NP061974

STRUCTURAL ENGINEER'S CONSTRUCTION METHOD STATEMENT FOR PLANNING,

128-130 GRAFTON ROAD, NW5 4BA

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CONTENTS

1.0 INTRODUCTION

This report summarises the structural engineering construction method statement (CMS) carried out for planning by NP Essex Cons. Co. for the proposed basement at 128-130 Grafton Road, London, NW5 4BA.

NP Essex has been appointed to carry out the report and this is to support a planning application for the change of use of an existing commercial development. The proposals are for the demolition of the existing building and erection of a five-storey building plus new basement, comprising of nine flats.

The report covers the proposed form of construction to build the basement adjacent to the existing properties without causing undue damage and disruption to these. An assumed sequence of construction for the proposed works is included and this elaborates on the assumed stages involved in the formation of the basement.

This report also includes outline general arrangement drawings of the proposed structure.

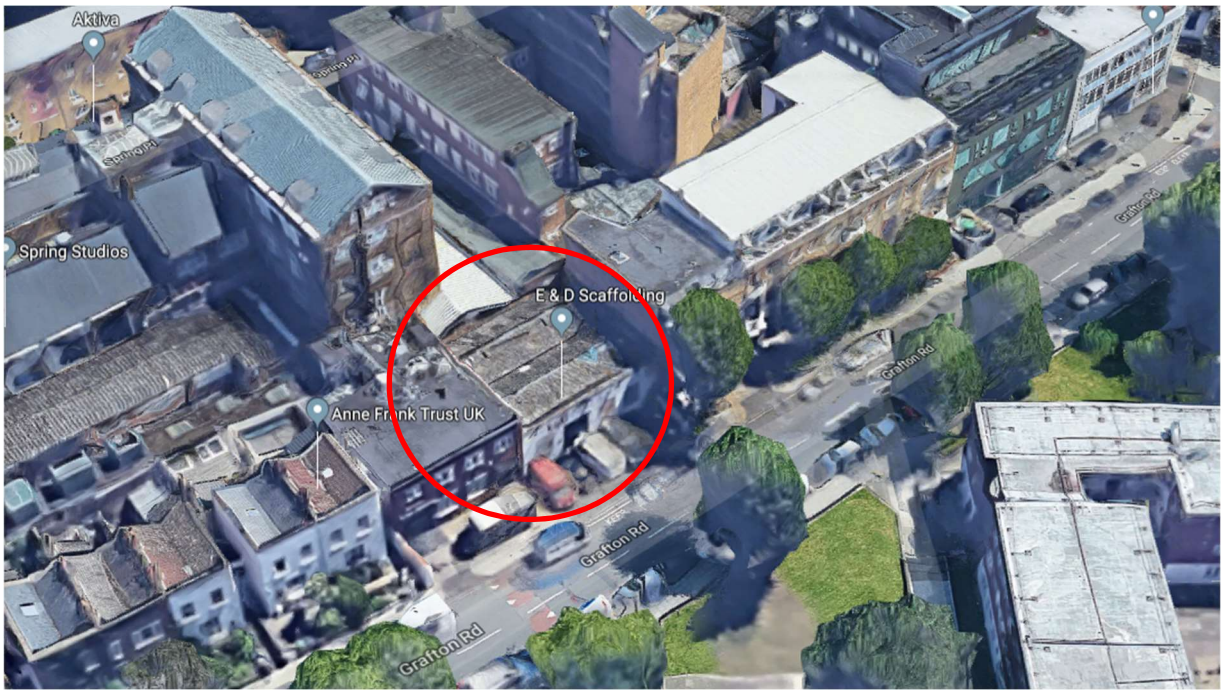
The CMS has been prepared for planning purposes solely for on behalf of the Client. It is for their use and for the use of the professional advisors on the project only. The scope of the proposals is set out on the architectural planning drawings complied by APS Design Associates Ltd.

This report is provided by Pirooz Amerian of NP Essex Cons. Co.

2.0 EXISTING BUILDING AND GROUND CONDITION

2.1 EXITING BUILDING

The site is located off Grafton Road in Camden, London. The site currently including of a single storey commercial building with a mezzanine located at Nos. 128-130. A single-story commercial building is to the west side of the existing building and a four-story residential building is on the other side.



2.2 EXISTING GROUND CONDITIONS

The ground condition base on report which has been provided by Ground and Water Limited company can be summarised below:

- Made Ground, up to a depth of approx. 1.8m below the existing ground floor level.
- London Clay Formation, consisting of medium brown to brown grey slightly sandy Clay, up to a depth of approx. 4.0m below the existing ground floor level.
- London Clay Formation, consisting of dark brown grey Clay with sand lenses, down to the bottom of the 7m deep borehole.
- No Groundwater was encountered to the borehole depth.

3.0 BASEMENT IMPACT ASSESSMENT

A basement impact assessment (BIA) was carried out by H Fraser consulting Ltd to consider the effects of the proposed basement construction, The BIA for groundwater has concluded that the impacts of the basement on the hydrogeological setting are likely to be negligible, due to the lack of observed groundwater during site investigations, the likely low to negligible groundwater flows in the London Clay, and the lack of basements in neighbouring properties. Groundwater has the potential to affect the basement by groundwater flow to the basement excavation during construction and by seepage/soil moisture impact to the finished basement structure. The following mitigation measures have been proposed:

- Provision should be made to keep the basement excavation dry during construction.
- The basement should be waterproofed in according with BS8102.
- The drainage arrangements for the site should b in accordance with the principles of sustainable drainage but should not seek to discharge water to ground.

4.0 PROPOSED WORK

4.1 BASEMENT

The proposed structural scheme is summarised in drawings SK- 1. Refer to Appendix A.

The proposed development entails the construction of the basement under the new proposed five-story building.

The basement will be a single story and is proposed to be formed of a stiff box with secant piles wall in the rear, front and part of the side elevations. A reinforced concrete wall is proposed in front of the secant piled walls to form a structurally efficient composite wall.

The rest of two sides of the basement walls (the basements walls adjoining to properties No. 126, 132&134) will be formed by underpinning the existing party/boundary walls and building a reinforced concrete wall in front.

Construction of the piles wall is faster than underpins and strategy has thus been adopted where possible.

Pilling is anticipated to be carried out using a small low-headroom piling rig. The contractor designed secant piles walls will be designed to resist lateral loads from soil and surcharge.

The underpins will be formed from the level of the existing foundations in a hit and miss sequence to minimise ground movements. This process will avoid instability of the existing perimeter walls as the masonry above will arch around the local excavations. Once underpinning is completed, the levels may be incrementally reduced and the underpins propped, in accordance with the temporary works contractor’s design and specifications.

Underpins transfer the vertical load from the respective party wall into the denser natural soil and minimal differential movement would be anticipated. The process of underpinning can cause minor cracks in the walls being underpinned and intersections walls, although if carried out carefully in accordance with the specifications and propped on completion to minimise the risk of horizontal movement, such movements generally goes undetected.

The reinforced concrete walls lying inbound of the underpinning are designed to withstand the lateral pressures. These RC walls connect into the RC wall in front of the secant piled walls to form a stiff box.

4.2 BASEMENT STABILITY

The weight of the proposed basement/building is greater than the weight of the soil removed. Tension/settlement reducing it is not needed.
Any anticipated heave forces (to be determined in detailed design stage) will be reduced to the crushing force of the heave protection to be specified (if deemed necessary) in the basement slab. Furthermore, the short-term part of the heave is anticipated to take place during excavation and construction.

Stability against sliding and overturning of the underpinning walls will be maintained during construction by a series of props (to contractor's details).

4.3 SUPERSTRUCTURE

The superstructure of the five-story building above the basement will be design in the detailed design stage base on using the low energy building system product by Thermohouse.

5.0 PROTECTION OF ADJACENT STRUCTURES

5.1 PARTY WALL ACT

The nature of the proposed development falls the party wall Act 1996. Criteria set out by the Act (serving notices, etc.) will be dealt with by a Party Wall Surveyor that will be appointed by the client in the post planning stage. The provision of party wall Awards will protect the interest of all owners. The proposed works to form the basement will be based on a design that limits the movement of the existing structures to 'Category 2' (slight movement) as categorised in table 1 of BRE design 251 and CIRIA report C580. This strategy will be agreed with the party wall surveyor. The contractor will be required to compile detailed drawings, method statements and other relevant information as required by the party wall Act, and furnish these to the party wall surveyor.

5.2 TEMPORARY WORKS

An outline assumed sequence of construction is included in Appendix B. This summarises is one possible way in which the proposed works to form the basement can be carried out, including the assumed temporary works.
The temporary works are to be designed and detailed so that any potential movement to the adjoining structure is limited to the limits stipulated in section 5.1. Further temporary works may be deemed necessary at the detailed design progresses.

The contractor needs to submit a detailed method statement, including detailed drawings and calculations, well in advance of commencing work onsite. A detailed assessment of the anticipated ground movements due to temporary works, piling and underpinning at all stages or the construction are to be included in the contractor's calculations.

5.3 MONITORING OF MOVEMENTS DURING THE WORKS

As highlighted in the proposed method construction in section 6, all temporary works and surrounding structure are to be monitored during all phases of the works.

The monitoring strategy will be the Contractor's details and will be developed in the detailed design stage. The anticipated monitoring strategy are anticipated to include a daily visual inspection of all temporary works and surrounding structures and a survey every 3-4 days of the existing structures using fixed survey points agreed with the party wall surveyor.

Criteria for acceptable movements will be agreed in detailed design stage. The strategy to be adopted is that the contractor will notify the engineer and review the construction sequence if the movement recorded are close to the limit stipulated. Should the movements recorded exceed these limits, then the contractor is to stop construction works immediately and install additional temporary works/reinstate excavated material in order to prevent any further movements and until such time as such measures are deemed suitable to be removed.

6.0 PROPOSED SEQUENCE OF CONSTRUCTION

Drawings SK-2 to SK-5 in Appendix B illustrate a proposed sequence of construction for the formation of the basement box.

These drawings summarise our initial thinking on how the proposed basement will be carried out to suit the architectural proposals. They summarise one possible way how the basement box can be formed. The contractor is still responsible to carry out this exercise, especially as the design of all the temporary works associated with temporary stability of all the existing structures in the temporary condition, together with stability of the permanent structure in the temporary condition, is entirely the responsibility of the contractor.

The key stages proposed in the envisaged sequence of construction are as follows:

Stage one: Site preparation and demolition works (see Appendix B, SK-2)

1.1. All existing services on site are de-activated, exposed and removed. Excavation obstructions as encountered.
1.2. Install temporary frames to restrain boundary walls located over all floor levels. Temporary frames assumed fixed to walls either side via anchors in slotted holes, to allow for vertical movement.
1.3. Existing building will be demolished, Monitor movement during all phases of construction.

Stage Two: Installing secant piles wall and first phase of underpinning (see Appendix B,SK-3)

2.0. Pilling mat is installed.

2.1. Installation of perimeter secant piled wall:

- Construction of guide wall.
- Installation of casing.
- Auguring of primary borehole.
- Concreting of primary borehole.
- Auguring of secondary borehole.
- Concreting of secondary borehole.
- Repetition of process along the perimeter

2.2. Install RC capping beam on top of secant piled wall.

2.3. Cast RC ring beam under the party walls in hit and miss sequence (similar to underpinning process)

Stage Three: Installing temporary support to the capping beams, RC beam and second phase of underpinning (see Appendix B, SK-4)

3.1. Reduce level dig when the RC beam is completed.

3.2. Install temporary propping to provide lateral stiffness to secant wall piles wall and formed underpinning.

3.3. Sacrificial trench sheeting to form underpinning, jacked against the soil.

3.4. Underpinned party/boundary walls down to proposed RC basement slab level in 1.0 m sections in hit and miss sequences. Backfill each pin on completion as work progresses. Underpinning formed in fully strutted excavation at all time.

Stage Four: Construct basement concrete box (see Appendix B, SK-5)

4.1. Reduce level dig when the underpinning is completed.

4.2. Install stiff horizontal temporary props at regular intervals as level is reduced gradually.

4.3. Internal piles and pile caps under the internal RC walls will be constructed.

4.4. Install heave protection.

4.5. Form concrete blinding. Waterproofing on top to Architect's details.

4.6. Construct RC walls along all basement and middle of the basement.

4.7. Construct RC ground floor slab.

4.8. Temporary props in basement are removed once permanent works in basement are completed and the basement box structure has attained design strength, effectively acting as a stiff box.

APPENDIX A

PROPOSED GENERAL ARRANGEMENT PLAN APPENDIX D

SK–1

1– This sketch is based on architectural drawings which has been provided by APS Design Associates Ltd.

2– This sketch is not to scale. Do not scale from this sketch.

1– The sketch needs to be reviewed once all necessary site investigations (eg opening up works) are carried out by specialist contractor and information provided to the design team.

3– Temporary works (by Contractor) need to be implemented to make sure that horizontal propping to the retaining walls on all sides of the proposed basement is provided at all times until the permanent works are completed and permanent lateral stability is provided by the proposed permanent structure.

4– Party/boundary walls laterally restrained at all levels throughout the works, until the permanent works are completed.

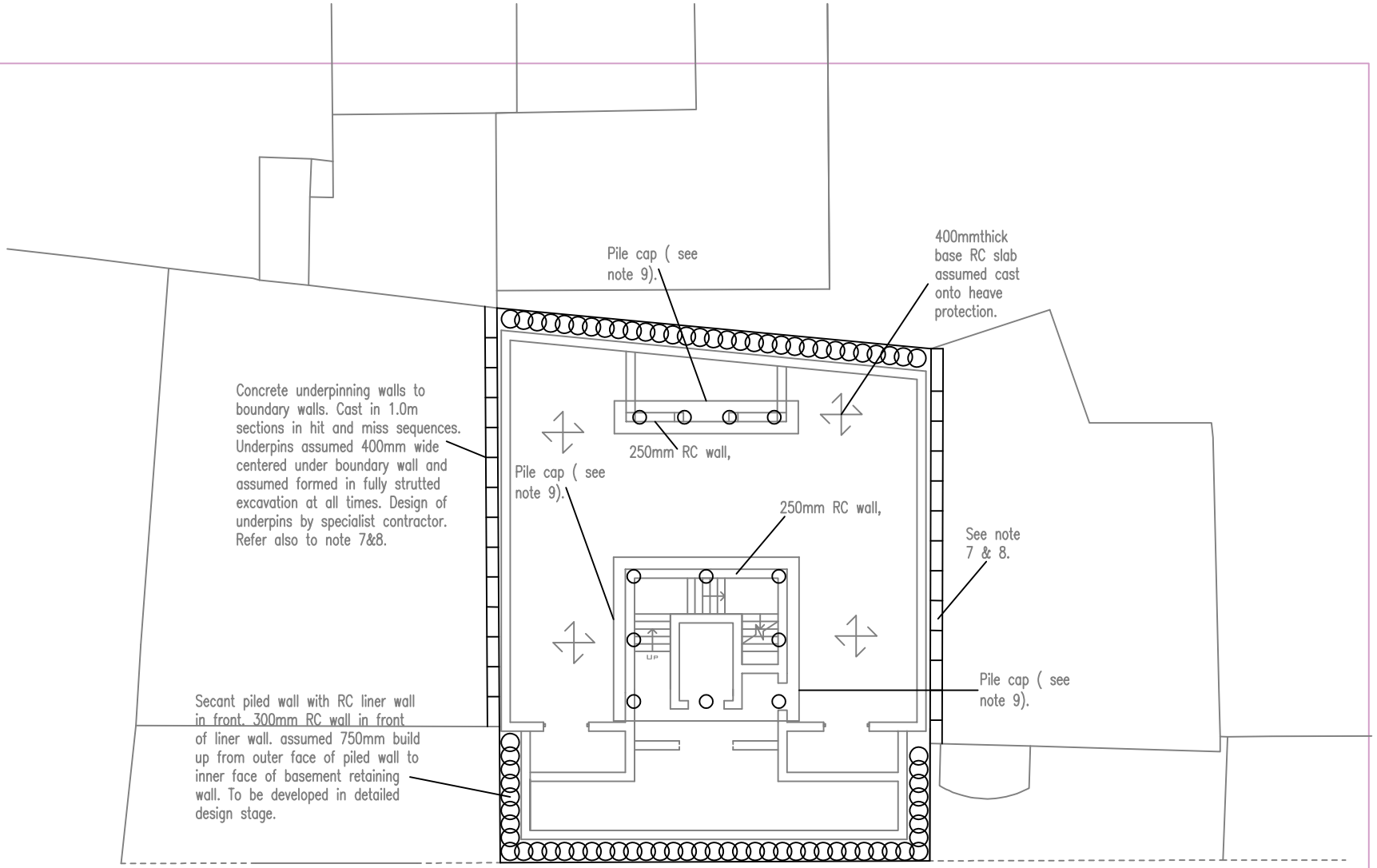
5– This drawing needs to be read in conjunction with sketches SK–2 to SK–5.

6– Monitoring of movements are assumed to take place in advance of the proposed works as a base–line survey, during the works and for a period following the completion of the works, to understand the long term effects. TBC. Monitoring to contractor's details.

7– Temporary propos to underpinning prior to construction of reinforced concrete box. To specialist Contractor's details.

8 – Width of underpins assumed symmetrical with the party/boundary wall above. Underpin assumed to extend below lowest excavation.

9 – Pile Caps and pile loads will be design in detailed design stage.



PROPOSED BASEMENT'S STRUCTURE

128–130 GRAFTON ROAD, LONDON, NW5 4BA

05 JUNE 2019

SK–1

APPENDIX B

PROPOSED SEQUENCE OF BASEMENT CONSTRUCTION

1– The Contractor shall prepare his own proposals for the sequence of construction for which he shall remain entirely responsible. .

2– The Contractor shall insure the stability of the building and adjoining building is maintained at all stages of construction. He shall design, install and maintain all necessary temporary works and programme the works accordingly. .

3– This sketch is based on architectural drawings which has been provided by APS Design Associates Ltd.

4– This sketch is not to scale. Do not scale from this sketch.

5– Temporary works (by Contractor) need to be implemented to make sure that horizontal propping to the retaining walls on all sides of the proposed basement is provided at all times until the permanent works are completed and permanent lateral stability is provided by the proposed permanent structure.

6– Party/boundary walls laterally restrained at all levels throughout the works, until the permanent works are completed.

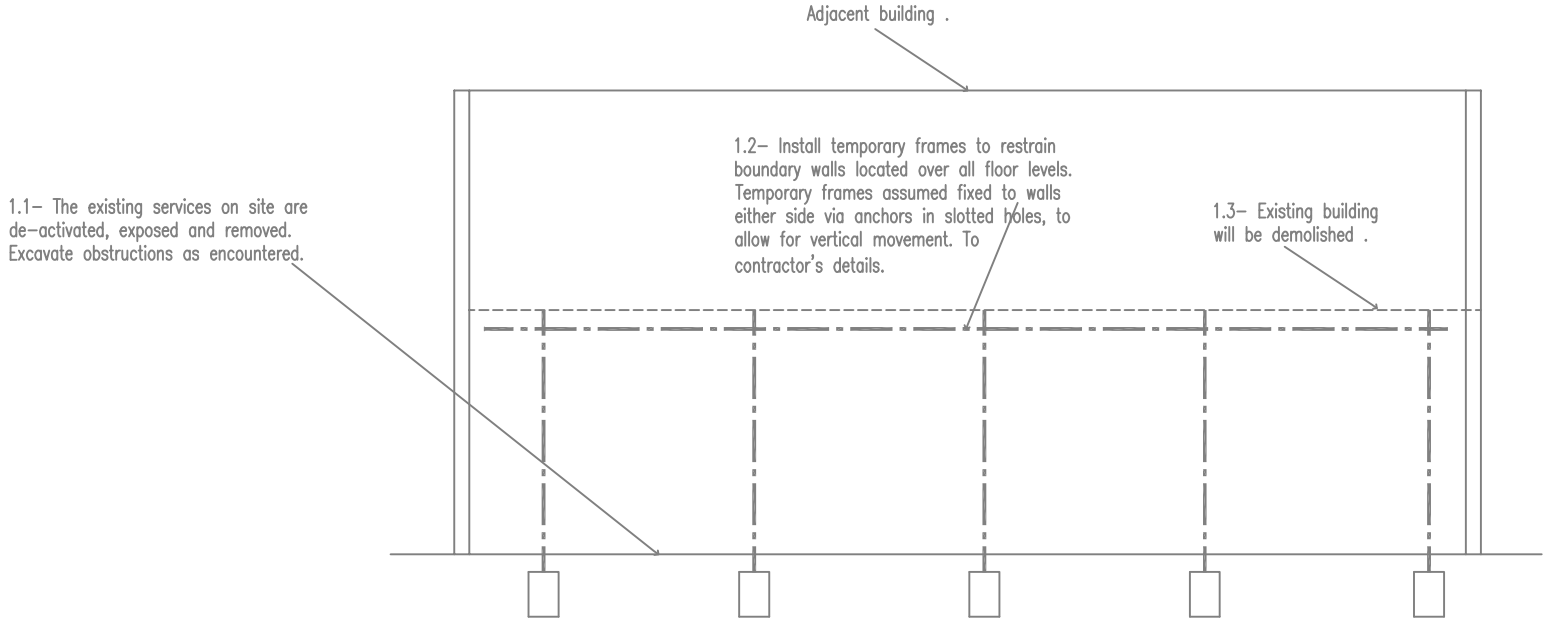
7– Monitoring of movements are assumed to take place in advance of the proposed works as a base–line survey, during the works and for a period following the completion of the works, to understand the long term effects. TBC. Monitoring to contractor's details.

8– Temporary propos to underpinning prior to construction of reinforced concrete box. To specialist Contractor's details.

9– Width of underpins assumed symmetrical with the party/boundary wall above. Underpin assumed to extend below lowest excavation.

10 – All temporary works designs and details by the Contractor.

11 – Additional tests assumed by Contractor to confirm groundwater level.



PROPOSED SEQUENCE OF BASEMENT CONSTRUCTION (Sheet 1)

128–130 GRAFTON ROAD, LONDON, NW5 4BA

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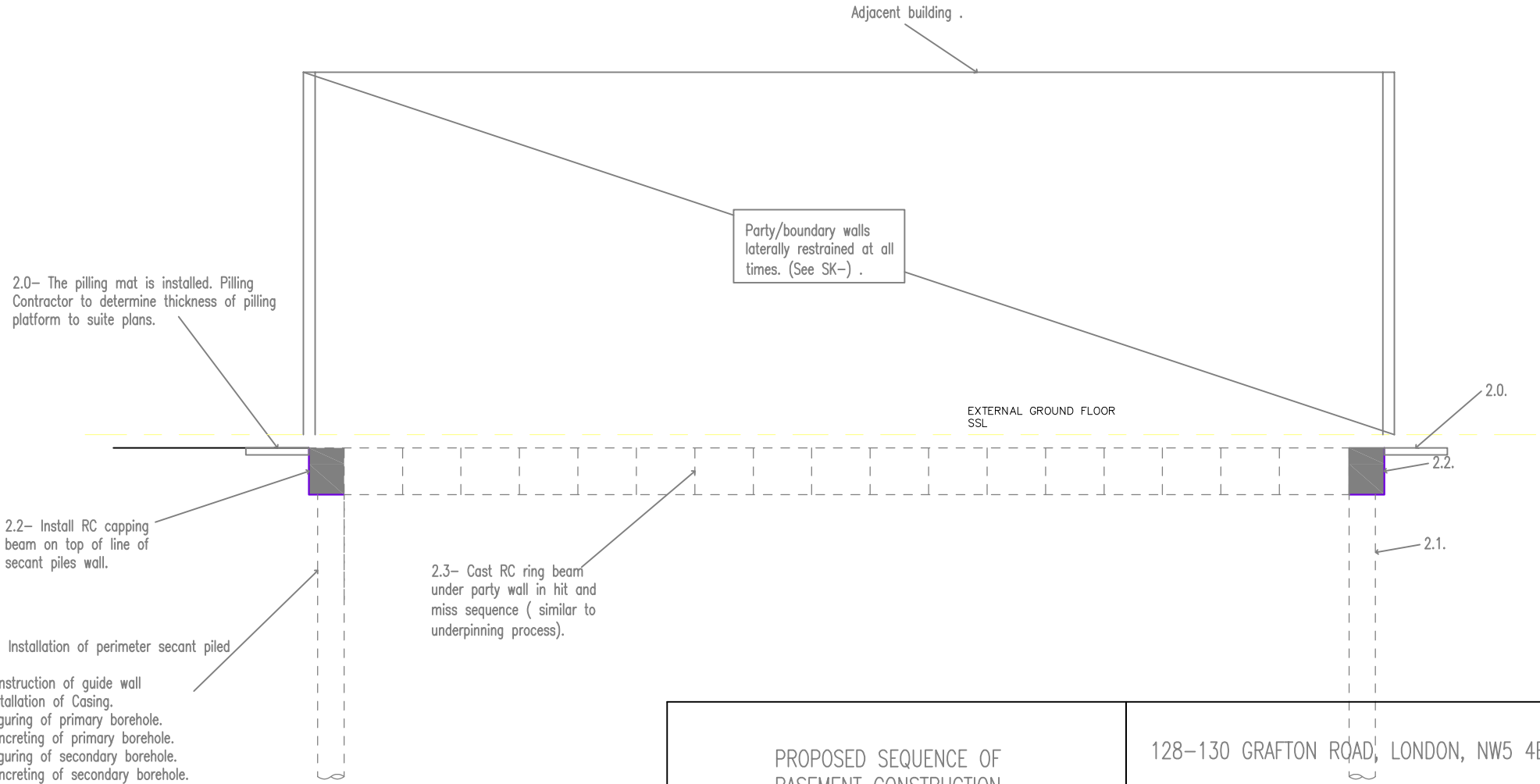
SK–2



PROPOSED SEQUENCE OF BASEMENT CONSTRUCTION (Sheet 2)

128-130 GRAFTON ROAD, LONDON, NW5 4BA

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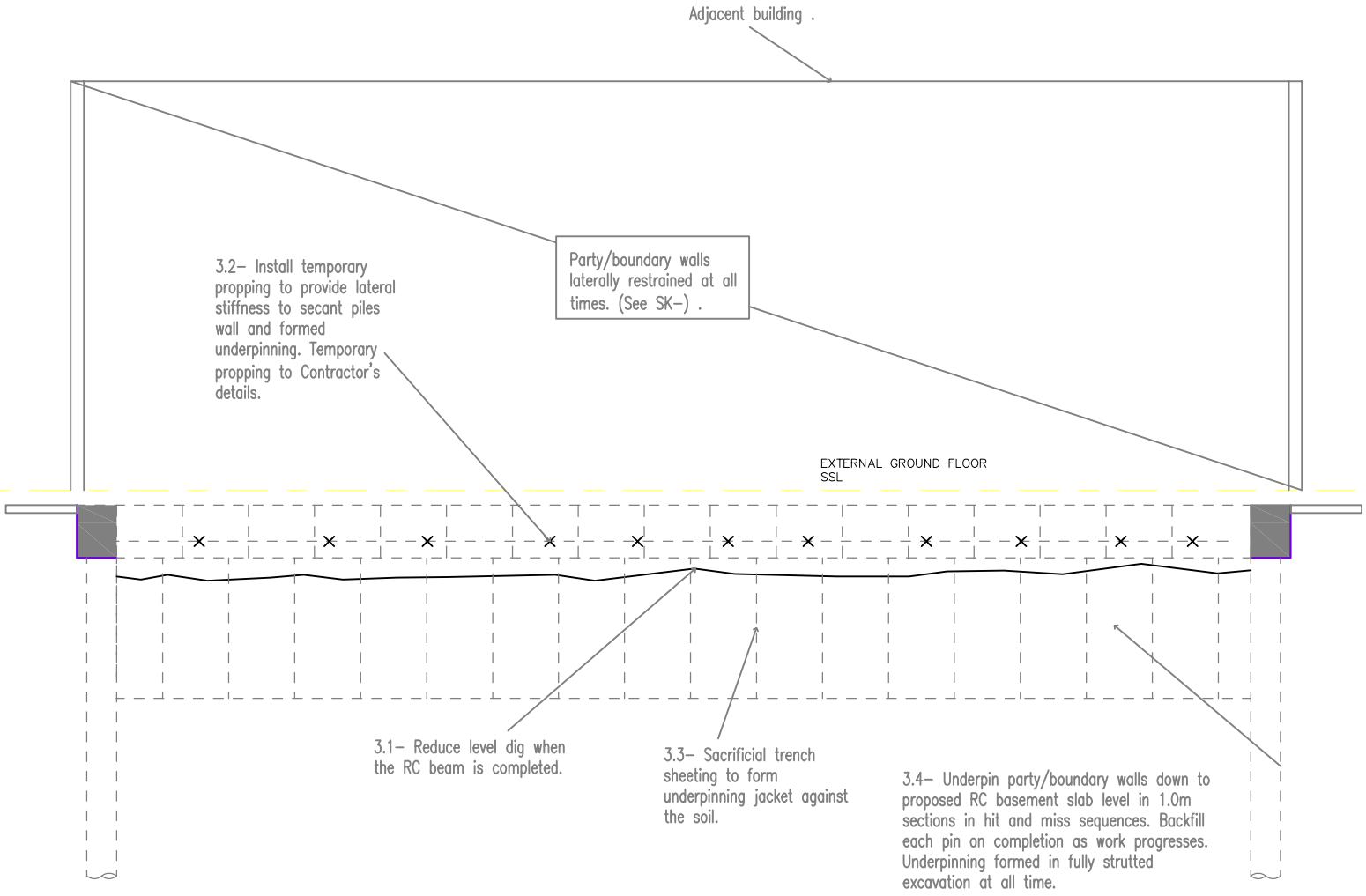
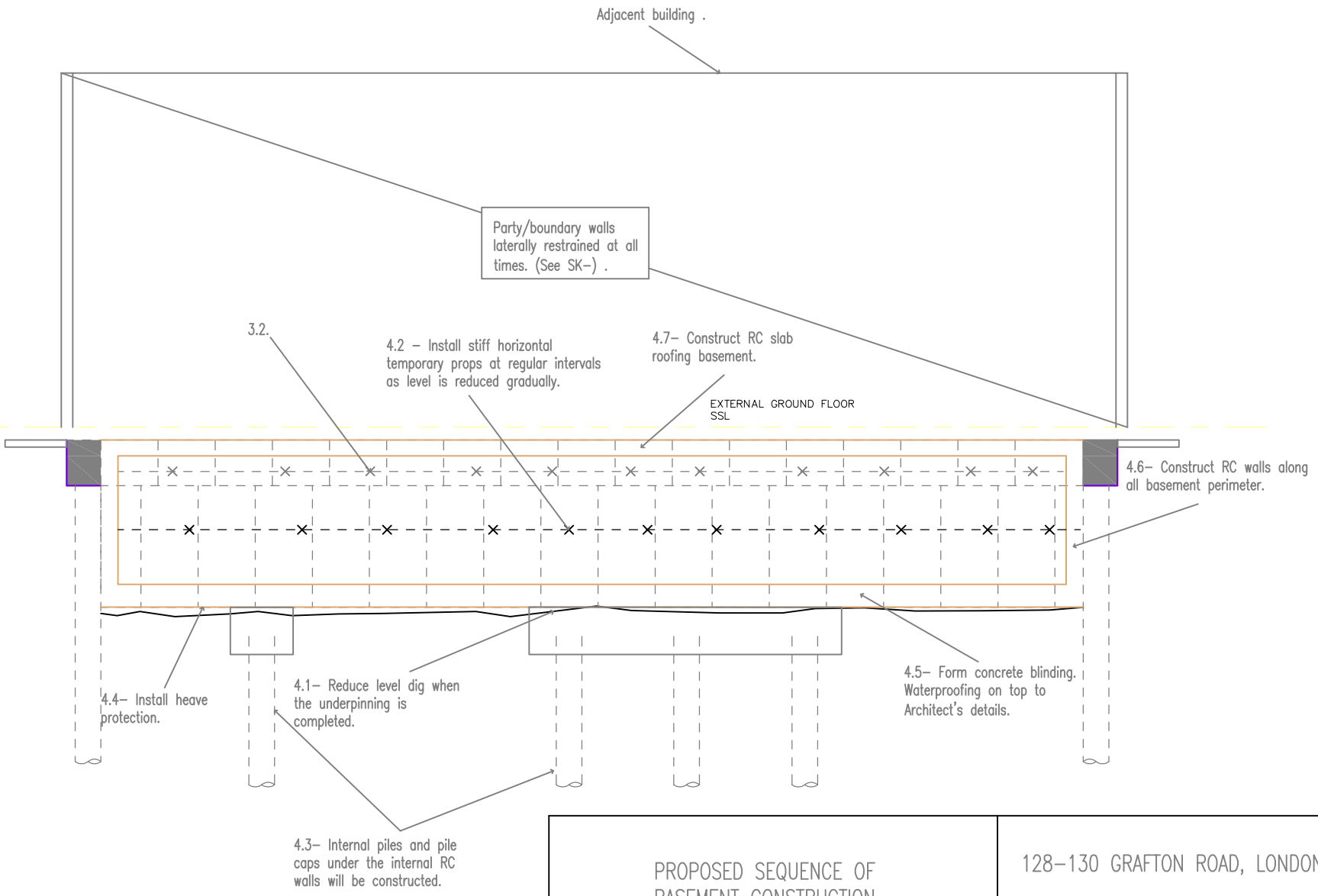
SK-3



PROPOSED SEQUENCE OF BASEMENT CONSTRUCTION (Sheet 3)	128-130 GRAFTON ROAD, LONDON, NW5 4BA 05 JUNE 2019 SK-4



PROPOSED SEQUENCE OF BASEMENT CONSTRUCTION (Sheet 4)

128-130 GRAFTON ROAD, LONDON, NW5 4BA

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SK-5