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4 Montpelier Square

LONDON, SW7 1JT

Structural engineering report and subterranean construction method statement

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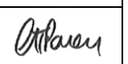
		Remarks:	Planning				
Revision:	P1	Prepared by:	Thomas Howarth MEng (Hons)	Checked by:	Gary Povey BEng CEng MIStructE	Approved by:	Gary Povey BEng CEng MIStructE
Date:	15/03/2021	Signature:		Signature:		Signature:	

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Our practice

Elliott Wood work with likeminded people to engineer a better society

Our portfolio is extraordinarily diverse, and we particularly enjoy those projects which provide the opportunity to engineer for the common good – from making dramatic improvements to the life of a town or city, through to nurturing a new generation of exceptional engineers in our own in-house academy.

Despite more than twenty years in practice, we continue to be curious and find ways to pass on the benefit of our collective experience. We foster enquiring minds and share ideas because we know that this knowledge can make a real difference to our clients.

Engineering is often about the unseen: much of what we do is hidden when a building is complete. But engineering is not a necessary evil – it's much cleverer than that. Our role is to demystify the invisible workings of a structure, to reveal unexpected opportunities and to make the existing engineering work harder.

We value both technical and creative thinking, and are activists for a new kind of engineering profession in which our craft is pivotal to the design process. We are no ordinary engineers.

We are no ordinary engineers

Elliott Wood people are activists for a new kind of engineering profession, in which our craft is re-evaluated by clients and collaborators as being pivotal to the design process. We are ambitious for ourselves, our practice and our discipline, and recognise that this paradigm shift will require a combination of both technical and creative thinking.

We help others to see the unseen

Engineering is often about the unseen: much of what we do is hidden, so part of our role as engineers is to explain and demystify this, uncovering the invisible workings of any structure. In so doing, it is also possible to reveal the hidden opportunities in a project, making the engineering work harder for our clients, materialising previously unidentified assets to make a positive impact.

Engineering is anything but routine

We aim to extend our existing reputation for reliability by demonstrating that engineering is not a necessary evil. Getting the nuts and bolts to work is a given, but our engineering is cleverer than that. Clients can't afford not to have our input, and should involve us as early as possible in the design process. By asking the right questions (of ourselves and others), we can shift conventional thinking about the engineer's place in a design team, and surprise and stimulate our clients with ideas they wouldn't necessarily have thought of.

We're still learning, after nearly twenty-five years

With decades of experience, we have considerable expertise over a huge range of building types. We remain relevant, however, because we continue to be curious. We learn something from every single project and invest time in sharing new ideas and thinking across the practice. We foster enquiring minds because we know that our collective, continually-developing knowledge can make a real difference to our clients

Reveal / Materialise / Impact

Engineers make a difference.

We like to be involved at the start of our clients' creative and commissioning journey, because we are concerned that not enough people are realising the full potential of their buildings. They are only working with what they can see.

Our process challenges usual perceptions of the engineer's role, because we help clients to see the unseen and achieve results beyond the aspirations of the brief – and which have a positive legacy for their wider communities.

Reveal

We ask questions. With innovative thinking, we reveal the unexpected opportunities in an already ambitious brief.

Materialise

We give ideas life. Using expertise and imagination, we materialise new assets for our clients.

Impact

We make a difference. Our work not only benefits our clients, it has a positive impact on society as a whole.

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WCC subterranean development (SMS) criteria checklist

	Structural methodology statement criteria	Report Section / Alternative Consultant Report	
A)	Desk study including: site history, age, site survey, geology, historic river courses and underground infrastructure, including utilities services, drains and tunnels. This should also identify other basement developments in the area, so that cumulative effects can be considered.	Section Two, 2.5, Site Investigation (S.I.)	✓
B)	Appraisal of the existing structure including: drawings of existing structure, previous alterations and any obvious defects, condition and location of the building with adjoining buildings, opening up works to investigate the existing structure	Section Three, SI, Appendix A	✓
C)	Site investigation including: trial pits to show the existing foundations and the material they are founded on, groundwater information	2.0, Section Nine, S.I.	✓
D)	Details of engineering design and how designers have addressed: ground conditions and groundwater, existing trees and infrastructure, drainage, flooding, vertical and horizontal loading. Structural general arrangement and details.	Sections Four, Five, Six, Eight, Appendix A & Error! Reference source not found.	✓
E)	An analysis of the Upper Aquifer (when it exists) and how the basement may impact on any groundwater flow.	Section Nine, SI	✓
F)	Details of flood risk, surface water flooding, critical drainage areas and how these are addressed in the design.	Section Six, Section Nine. FRA, SI	✓
G)	Assessment of movements expected and their effect on adjoining or adjacent properties. Details of how the design and construction limits damage to all buildings to a maximum of Category 2 as set out in CIRIA Report 580.	Section Ten, Section Eleven, SI	✓
H)	Details of construction sequence and temporary propping to demonstrate how the construction will prevent movements exceeding those predicted, showing how horizontal and vertical loads are supported and balanced at all stages of construction and consideration of the interaction between permanent works and temporary works.	Section Thirteen, Appendix A & Error! Reference source not found.	✓

One

Non-technical summary

1.1

Elliott Wood has worked on a number of projects in the area and is aware of both the underlying soil and groundwater; the basement has been designed with this in mind. The site-specific site investigation and flood risk assessment conclude that the basement will have no adverse effect on the local hydrogeology and the site specific investigation provides further evidence of this.

1.2

If the works noted above are properly undertaken by suitably qualified contractors, these works will pose no significant threat to the structural stability of the building or the adjoining properties. A damage risk assessment has been completed by Curtins Consulting Limited in accordance with CIRIA C580. Based on the predicted ground movements, the properties surrounding the site are not expected to suffer any damage greater than CIRIA C580 Damage Category 1.

1.3

A demolition and construction traffic management plan has been completed by Elliott Wood Partnership Ltd. This gives advice on the likely programme, vehicular access, and site set-up.

1.4

All reports have led to the same conclusion: the construction of a new basement on the site will not have any adverse effect on the property, neighbouring properties, groundwater, or slope stability. Flood risk from surface water, groundwater, sewers and artificial water bodies is considered to be low.

Two

Introduction

2.1

Elliott Wood is a firm of consulting structural engineers approximately 130 strong operating from their head office in South West London. Residential developments of all scales have been central to the workload of the practice with many in the Greater London area. In particular, Elliott Wood has been producing designs for basements to both existing and new buildings. To date, this numbers approximately 500 sites many of which have been in the City of Westminster. Our general understanding of the development of London, its geology and unique features together with direct experience on many sites puts us in a strong position to advise clients on works to their buildings and in particular the design and construction of their basement.

2.2

Elliott Wood was appointed by the Client, Fulvio Renoldi, to advise on the structural implications of the proposed refurbishment works and the addition of a basement and upper floor to the existing five storey mid-terrace residential property at 4 Montpelier Square. The following report has been prepared to help ensure that the neighbouring properties are safeguarded during the works. The report provides information in accordance with the requirements outlined in the emerging policy CM28.1 Basement Development, Supplementary Planning Document "Basement Development in Westminster" dated October 2014, and "Westminster City Council's Residential Basement Report" by Alan Baxter dated July 2013. It includes information on the site, the proposed alterations and their impact on the site, the building and adjoining buildings and provides information on how the works will be constructed.

2.3

Elliott Wood has extensive experience of projects of this type and has previously produced planning reports for other properties in the area. We also have a comprehensive understanding of the underlying ground conditions in the area, gained from the numerous basement projects we have completed in the City of Westminster, including a couple of basements on Montpelier Square.

2.4

This statement focuses on the proposed subterranean works as opposed to the superstructure works and should be read in conjunction with all relevant Architects and Specialists supporting documents.

2.5

The site-specific site investigation was completed by Site Analytical Services Ltd in January 2021 and comprised of six trial pits and a borehole to a depth of 15m.

2.6

A preliminary desk study has been completed to establish the general ground conditions and history of the building (See section 3.8 for the summary of the desk study).

Three

Description of existing building and site conditions

3.1

5 Montpelier Square is a Victorian terraced building located along the east side of Montpelier Square in Knightsbridge, London.

3.2

The site is bounded by adjoining buildings 3 Montpelier Square and 5 Montpelier Square to the north and south respectively, the public highway to the west and 32 and 33 Trevor Place to the east. The nearest major road is the A4 (Brompton Rd) located 200m to the south and east of the site. The nearest underground station is Knightsbridge Station, located 400m to the east.

3.3

The existing building is a five-storey residential building, including a lower ground floor under the main building footprint. The building is constructed with timber floors supported on assumed load bearing masonry walls and assumed steel lintels / beams. The floors appear to span front to back between the front and rear walls and are assumed to be supported at the mid-span by the spine walls. A four storey (including lower ground) closet wing with half landings is attached to the rear of the property. This includes a rooftop patio supporting a conservatory.

3.4

The overall stability is assumed to be provided by the cellular layout of the masonry walls and diaphragm action of the timber floors at each level.

3.5

Survey of London (London City Council) notes that the building was constructed between the years 1841 and 1843. The building is Grade II Listed and sits within the Knightsbridge Conservation Area.

3.6

A site investigation has been completed on the site by Site Analytical Services Ltd.. This consisted of six trial pits and a borehole to a depth of 15m. The ground investigation showed made ground to a depth of 1.1m, followed by Kempton Park River Terrace Gravel founded on London Clay. This is in line with geological records for this area. Groundwater was not encountered during the initial boring/excavation, however subsequent monitoring indicated groundwater levels at 4.05m and below ground level. The presence of water in the future could be subject to seasonal variation. During basement excavations, contractors should allow for localised pumps.

Gas screening performed by SAS indicated a CIRIA Characteristic Situation 1, which does not require gas protection measures.

3.7

A single sycamore tree (as identified on planning reports through the WCC Planning Portal) is present at the rear of 4 Montpelier Squares' garden.

An arboriculturist is to be appointed by the Architect / Client to ensure that the works do not have an adverse impact on the retained trees.

3.8

The results of our desk study can be summarised as follows;

The site does not appear to be in the vicinity of any historic rivers (reference Lost Rivers of London, Nicholas Barton).

The site is located within Flood Zone 1 as shown on the latest Environment Agency Flood Maps, which indicates that the property is at low risk from flooding (reference; www.environmentagency.gov.uk). The property is not listed in any of the City of Westminster's Surface Water Flood Risk Hotspots, as such a flood risk assessment is not required.

The Piccadilly Line is approximately 150m to the southwest of the site and therefore the works will not be affected by any London Underground infrastructure (reference, www.google.co.uk/maps).

From the Thames water asset location search it appears that there have been no incidents of flooding in the area as a result of surcharging.

There is no record of any historical bomb damage to the property (reference, The LCC London Bomb Damage Maps 1939-1945, LTS).

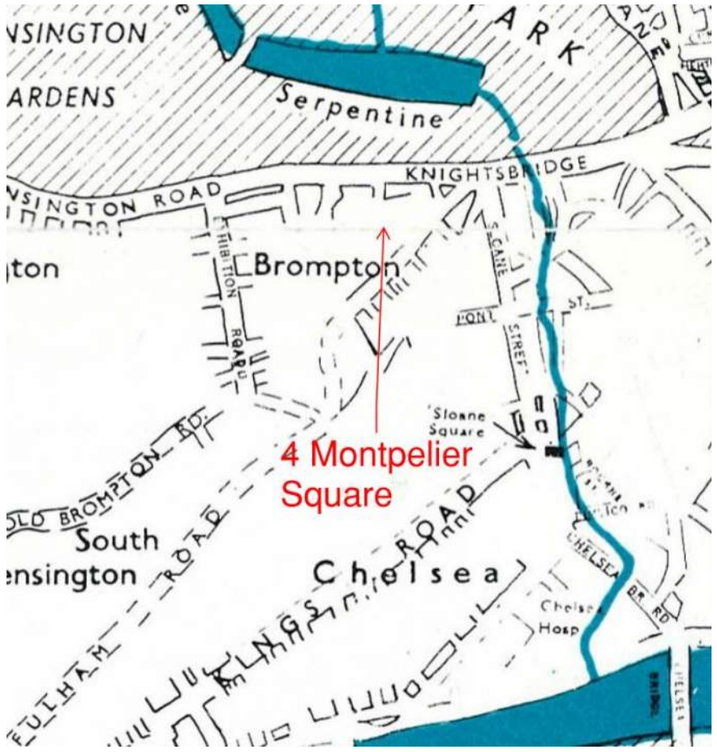

Figure 1: Lost Rivers of London Map showing 4 Montpelier Square (©1962 and 1992 by Nicholas Barton, used by kind permission of Historical Publications Ltd.)

Four

Observations

4.1

Based on the findings of the opening up works, the property appears in reasonable condition for its age and type. There is however, evidence that certain parts have not been well maintained particularly towards the rear, where there are signs of water ingress and some decay to the timber structure. There are no obvious visible signs of significant movement or settlement to either this property or the directly adjoining buildings.

Figure 2: Front façade of 4 Montpelier Square, *LBMV Architects*

Five

Proposed alterations

5.1

The current proposals are for the refurbishment / alternations, and the addition of a basement (below the existing Lower Ground Floor) and upper floor (within the roof space). The proposal includes the extension of the existing lower ground floor into the garden along with the proposed basement. The existing structural floor at lower ground is to be lowered and replaced with a metal deck with concrete slab over. The basement slab will consist of a reinforced concrete suspended slab, supported off the toes of the RC underpins and strip footings. The slab will be designed to resist hydrostatic forces and heave as well as gravitational vertical forces, such as finishes and imposed loading etc.. A new lift shaft is proposed, accessing all levels between basement and third floor.

5.2

The basement extends below the existing lower ground level. The basement slab is formed at ca. 3.5m below the existing lower ground floor level (top of slab to top of slab). The basement footprint aligns with the existing facade of the building at the front and the proposed lower ground floor at the rear.

The majority of the basement perimeter walls will be formed using reinforced concrete underpins. The cantilever RC Underpins will resist lateral loads from any soil, hydrostatic and surcharge pressures. High and low-level horizontal props will be installed to resist the lateral pressures in the temporary state.

5.3

The structural alterations within the existing main building involve removing a number of existing walls to suit the new architectural layout. New steel beams, columns and moment frames are to be provided to support the new and existing structure as well as to reinstate lateral stability to the building as a whole. The existing stairs to the lower ground level are to be removed and replaced with stairs located in the extension that extend to both the lower ground and basement levels.

5.4

Heave protection systems have been specified to provide heave protection to the basement slab.

Six

Proposed below ground drainage

6.1

It is envisaged to reuse the existing connection to the combined sewer in Montpelier Square. Drainage to ground floor and above will drain via gravity. Drainage at basement level will be pumped via a submersible package pumping station, which will include dual pumps, non-return valve and alarm.

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Seven

Basement waterproofing

7.1

The proposed basement will be designed to achieve a Grade 3 level of waterproofing protection as outlined in BS 8102:2009.

Eight

Party wall matters

8.1

The proposed development works falls within the scope of the Party Walls Act 1996. Procedures under the Act will be dealt with in full by the Employer's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary Notices under the provisions of the Act and agree on Party Wall Awards in the event of disputes. The Contractor will be required to provide the Party Wall Surveyor with appropriate drawings, method statements and other relevant information covering the works that are notable under the Act. The resolution of matters under the Act and provisions of the Party Wall Awards will protect the interests of all owners.

8.2

The designs for 4 Montpelier Square will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties. This will be verified by the Surveyors as part of the process under the Act.

Nine

Hydrogeological statement summary

9.1

Groundwater was not encountered in either the trial pits or the borehole at the time of excavation. However, after four weeks of monitoring ground water was found at 4.05m below lower ground floor level. The presence of water in the future could be subject to seasonal variation. During basement excavation contractors should allow for localised pumps.

9.2

Groundwater flooding occurs when water levels in the ground rise above surface levels. It is most likely to occur in areas underlain by permeable ground, called aquifers.

Figure 3 below is an extract from the Westminster Draft SFRA; Increased Potential for Elevated Groundwater map which indicates that the site is located inside an area of increased potential for elevated groundwater. However, no groundwater flooding incidents have been reported in the vicinity of the site. As a result, the development is deemed to be low risk of flooding from elevated groundwater.

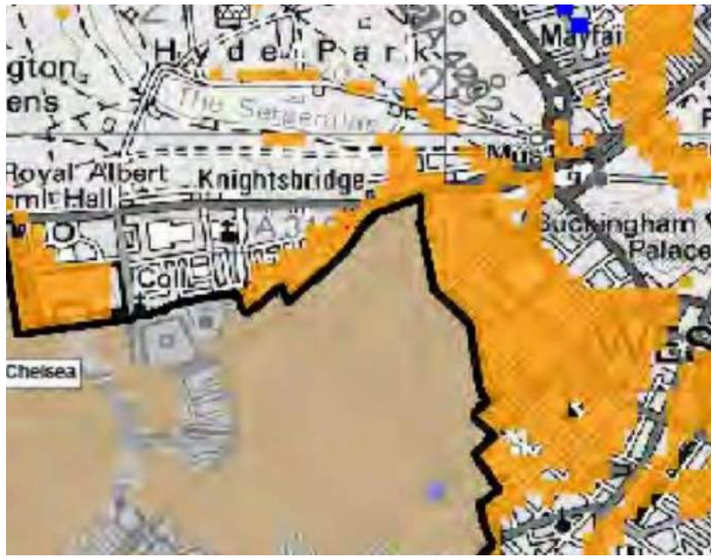

Figure 3: Areas at risk of flooding from groundwater (Draft SFRA)

9.3

A Flood Risk Assessment has been produced by Elliott Wood to demonstrate that the proposed works should not increase the risk of flooding in the area.

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Ten

Monitoring during excavation and construction

10.1

The Contractor shall provide monitoring to all structures and infrastructure adjacent to the basement excavation at the time of excavation and construction.

10.2

Monitoring shall be completed as follows:

1) One month prior to any works being started to provide a base reading.

2) On a weekly basis during the excavation and until the basement slab and lining wall has been cast.

3) On a monthly basis thereafter for a 6-month period following completion of the notifiable works.

10.3

Cumulative movement of survey points must not exceed:

a. Settlement
Code amber trigger values: +/-4mm
Code red trigger values: +/-8mm

b. Lateral displacement
Code amber trigger values: +/-4mm
Code red trigger values: +/-8mm

10.4 Movement approaching critical values:

10.4.1 Code amber trigger value:

All interested parties, including the Adjoining Owner's Surveyor and his Engineer, should be informed and further actions immediately agreed between two of the three Surveyors and implemented by the Building Owner. Notwithstanding the Party Wall requirements, the Contractor is to appoint a suitably qualified Structural Engineer who will be responsible for the reviewing of the movement monitoring results at the start and end of each day and provide immediate advice, remedial works and design as necessary in the event of movement being noted.

The Contractor is to ensure that he has 24 hour / 7 days a week access to emergency support provision including but not limited to additional temporary props, needles, waling beams and concrete supply at the start of the excavation and prior to any likelihood of this trigger value being reached. If this value is reached the Contractor, and his Engineer, provide all interested parties with his plan to implement any emergency remedial and supporting works deemed necessary. The Contractor must be ready to carry out these works without delay if the movement continues and approaches the trigger value below.

10.4.2 Code red trigger value:

All interested parties including Adjoining Owner's Surveyor and Engineer will be informed immediately. Works will stop and be made safe using methods and equipment agreed at the above stage. The Contractor is to ensure that the movement has stopped as a result of the implemented remedial works designed and installed at this stage. The requirements of the Party Wall Act will also ensure that two of the three Surveyors and their advising Engineers shall then enter into an addendum Award, setting out whether or not the Building Owner's works can re-commence and when, and if so agree on additional precautions or modifications to the proposals prior to recommencement.

Eleven

Ground movement assessment

11.1

A ground movement assessment has been completed by Curtins Consulting Limited, which takes into account both the long and short-term effects of the proposed basement.

11.2

The analysis has concluded that the proposed basement excavations should not have an unacceptable impact on this property and the adjacent properties at 3 Montpelier Square and 5 Montpelier Square in each case, these buildings are predicted to have Category 1 – Very Slight damage at worst. The above damages are within the acceptable damage levels set out in the City of Westminster subterranean development policies.

11.3

In order to mitigate the risk of Category 1 damage to the surrounding properties, the temporary works installed during the works will be designed to support the surcharge from the soil and surrounding buildings. A ground movement monitoring system will also be installed to the adjoining properties 3 Montpelier Square and 5 Montpelier Square, with trigger values set to allow the works to be controlled appropriately in the event of ground movement occurring (as outlined in section Ten).

11.4

With the implementation of these mitigation measures, any damage caused to the property and surrounding properties should be limited to Category1 at worst.

Twelve

Conclusions

12.1

It is intended that the above measures and sequence of works are adopted for the eventual design and construction of the proposed works. If the works noted above are properly undertaken by suitably qualified contractors, these works should pose no significant threat to the structural stability of the house or the adjoining properties.

12.2

Detailed method statements and calculations for the enabling and temporary works will need to be prepared by the Contractor for comment by all relevant parties including party wall surveyors and their engineers. Elliott Wood will need to ensure that adequate supervision and monitoring are provided throughout the works particularly during the excavation and demolition stages. A specification and indication of monitoring requirements is given in section Ten.

12.3

A Burland Category report and Damage Risk Assessment has been prepared by Curtins Consulting Limited which is included in the site investigation. The report concludes that, given good workmanship, the basement to 4 Montpelier Square can be constructed without imposing more than Category 1 – Very Slight damage on the adjoining properties.

12.4

To this end, Elliott Wood will have an on-going role during the works on site to monitor that the works are being carried out generally in accordance with our design and specification. This role will typically involve weekly site visits at the beginning of the project and fortnightly thereafter. A written site report is provided to the design team, Contractor and Party Wall Surveyor.

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Thirteen

Subterranean construction method statement

13.1 Construction generally

It is assumed that the above measures and assumed sequence of works are taken into account in the eventual design and construction of the proposed works.

Detailed method statements and calculations for the enabling and temporary works will need to be prepared by the Contractor for comment by all relevant parties including Party Wall Surveyors and their Engineers. Elliott Wood will need to ensure that adequate supervision and monitoring is provided throughout the works particularly during the excavation and demolition stages.

To this end, Elliott Wood will have an on-going role during the works on site to monitor that the works are being carried out generally in accordance with our design and specification. This role will typically involve weekly site visits at the beginning of the project and fortnightly thereafter. A written site report is provided to the design team, Contractor and Party Wall Surveyor.

Access onto the site will be from the front of the property and must be coordinated in a sensible manner to minimise disruption to the adjoining residents and provide a safe working environment.

Stage 1: Site set-up

- Erect a fully enclosed painted plywood site hoarding along the front boundary wall, this should not impede on the neighbouring properties.
- The services within the site should be identified and isolated as necessary. All below ground obstructions should also be removed to allow the works to progress.
- The principles for the removal of spoil shall be agreed. Given the scope of the works, it is likely that conveyors will be used to move the spoil from within the building to a holding skip located in the front garden/driveway. Grab lorries will be used to remove the material from the skip. Refer to the CTMP for detailed information on the site set-up and waste removal.
- Tree protection methods to be agreed and installed to all retained trees.
- Monitoring points should be installed to all neighbouring structures and infrastructure and a base reading should be taken prior to any construction works starting on the site.

Stage 2: Internal soft strip & demolition

- Complete soft strip of internal finishes within the building.
- Carefully demolish the existing assumed ground bearing slab and non-load bearing walls at Lower Ground Floor in a staged sequence, ensuring low level propping is installed to the base of the existing walls as demolition progresses (sequence and design TBC by the Contractor).

Stage 3: Construct Underpinning

- In a typical underpinning sequence (TBC by the Contractor), construct the maximum 1m wide L-shaped cantilever RC underpinning below the existing footings, carefully cutting off any existing corbel footing, as indicated on EWP drawings. Ensure minimum 75mm well compacted drypack is wedged between top of underpin and existing footing. The agreed sequence will ensure that the RC underpin have a minimum of 48 hours to cure, prior to the subsequent pins being constructed. Backfilling underpin trenches once underpin has cured will ensure stability is maintained in the temporary case, before moving on to adjacent underpins.
- Ensure to cast MC underpins (maximum 1m wide, in a typical underpinning sequence) under existing internal walls for temporary vertical support, to proposed formation level (to be carefully cutaway once proposed steel frame is in).

Stage 4: Bulk excavation

- Once underpins are fully constructed and cast, supporting the existing building above, reduce level dig down to approx. 1m below ground level.
- Install steel waling beams around the perimeter of the excavation (requirements TBC by Contractor and their Temporary Works Engineer).
- Install horizontal props spanning across the width of the basement between the waling beams.
- Continue excavating down to formation level installing further waling beams and horizontal propping as the excavation progresses. The levels at which propping is required is to be determined by the temporary works Engineer. The propping levels will take into account the permanent works design such that the RC slabs can be cast above/below the props whilst the props remain in place.
- To the rear garden, construct the final underpins for the proposed extended zone of the basement in a typical underpinning sequence, following the guidance stated within Stage 3.
- Reduce level dig to formation level following steps outline earlier in this Stage.
- Cast MC pad footings in locations for where vertical temporary props are required for the support of the needling works (design and requirements TBC by Contractor and their Temporary Works Engineer)
- Install needles, spreader beams and vertical props (supported off MC pad footings) and fully cross brace the props. Install any back props required.
- Once props are in, carefully (using non-percussive methods) break down MC underpins to formation level. The walls above are now supported off needles and props and MC pad footings cast.

Stage 5: Cast RC base slab

- At formation level cast blinding layer and install the below ground drainage as required.
- Install ground steel spreader beams, columns, and lower ground floor beam, which form part of the moment stability frames and encase beam buried in ground in mesh and concrete.
- Install compressible void former under areas of suspended slab (between footings).
- Install and tie together the reinforcement for the lower basement slab.
- Cast the RC basement slab. The slab will be designed to resist uplift forces from any residual overburden and hydrostatic pressures acting on the base slab.
- Once the basement slab has cured it will provide a permanent low-level prop to the basement retaining walls and hence, the lowest level of horizontal propping and waling beams can be removed.

Stage 6: Construct up to ground floor level

- The remainder of the steel frame can be installed consisting of beams and columns, up to ground floor level. The temporary props should be retained until the steel frame is fully installed as per EWP drawings. Vertical propping up to ground floor can then be removed and the walls and floors are now supported off the permanent steel work.

Stage 7: Cast ground floor slab

- Once the steel frames and beams have been installed, the metal decking can be installed and concrete can then be poured and cast over. This will provide permanent propping to the existing footings, hence the remaining horizontal propping and waling beams can be removed.

Stage 8: Construct superstructure

- Once the ground floor slab has cured, the superstructure works can commence.

Fourteen

Dust, noise and vibration

14.1

The Supplementary Planning Document “Basement Development in Westminster” states that any basement works should be completed in such a way as to ensure that “suitable measures to control the emission of dust and dirt during construction and ensure works will not generate noise audible at the site boundaries outside of permitted working hours” are in place

The construction works will involve demolition of existing ground floor slab and parts of the rear project of the property and roof structure. Alterations to the internal portion of the existing property will also take place. A more detailed sequence of the works has been given in section 13. Those most likely to be affected by noise dust and vibration will be the immediate neighbours at 3 Montpelier Square and 5 Montpelier Square There may be some impact on other residents on Montpelier Square, Montpelier Street and Trevor Place due to the related construction traffic but this should be minimal.

Below we have described the mitigation measures that are proposed to keep noise, dust and vibration to acceptable levels.

14.2 Mitigation measures for demolition of part of existing building / ground Floor Slab

The breaking out of existing structures shall be carried out by diamond saw cutting and hydraulic bursting where possible to minimise noise and vibration to the adjacent properties. All demolition and excavation work will be undertaken in a carefully controlled sequence, taking into account the requirement to minimise vibration and noise. The contractor will need to utilise non-percussive breaking techniques where practicable.

Dust suppression equipment should be used during the demolition process to ensure that any airborne dust is kept to a minimum. Where practical, concrete should also be wetted down prior to and during breakout to further inhibit airborne dust.

14.3 Mitigation measures for bulk excavation

Due to the size of the basement it is likely that some mechanical plant will be required to complete the bulk excavation. The contractor should ensure that any mechanical plant is switched off when not in use and is subject to regular maintenance checks and servicing. An electrically powered conveyor will be used as detailed above.

14.4 Mitigation measures for the construction of the concrete basement shell

The contractor should ensure that any concrete pours are completed within the permitted hours for noise generating works. The contractor should allow for a contingency period to ensure that concrete pours can be completed within these hours regardless of unforeseen circumstances such as batching plant delays and traffic congestion.

The fabrication and cutting of steelwork for the reinforced concrete underpins and slabs shall take place off site. If any rebar needs to be trimmed on site this should be completed using hydraulic or pneumatic tools instead of angle grinders.

14.5 Dust control

In order to reduce the amount of dust generated from the site, the contractor should ensure that any cutting, grinding and sawing should be completed off site where practicable. If cutting, grinding and sawing is being carried out on site, surfaces are to be wetted down prior to and during these types of work whenever possible. Any equipment used on site should be fitted with dust suppression or a dust collection facility.

The contractor will be responsible for ensuring good practice with regards to dust and should adopt regular sweeping, cleaning and washing down of the hoardings and scaffolding to ensure that the site is kept within good order. The Contractor selected will be a member of the Considerate Contractors Scheme. Contact details of the contractor who will be responsible for containing dust and emissions within the site will be displayed on the site boundary so that the local residents can contact the contractor to raise any concerns regarding noise and dust.

The building will be enclosed within suitable scaffold sheeting and any stockpiles of sand or dust-generating materials will be covered. Cement, fine aggregates, sand and other fine powders should be sealed after use.

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Appendices

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A Proposed structural layouts

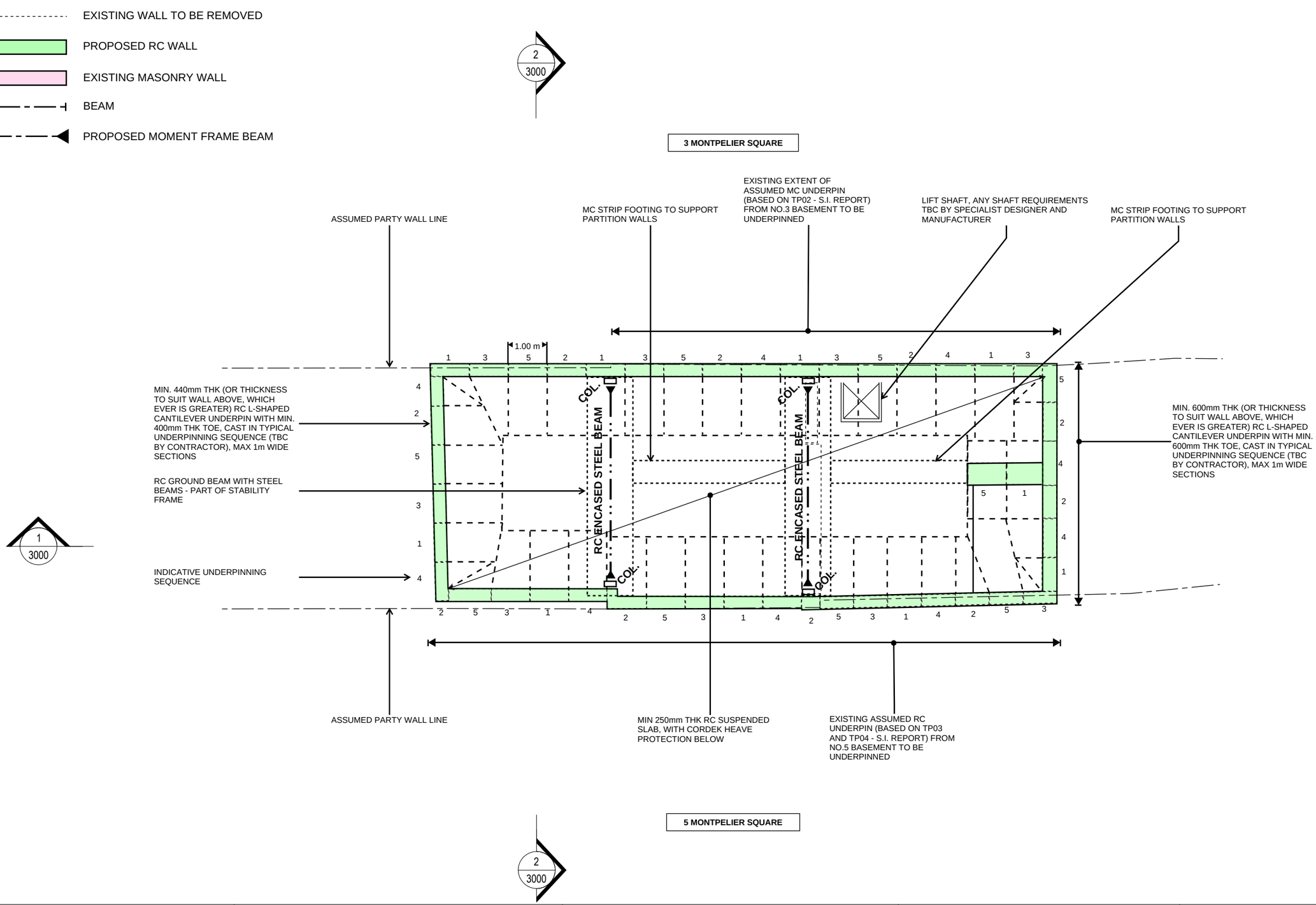
EXISTING WALL TO BE REMOVED

PROPOSED RC WALL

EXISTING MASONRY WALL

BEAM

PROPOSED MOMENT FRAME BEAM



This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

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rev	date	by	chk	description
P1	15/03/21	SAm	-	Preliminary

Drawing title
Proposed Basement Plan

Scale	Date	Drawn
1:100@ A3	March 2021	THo

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Project
4 Montpelier Square
London
SW7 1JT

Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	B2	SK	S	0800

EXISTING WALL TO BE REMOVED

PROPOSED RC WALL

EXISTING MASONRY WALL

PROPOSED BEAM

PROPOSED MOMENT FRAME BEAM

2
3000

3 MONTPELIER SQUARE

ASSUMED PARTY WALL LINE

METAL DECK WITH CONCRETE OVER MIN. 250THK

LIFT SHAFT

DENOTES FULLY TOOTHED AND BONDED MASONRY, TO MACTH EXT'G, SITE STOCK

STAIRCASE VOID

COL.

STEEL BEAM

MIN. 600mm THK RC L-SHAPED CANTILEVER UNDERPIN WITH MIN. 600mm THK TOE, CAST IN TYPICAL UNDERPINNING SEQUENCE (TBC BY CONTRACTOR), MAX 1m WIDE SECTIONS

2
4
1

RETAINING WALL TO EXTEND TO HIGHER LEVEL IN GARDEN

1
3000

1
3000

VAULTS

ASSUMED PARTY WALL LINE

EXISTING LOWER GROUND FLOOR ASSUMED GROUND BEARING SLAB CAREFULLY DEMOLISHED AND LOWERED

EXISTING MASONRY WALLS REMOVED, REPLACED BY STEEL MOMENT FRAME TO MAINTAIN STABILTY

STEEL ANGLES TO PERIMETER RESIN ANCHORED TO PROVIDE SIDE / EDGE SUPPORT TO FLOOR STRUCTURE - METAL DECK

STRUCTURAL GLASS LIGHTWELL

5 MONTPELIER SQUARE

2
3000

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Do not scale from this drawing.

rev	date	by	chk	description
P1	15/03/21	SAm	-	Preliminary

Drawing title

Proposed Lower Ground Plan

Scale	Date	Drawn
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Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	B1	SK	S	0900

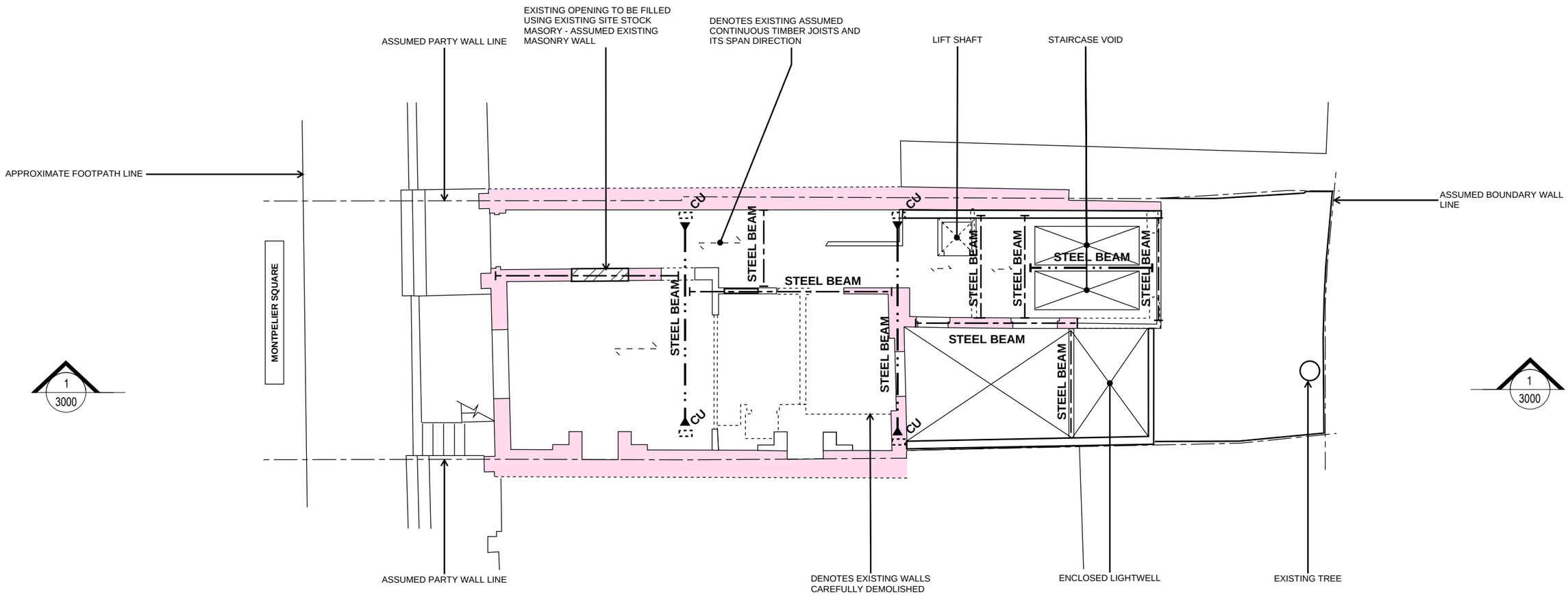
EXISTING WALL TO BE REMOVED

PROPOSED RC WALL

EXISTING MASONRY WALL

PROPOSED BEAM

PROPOSED MOMENT FRAME BEAM



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rev	date	by	chk	description
P1	15/03/21	SAm	-	Preliminary

Drawing title
Proposed Ground Floor Plan

Scale	Date	Drawn
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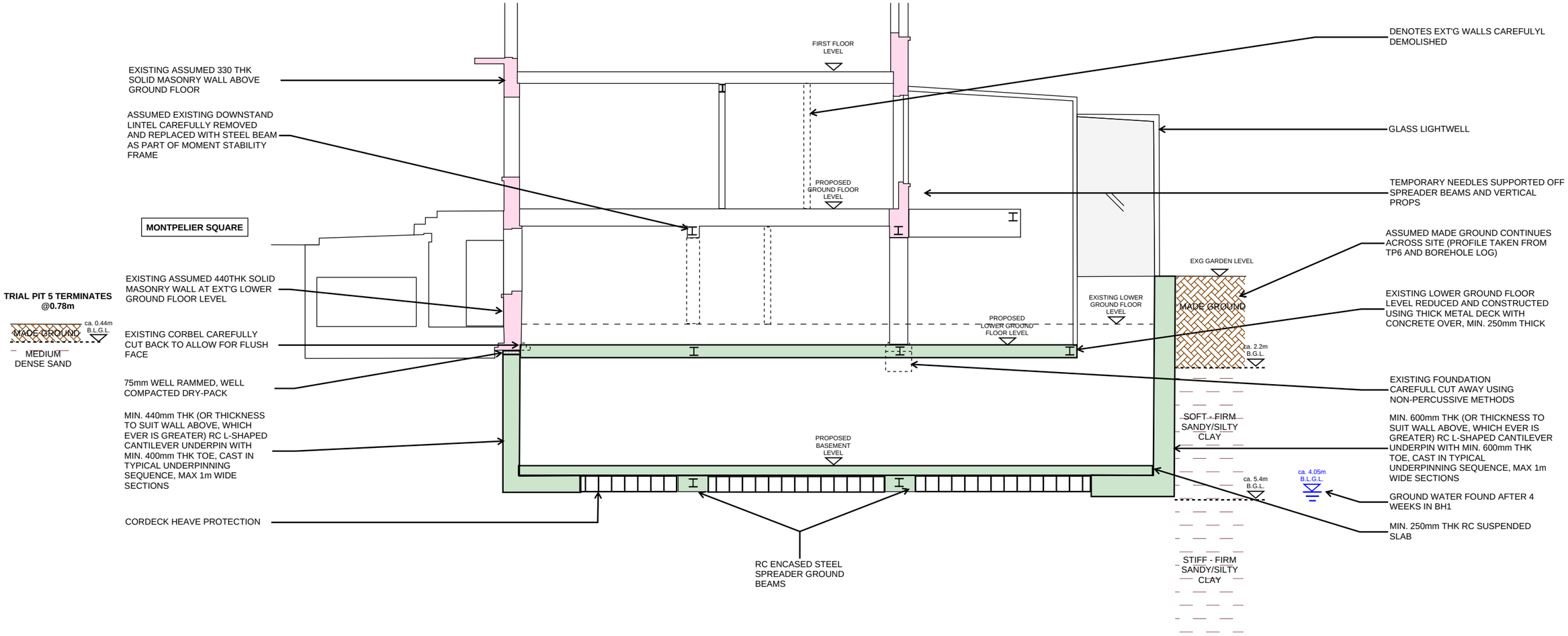
Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	00	SK	S	1000



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P1	15/03/21	SAm	-	Preliminary

Drawing title
Proposed Section 1

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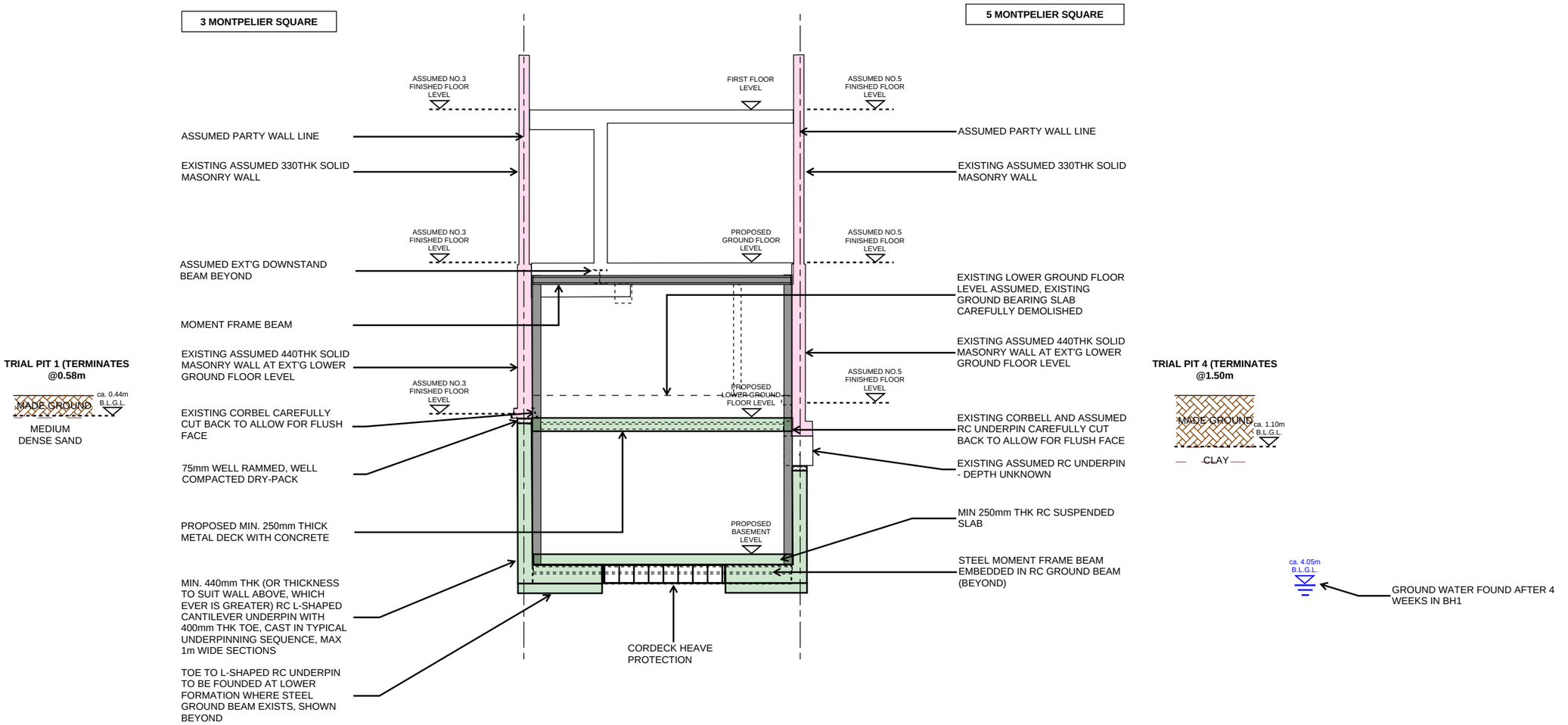
Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	SE	SK	S	2000



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P1	15/03/21	SAm	-	Preliminary

Drawing title
Proposed Section 2

Scale	Date	Drawn
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Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	SE	SK	S	2100

EXISTING WALL TO BE REMOVED

PROPOSED RC WALL

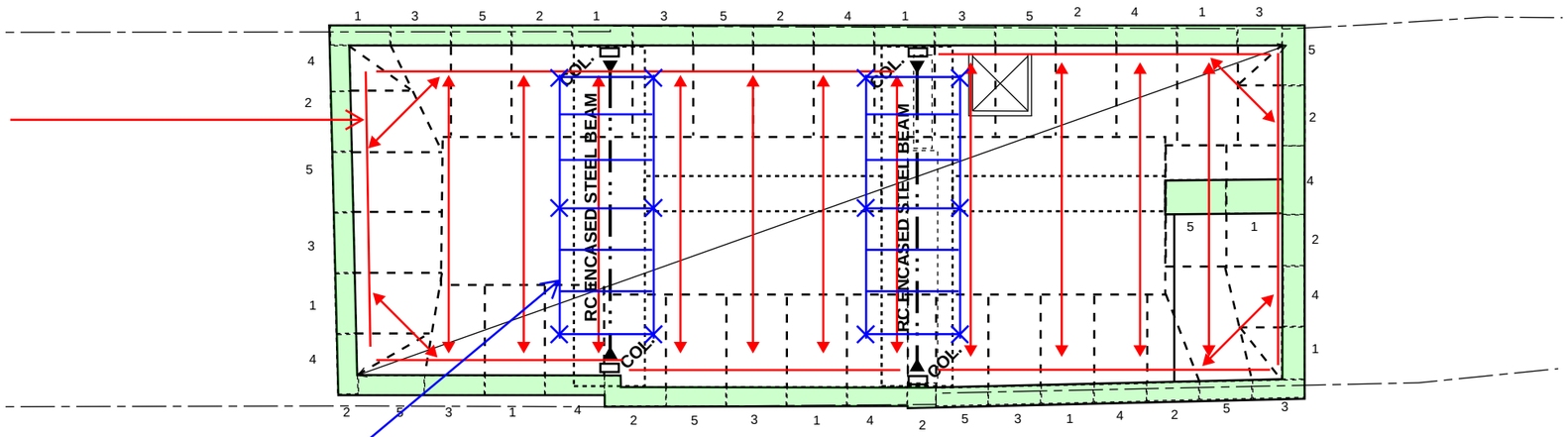
EXISTING MASONRY WALL

BEAM

PROPOSED MOMENT FRAME BEAM

2
3000

3 MONTPELIER SQUARE



DENOTES PROPS AND WALING BEAMS

DENOTES PROPS, SPREADER BEAMS AND NEEDLES (FULLY BRACED)

1
3000

1
3000

5 MONTPELIER SQUARE

2
3000

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rev	date	by	chk	description
P1	15/03/21	SAm	-	Preliminary

Drawing title

Proposed Basement Plan - Typical Propping / Sequencing

Scale	Date	Drawn
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Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	B2	SK	S	0801

EXISTING WALL TO BE REMOVED

PROPOSED RC WALL

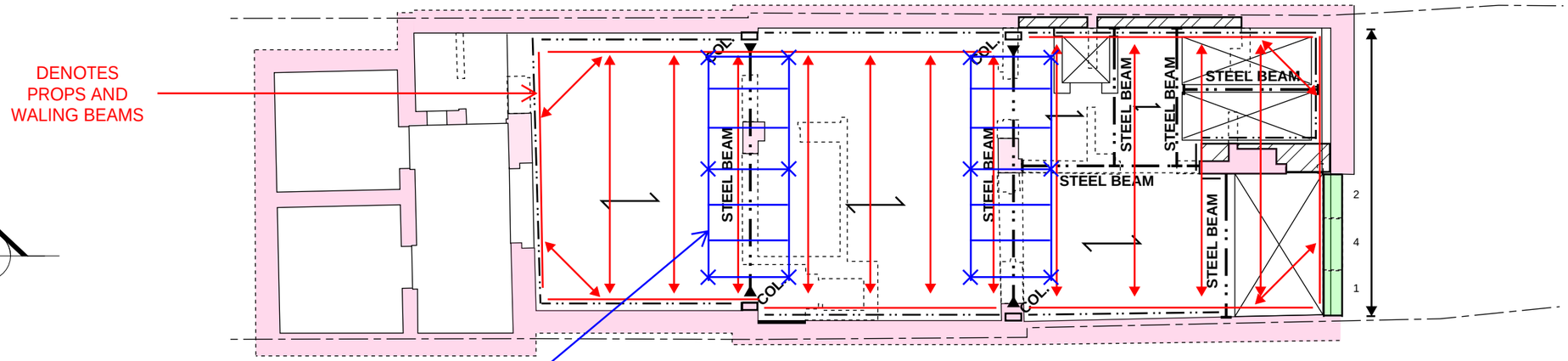
EXISTING MASONRY WALL

PROPOSED BEAM

PROPOSED MOMENT FRAME BEAM

2
3000

3 MONTPELIER SQUARE



DENOTES PROPS AND WALING BEAMS

DENOTES PROPS, SPREADER BEAMS AND NEEDLES (FULLY BRACED)

1
3000

1
3000

5 MONTPELIER SQUARE

2
3000

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rev	date	by	chk	description
P1	15/03/21	SAm	-	Preliminary

Drawing title

Proposed Lower Ground Plan - Typical Propping / Sequencing

Scale	Date	Drawn
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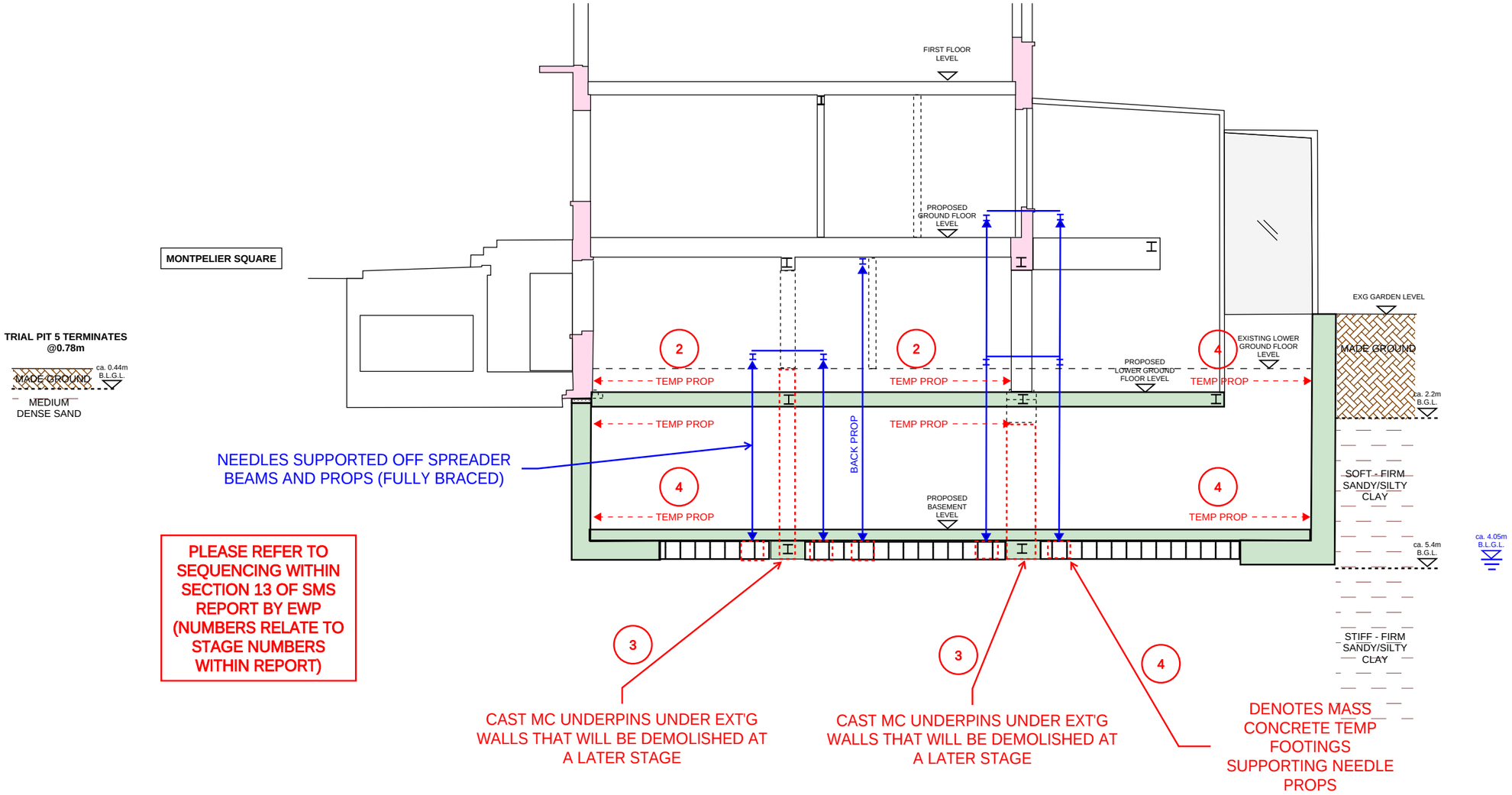
Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	B1	SK	S	0901



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P1	15/03/21	SAm	-	Preliminary

Drawing title
Proposed Section 1 - Typical Propping / Sequencing

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Drawing status	Status	Revision
Preliminary	S2	P1

Project no.	Originator	Zone	Level	Type	Role	drg no.
2190560	EWP	ZZ	SE	SK	S	2001

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