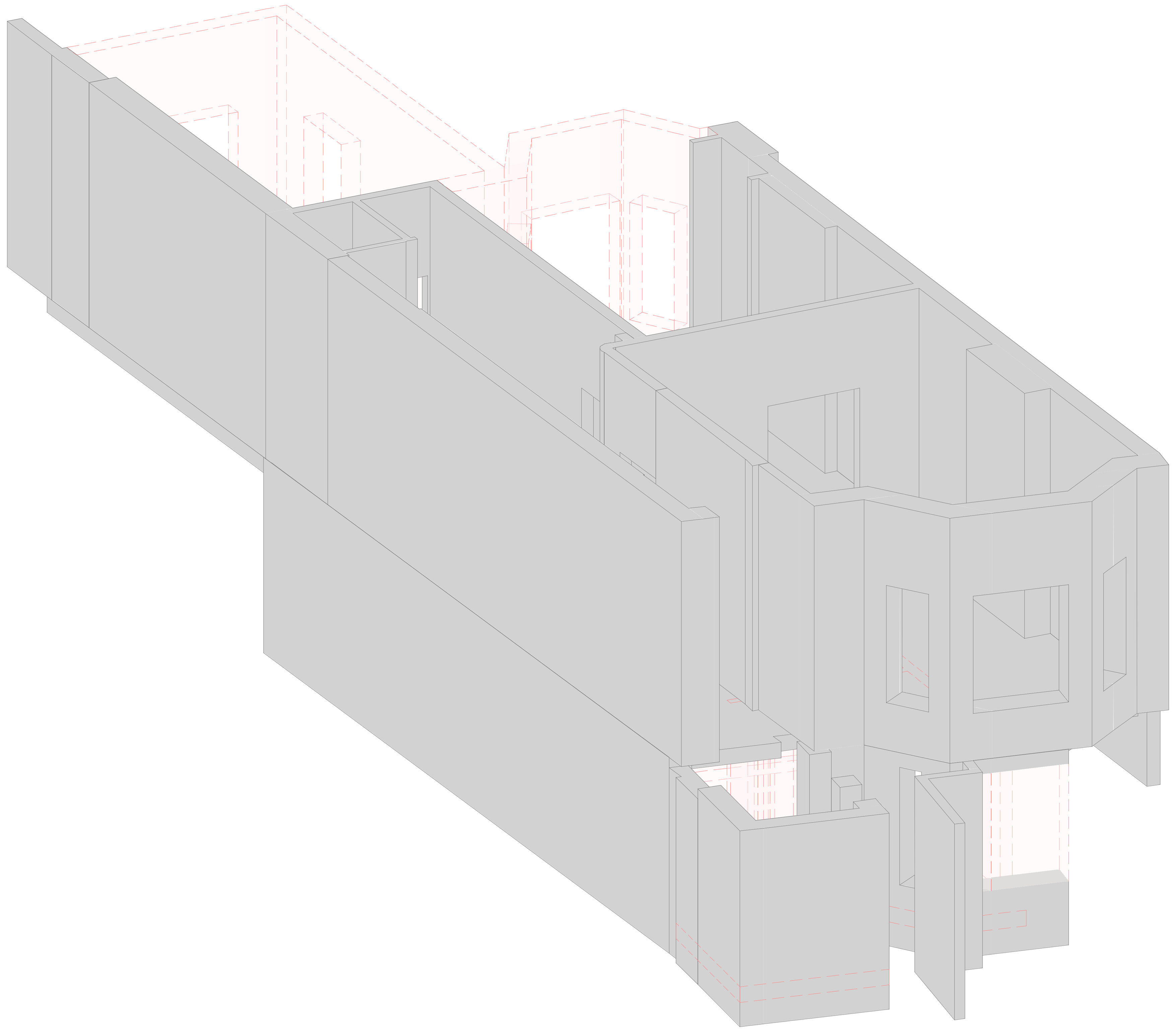
dvp structures

Registered office address: 85 Great Portland St. London, W1W 7LT Tel: 020 3633 4483
info@dvpstructures.com www.dvpstructures.com

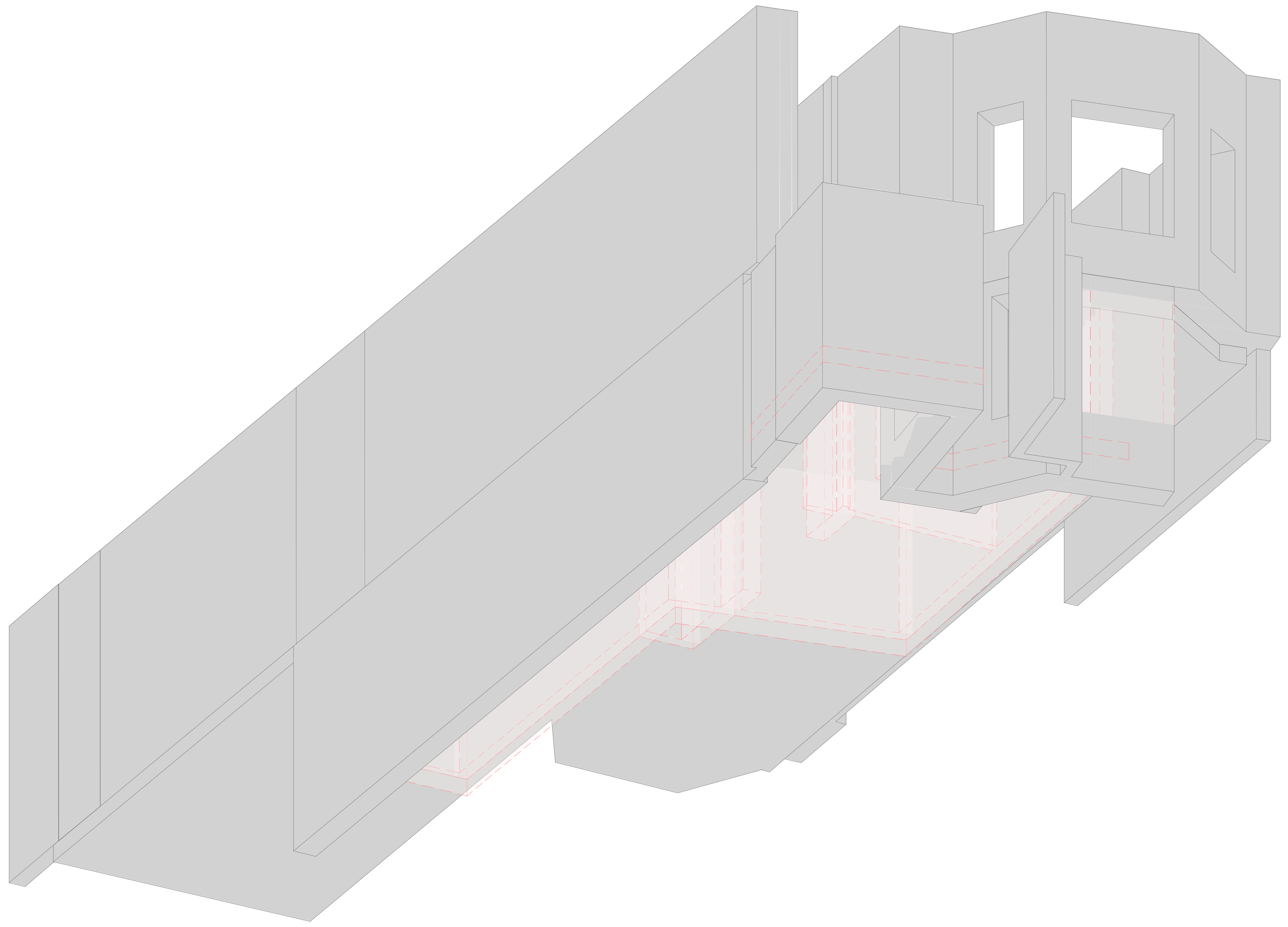
Client	Jyotin Sethi
Project	29 Inglewood Rd, NW6 1QT
Title	Existing/Proposed Ground Floor Plans

Drawn by	Checked by	Scale	Sheet Size
ANM	VP	As indicated	A1

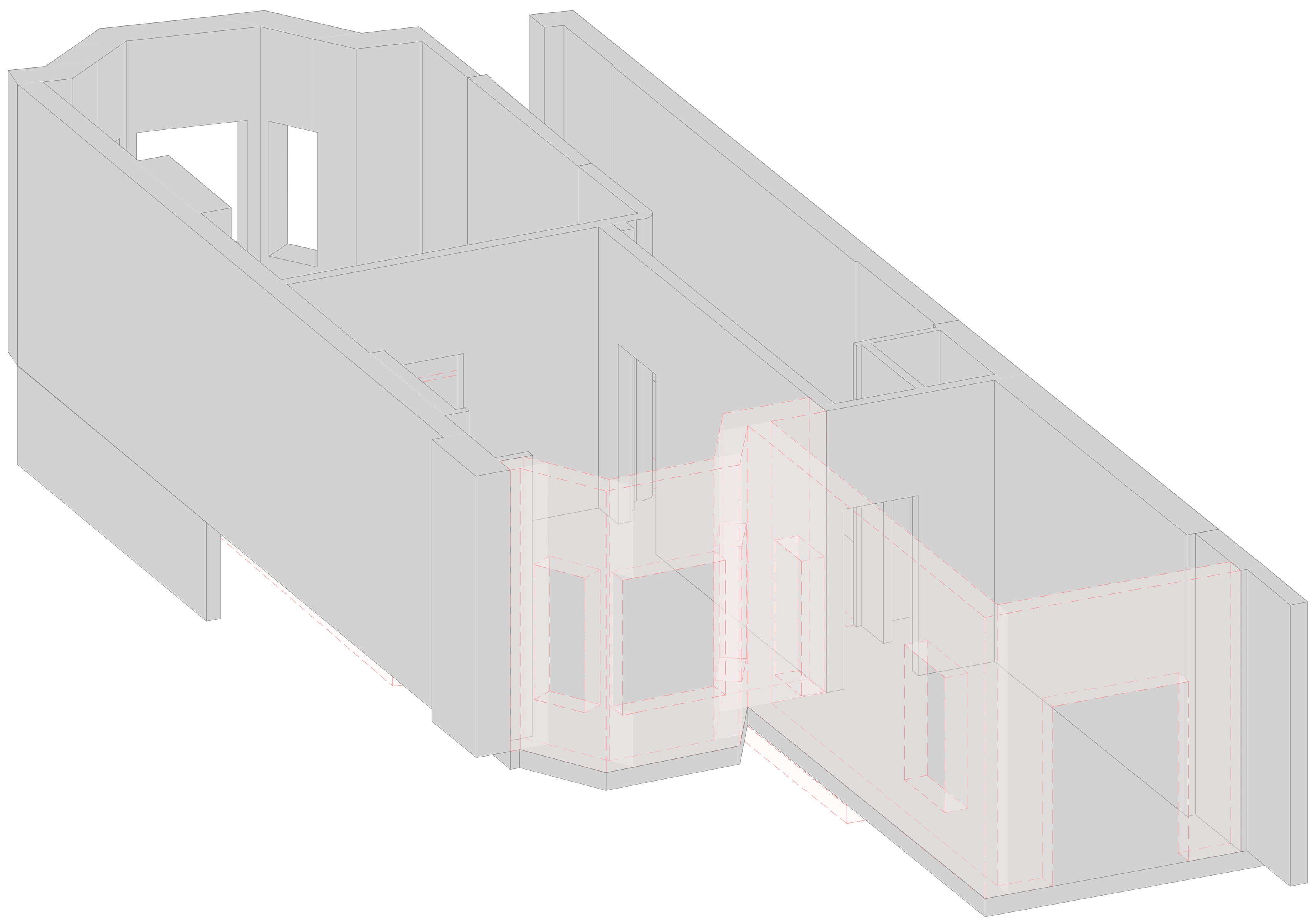
Proj. No.	Doc. Type	Drg. No.	Rev
23106	D	002	P1



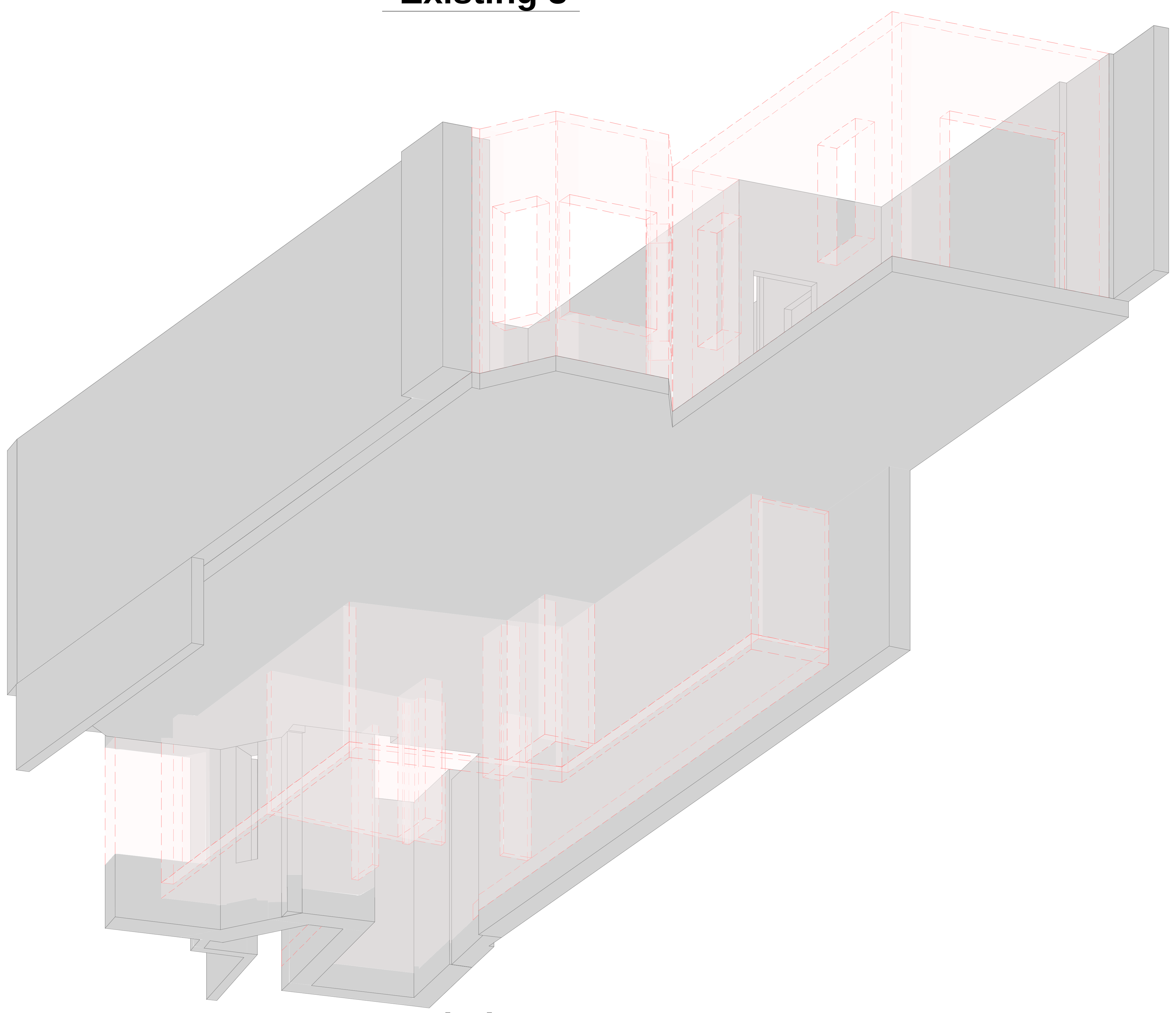
Existing 1



Existing 3



Existing 2



Existing 4

NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALL WORK FROM FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS ON THIS DRAWING IS ALLOWED WITHOUT DVP PRIOR PERMISSION IN WRITING.
3. READ THIS DRAWING WITH ALL ARCHITECT'S, SERVICE ENGINEER'S AND DVP RELEVANT DETAILS AND DRAWINGS.
4. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS ISSUED BY DVP STRUCTURES, BRITISH STANDARD CODES OF PRACTICE, STATUTORY REQUIREMENTS AND THE CONTRACT DOCUMENTS.
5. DRAWING STATUS:

P : PRELIMINARY - EVOLVING DRAWINGS FOR APPROVALS, TENDERS, BILLINGS, ETC.

C : CONSTRUCTION - FULLY DEVELOPED DRAWINGS ISSUED UNDER INSTRUCTION FOR CONSTRUCTION

ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.

P1	11.10.23	ISSUED FOR COMMENTS	TV
Revision	Date	Description	Issuer

not for construction

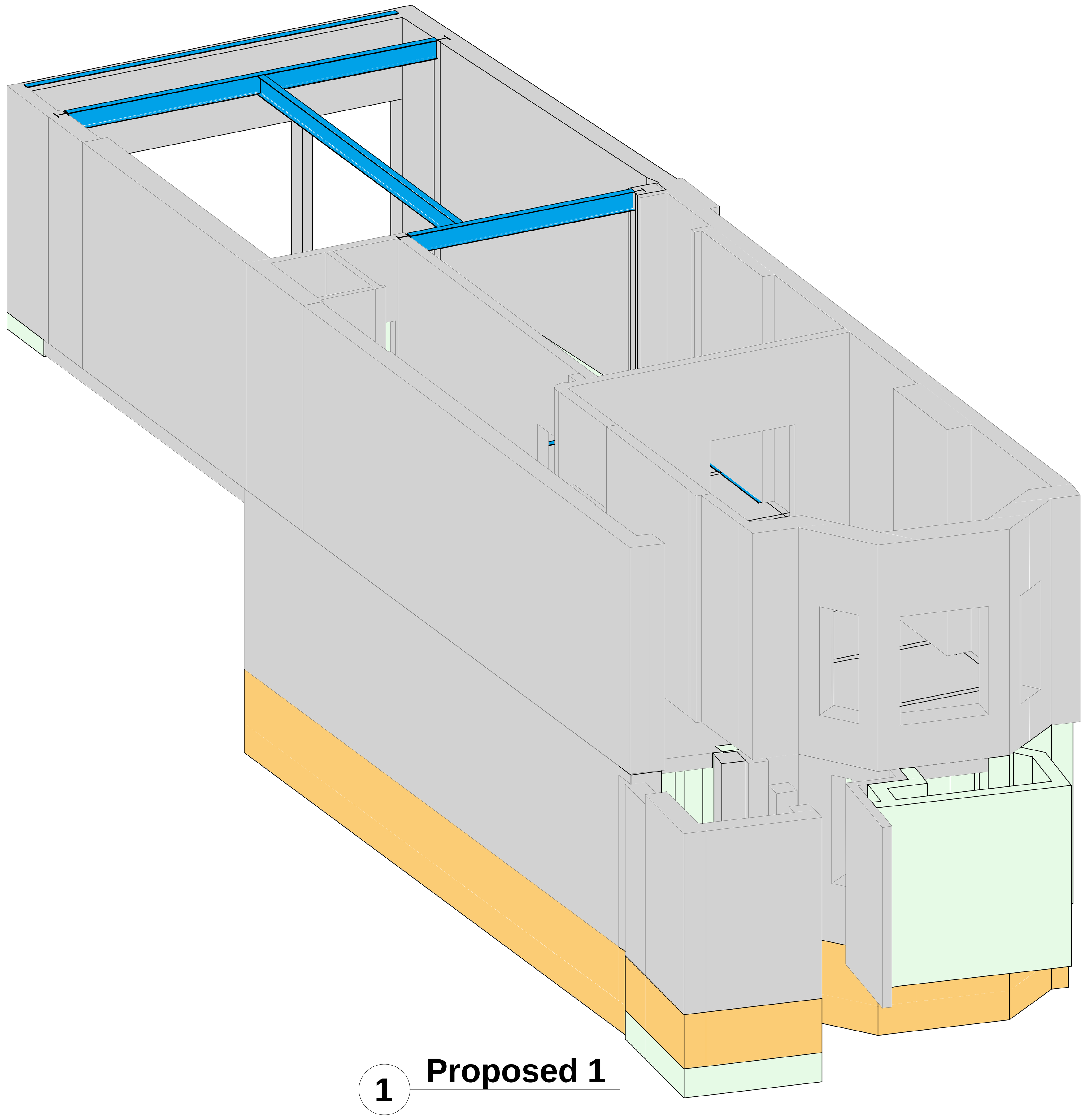
PDG GEO-STRUCTURAL EXPERTISE

dvp structures

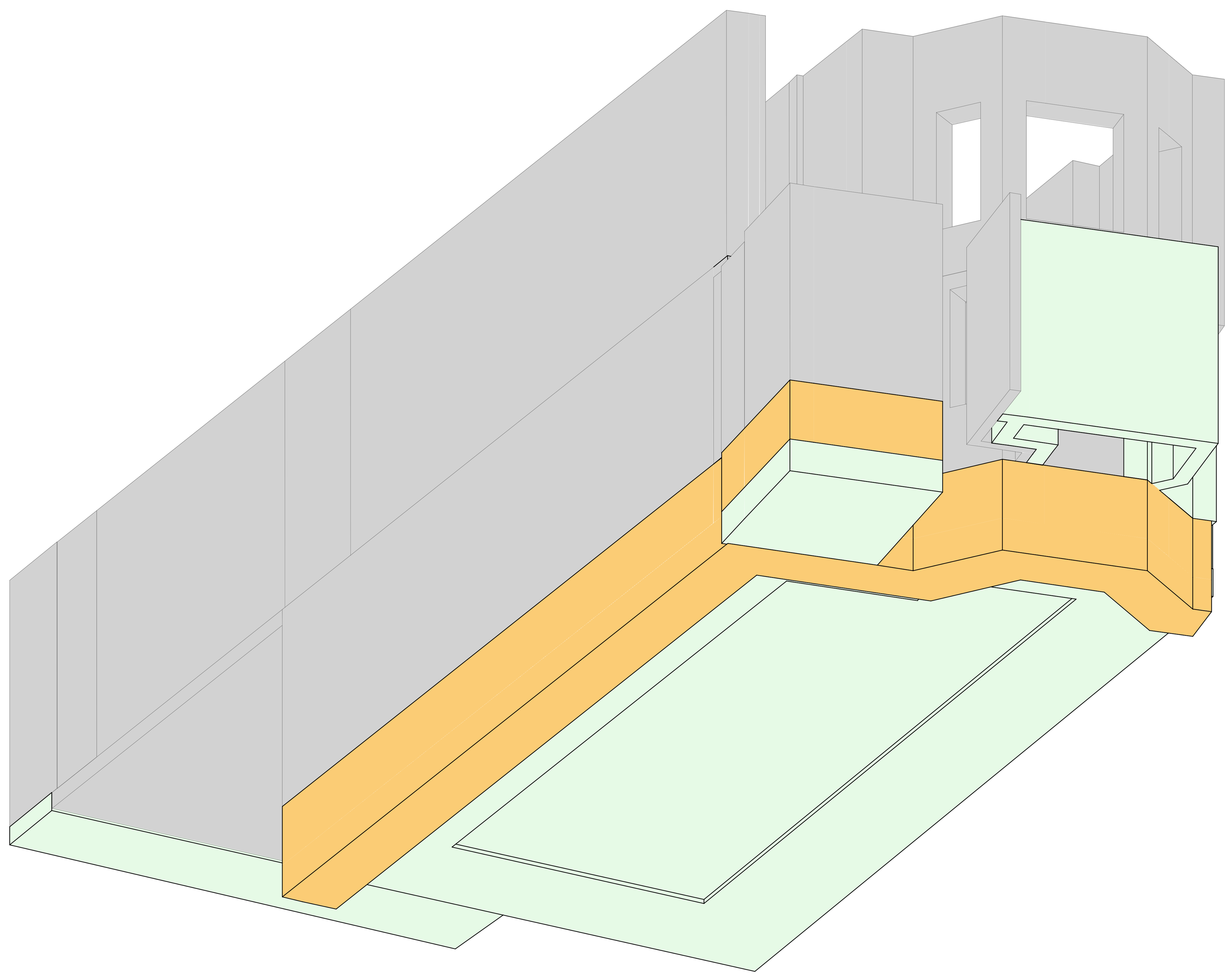
Registered office address: 85 Great Portland St. London, W1W 7LT Tel: 020 3633 4483
info@dvpstructures.com www.dvpstructures.com

Client	Jyotin Sethi
Project	29 Inglewood Rd, NW6 1QT
Title	Existing 3D Views

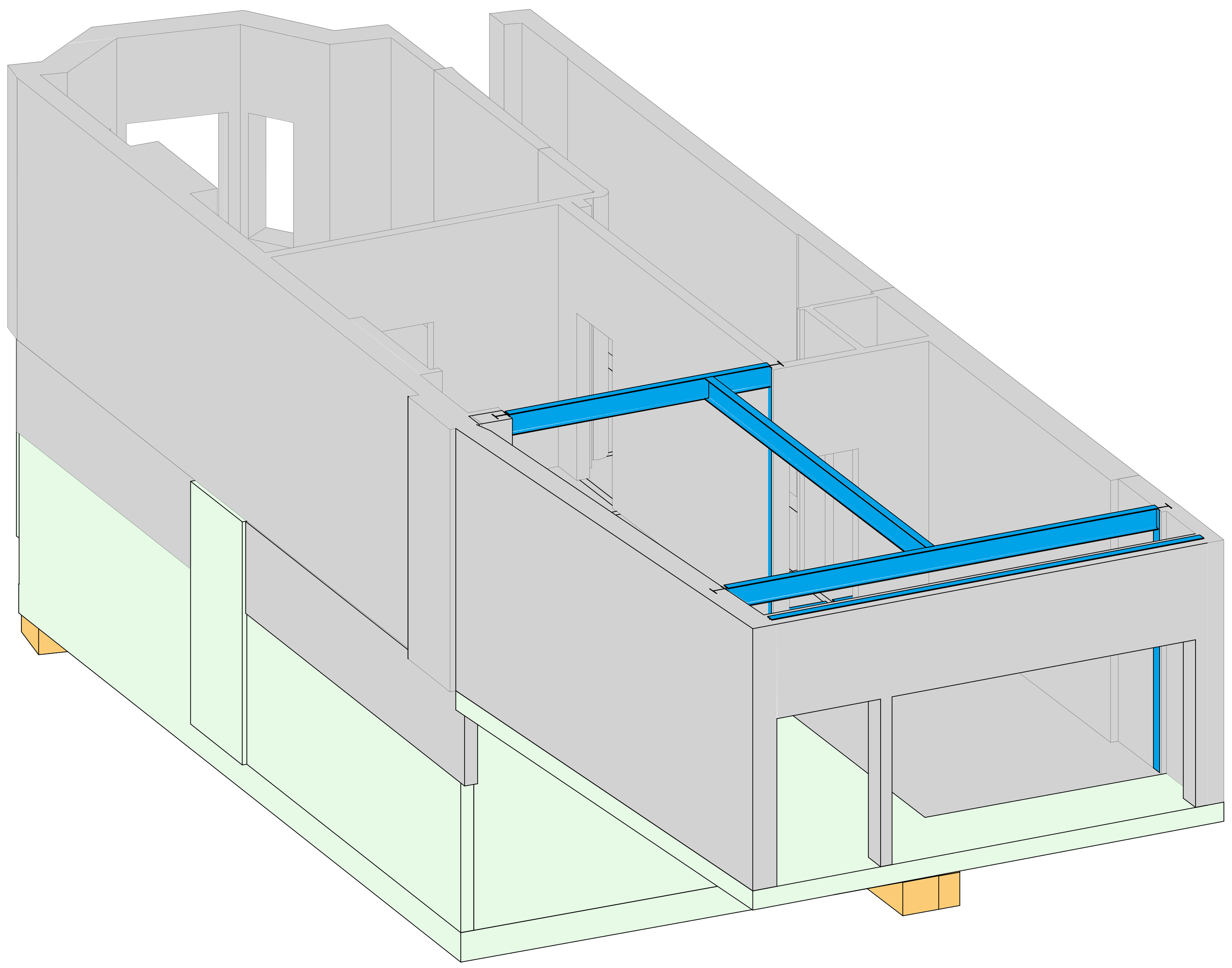
Drawn by	Checked by	Scale	Sheet Size
ANM	VP	1 : 1	A1
Proj. No.	**Doc. Type**	**Drg. No.**	**Rev**
23106	D	020	P1



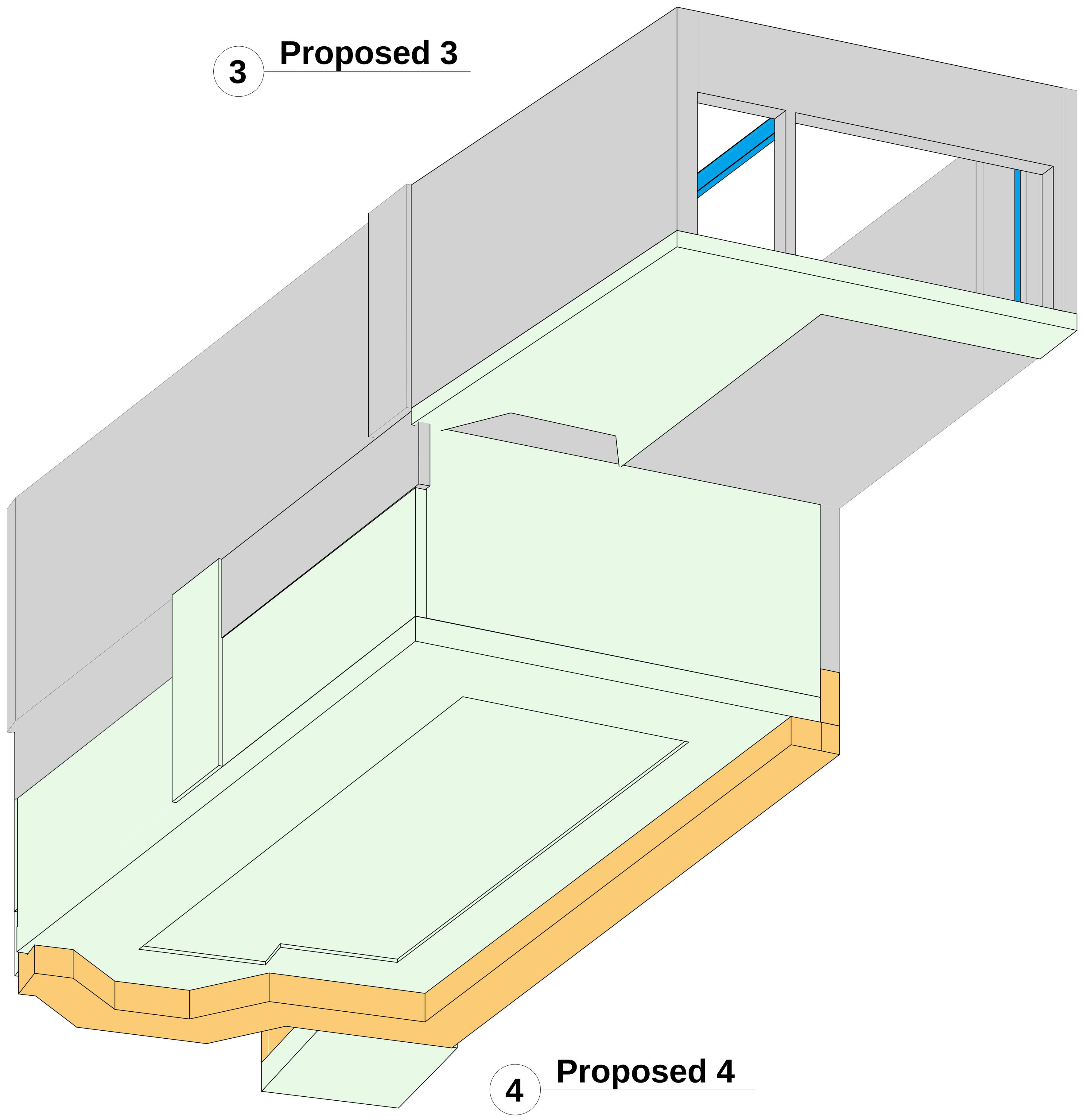
1 Proposed 1



3 Proposed 3



2 Proposed 2



4 Proposed 4

NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALL WORK FROM FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS ON THIS DRAWING IS ALLOWED WITHOUT DVP PRIOR PERMISSION IN WRITING.
3. READ THIS DRAWING WITH ALL ARCHITECT'S, SERVICE ENGINEER'S AND DVP RELEVANT DETAILS AND DRAWINGS.
4. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS ISSUED BY DVP STRUCTURES, BRITISH STANDARD CODES OF PRACTICE, STATUTORY REQUIREMENTS AND THE CONTRACT DOCUMENTS.
5. DRAWING STATUS:

P : PRELIMINARY - EVOLVING DRAWINGS FOR APPROVALS, TENDERS, BILLINGS, ETC.

C : CONSTRUCTION - FULLY DEVELOPED DRAWINGS ISSUED UNDER INSTRUCTION FOR CONSTRUCTION

ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.

Revision	Date	Description	Issuer
P1	11.10.23	ISSUED FOR COMMENTS	TV

not for construction

PDG GEO-STRUCTURAL EXPERTISE

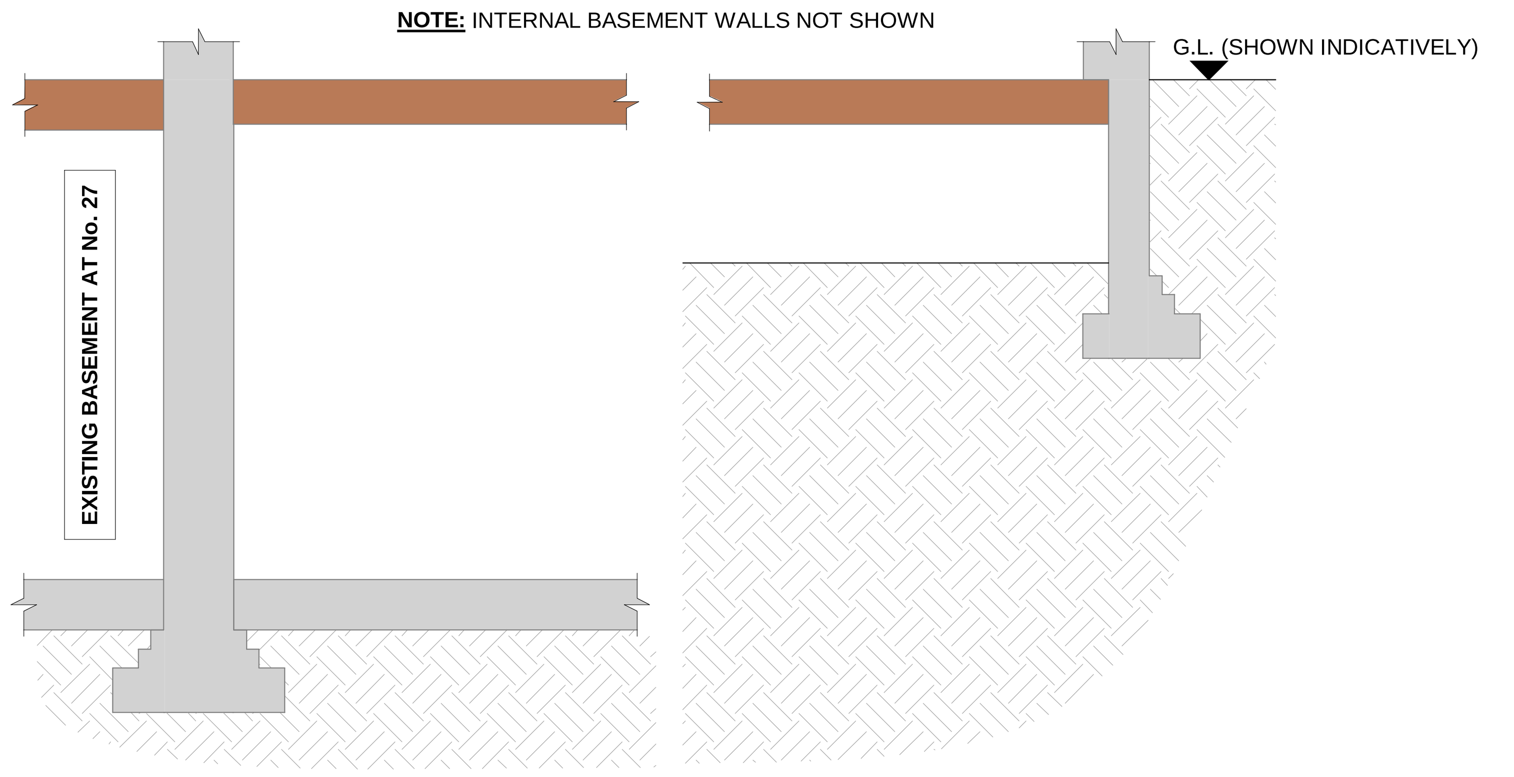
dvp structures

Registered office address: 85 Great Portland St. London, W1W 7LT Tel: 020 3633 4483
info@dvpstructures.com www.dvpstructures.com

Client	Jyotin Sethi
Project	29 Inglewood Rd, NW6 1QT
Title	Proposed 3D Views

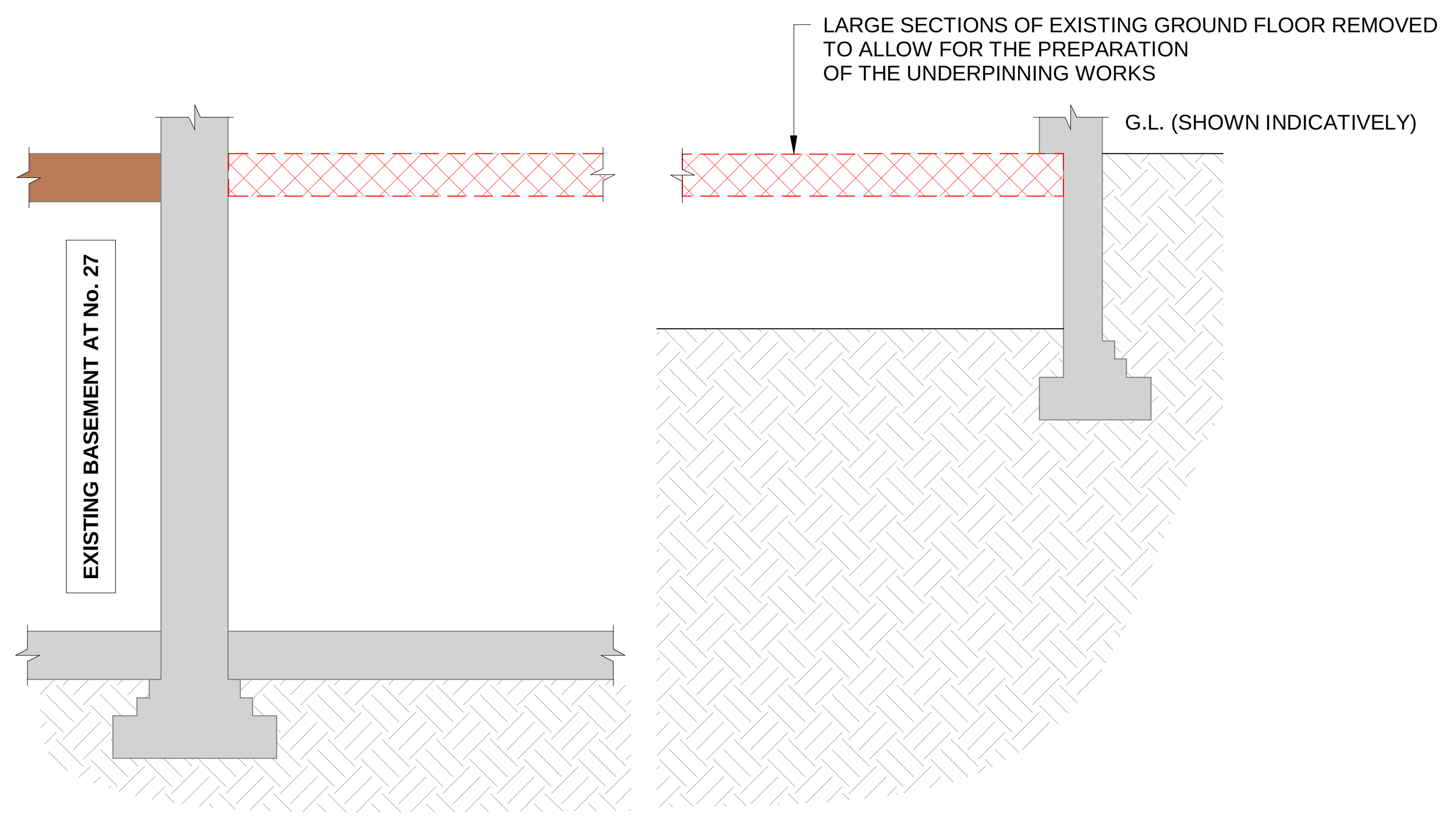
Drawn by	Checked by	Scale	Sheet Size
ANM	VP	1 : 1	A1

Proj. No.	Doc. Type	Drg. No.	Rev
23106	D	021	P1



STAGE 0 - Part Basement

- Existing Construction



STAGE 1 - Part Basement

- Remove sections of the ground floor timber to allow for the preparation of the underpinning works.

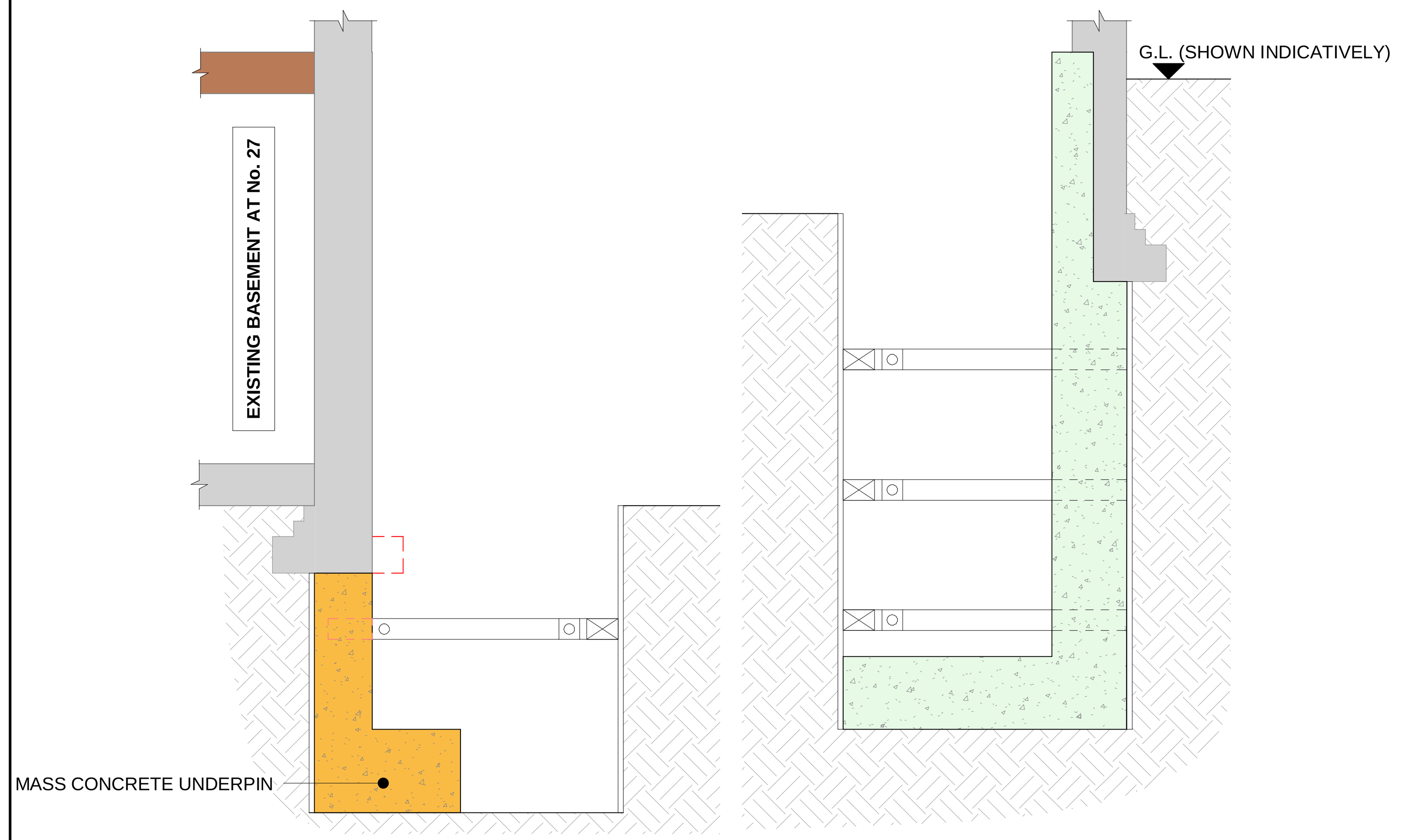
NOTES

1. DO NOT SCALE THIS DRAWING ON PRINT OR ELECTRONICALL WORK FROM FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS ON THIS DRAWING IS ALLOWED WITHOUT DVP PRIOR PERMISSION IN WRITING.
3. READ THIS DRAWING WITH ALL ARCHITECT'S, SERVICE ENGINEER'S AND DVP RELEVANT DETAILS AND DRAWINGS.
4. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS ISSUED BY DVP STRUCTURES, BRITISH STANDARD CODES OF PRACTICE, STATUTORY REQUIREMENTS AND THE CONTRACT DOCUMENTS.
5. DRAWING STATUS:

P : PRELIMINARY - EVOLVING DRAWINGS FOR APPROVALS, TENDERS, BILLINGS, ETC.

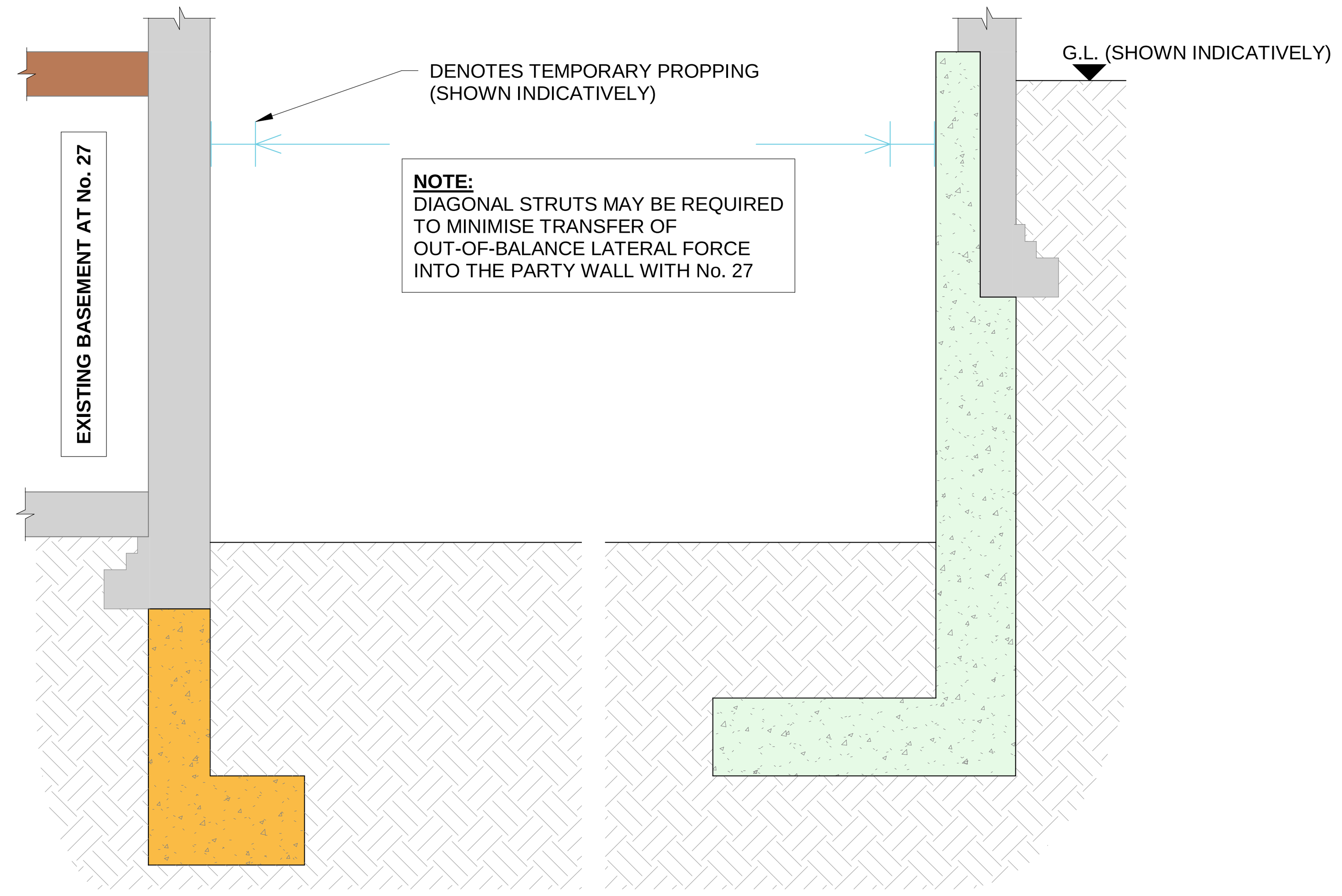
C : CONSTRUCTION - FULLY DEVELOPED DRAWINGS ISSUED UNDER INSTRUCTION FOR CONSTRUCTION

ONLY STATUS C DRAWINGS TO BE USED FOR CONSTRUCTION.



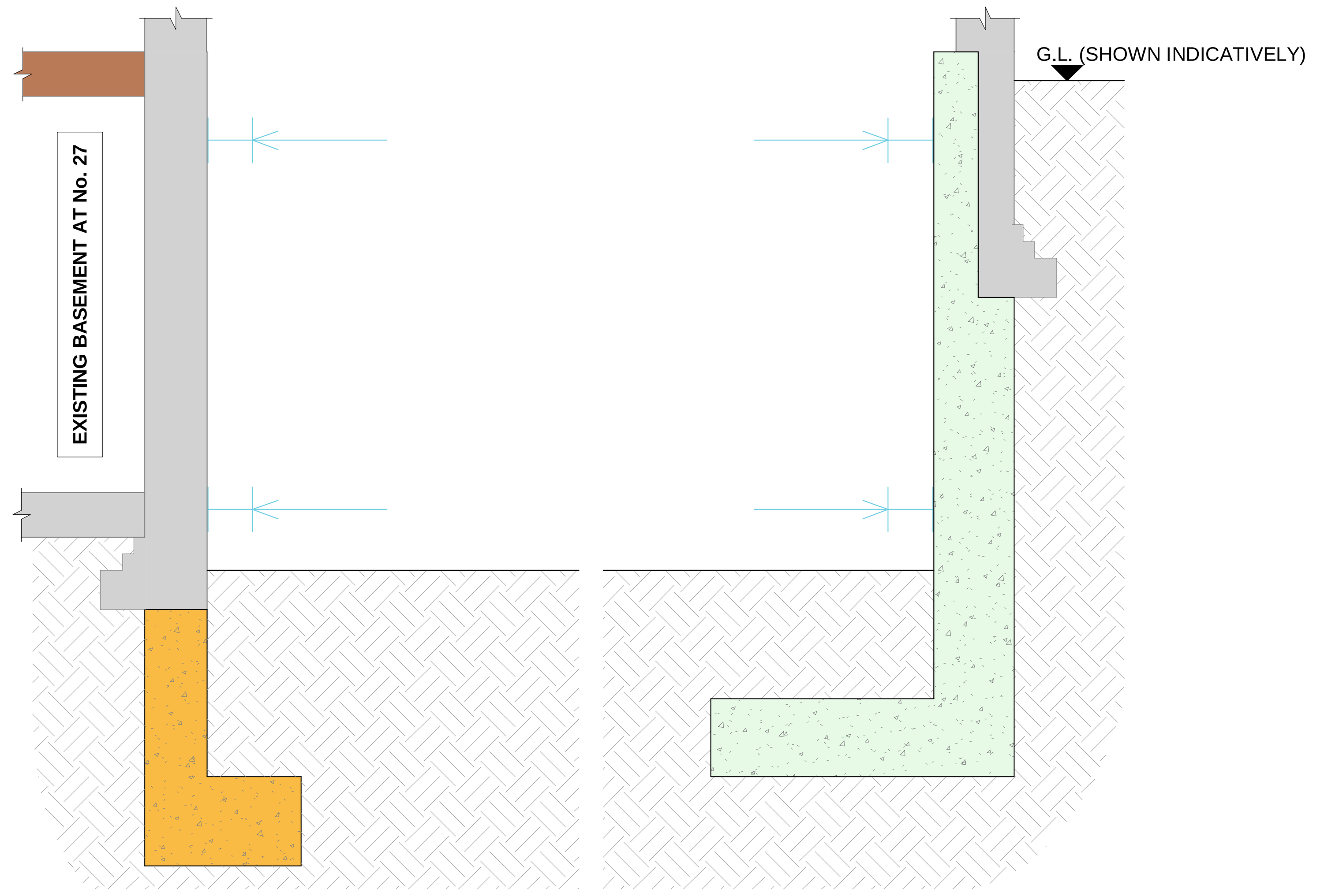
STAGE 2

- Excavate for underpin
- Install temporary excavation propping
- Construct R.C. toe with projecting rebars installed to achieve lapping with the slab and neighbouring toes; and mass concrete underpin
- Construct R.C. stem wall and dry pack
- Back-fill excavation
- The above steps are to be repeated for each underpin



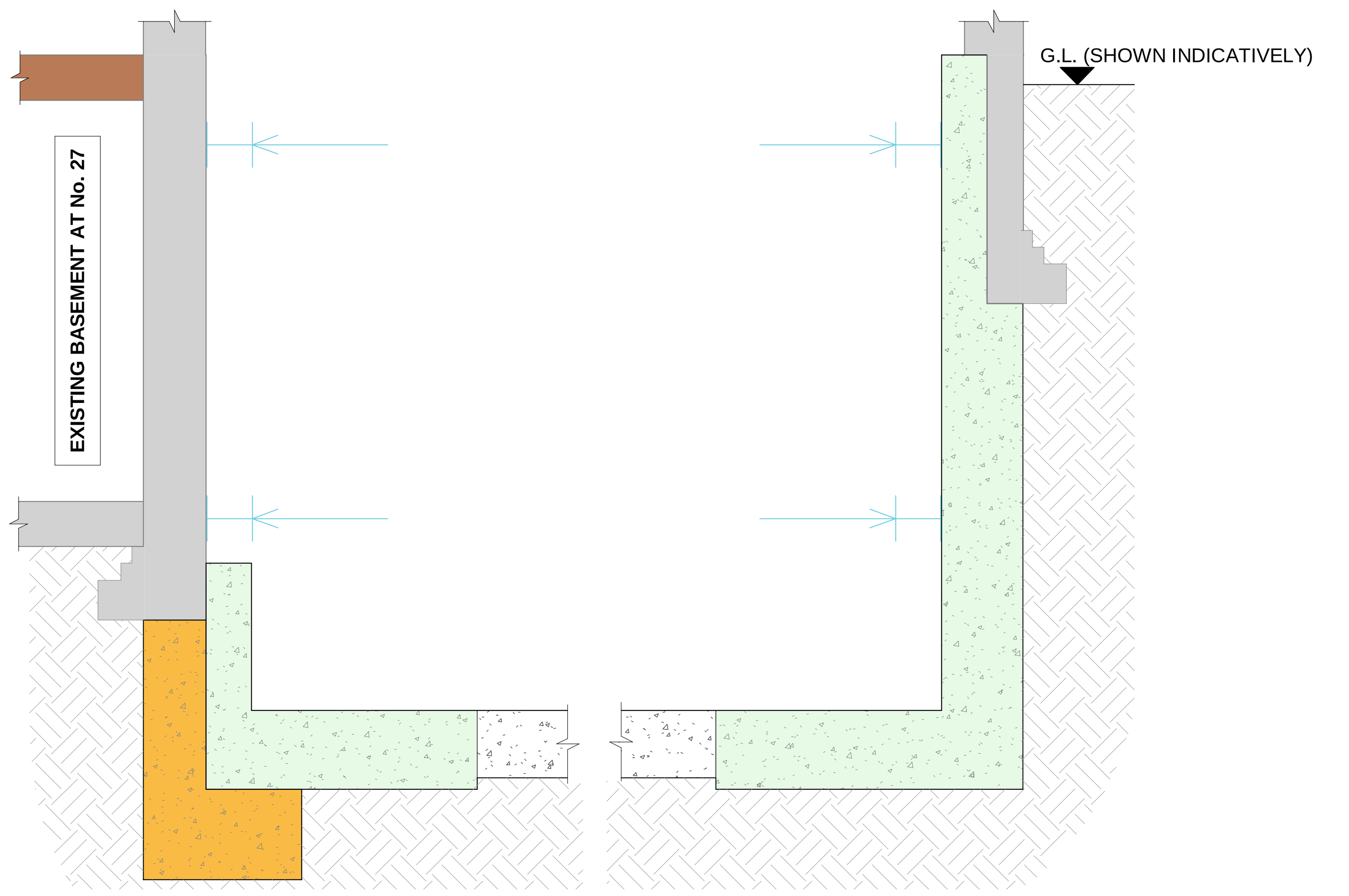
STAGE 3

- Complete underpinning works
- Reduce formation levels slightly to allow for the installation of the upper level of temporary propping, which will likely comprise walers and struts



STAGE 4

- Reduce formation levels further, following the installation of upper level of temporary propping
- Install second level of temporary propping

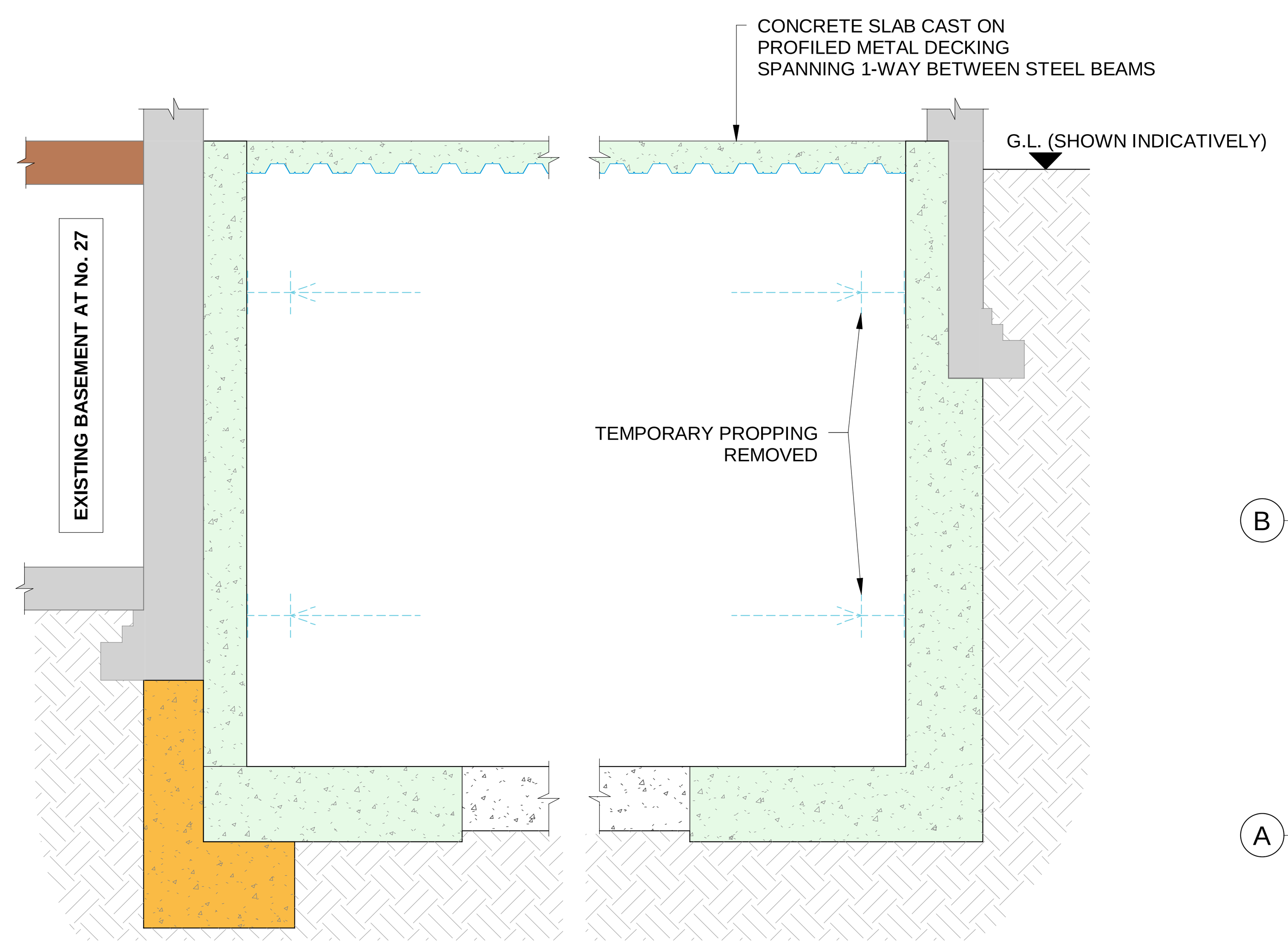


STAGE 5

- Once the temporary propping has been installed, proceed with partial excavation of the basement.

NOTE: Full basement excavation is also possible, providing the internal load-bearing walls are temporarily supported.

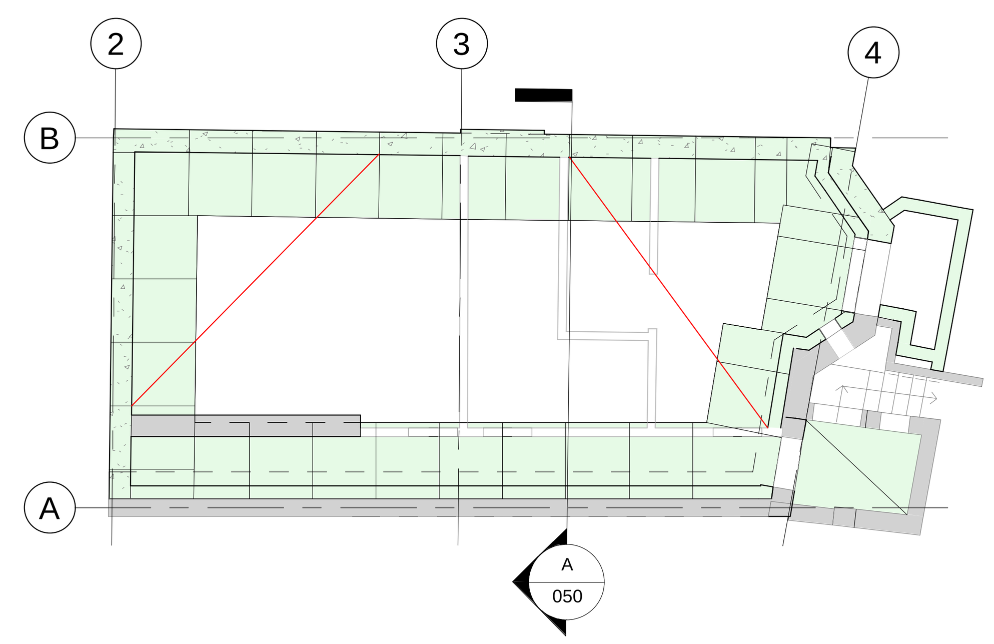
- Lay the reinforcement and construct the RC basement slab.



STAGE 6

- Once the R.C. basement slab has been constructed, remove the low level temporary propping.
- Erect steel columns and ground floor steelwork.
- Cast the ground floor slab and remove the upper level propping.
- Basement construction complete.

NOTE: DIAGONAL STRUTS MAY BE REQUIRED TO MINIMISE TRANSFER OF OUT-OF-BALANCE LATERAL FORCE INTO THE PARTY WALL WITH No. 27 (STRUTS SHOWN INDICATIVELY BELOW)



Underpinning Sequence Key Plan

1 : 100

Revision	Date	Description	Issuer
P1	11.10.23	ISSUED FOR COMMENTS	TV

not for construction

PDG GEO-STRUCTURAL EXPERTISE

dvp structures

Registered office address: 85 Great Portland St. London, W1W 7LT Tel: 020 3633 4483
info@dvpstructures.com www.dvpstructures.com

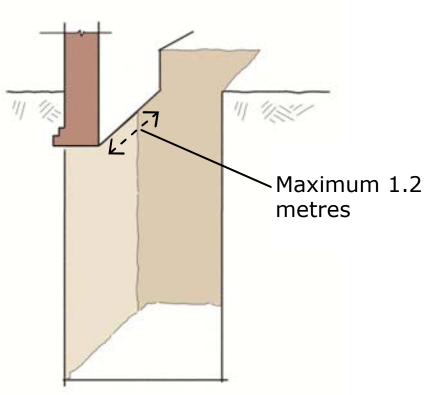
Client	Jyotin Sethi
Project	29 Inglewood Rd, NW6 1QT
Title	Indicative Basement Construction Sequence

Drawn by	Checked by	Scale	Sheet Size
ANM	VP	As indicated	A1

Proj. No.	Doc. Type	Drg. No.	Rev
23106	D	050	P1

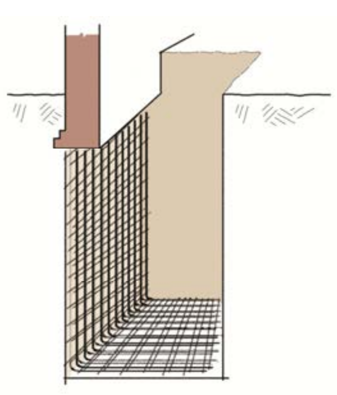
Appendix 2:

Diagram of a Typical RC Underpin Construction



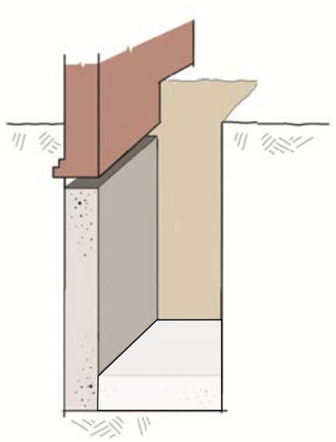
1. Excavation must be fully supported by props and shoring.
2. Edge protection to prevent falls into the excavation must be installed.
3. A temporary vertical prop or support may be placed under the wall to keep any loose bricks or masonry in place.
4. The main load from the existing wall will span onto the wall and foundations on either side of the excavation.

Stage 1. Excavation



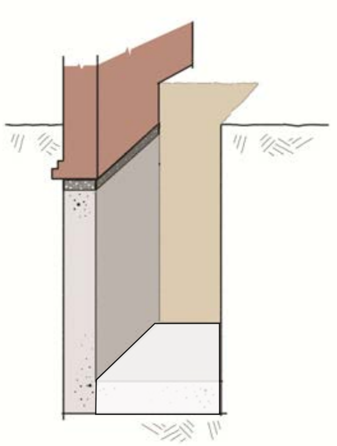
1. Reinforcement is fixed into position.
2. Reinforcement details are given in the engineering design. It is critical that the reinforcement is installed as detailed in the design
3. The design will usually require a shear connection between adjacent underpins. This is generally achieved using dowel bars between adjacent pins or by building sheer keys in the concrete underpin walls.

Stage 2. Reinforcement



1. Concrete is placed in the toe first.
2. Once the toe is sufficiently cured the concrete wall is poured.
3. Shuttering, usually timber, is used to hold the concrete for the wall in place while it is placed.
4. Gap of approximately 75mm left between the top of the concrete and the underside of the existing foundation.

Stage 3. Concrete placement



1. After a minimum of 24 hours dry-pack is rammed into the 75mm void that has been left above the new underpin.
2. Dry-pack is a mix of sharp sand and cement. It is easy to handle and has a low shrink volume, minimising settlement of the wall onto the new underpin foundation.
3. The completed underpin must be supported horizontally either by horizontal propping or by backfilling the excavation until the ground slab and possibly other permanent works are constructed.

Stage 4. Dry packing

Typical underpin construction sequence