

4 TAVISTOCK PLACE, LONDON, WC1

STRUCTURAL ENGINEER'S CONSTRUCTION METHOD STATEMENT

Job No: 142264

Date: 20th September 2016

Prepared by Chartered Engineer: Andy Ilsley C.Eng. M.I.Struct.E

Revision: P5



Residential



Commercial



Conservation



Retail



Education



Art



Hotels



Period

Preamble

This report has been prepared by Form Structural Design Ltd on the instructions of the project architects, Marek Wojciechowski Architects, acting on behalf of the client GFZ Investments and is for the sole use and benefit of the client. It has been prepared as a supporting document to the planning application for the redevelopment of the property at 4 Tavistock Place. The proposals involve extending the existing lower ground floor level back in to the rear garden area which will be lowered throughout to provide level access to the external area. This report presents an outline structural scheme for the construction of the new subterranean structure.

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ABOUT FORM SD

Form has undertaken over 300 projects involving subterranean development, both new build and retrospective, using numerous techniques and sequences of construction. This extensive design, site and local geology/hydrology experience has positioned the practice as one of London's leading subterranean engineering design consultants.

Many of our subterranean projects are in the London Boroughs of Camden, Westminster, and RBKC, making us familiar with the most recent requirements of subterranean development.

Form has designed multi-level basements using techniques including open dig, underpinning (mass and 'L' shaped R.C. special foundations), temporary and permanent steel sheet piling, temporary and permanent concrete piled retaining walls, top down construction and tunnelling.

TERMS OF REFERENCE

We were appointed by the client GFZ Investments to prepare a supporting Structural Design Statement in support of a Planning Submission for new development at 4 Tavistock Place, London, WC1H 9RA.

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1.0 Site Information

Site Location, History, and the Existing Building

The site is located just off the south east corner of Tavistock Square and it is within the Bloomsbury Conservation Area. The property has a split level arrangement with 6 floors at the front of the property at levels set to align with original façade. At the rear of the property there is an additional level between lower ground floor and third floor which both align.

A desktop study has confirmed that there are no tube tunnels within the vicinity of the site and therefore it not be necessary to advise London Underground asset protection department to check alignments as agreed works will not affect any existing tunnels or access shafts.



Figure 1: Site Location Plan and Aerial View

The original terrace was demolished in the 1970's. It is not clear why it was demolished but a historic image confirms that at the time the terrace was used a single hotel. It is likely that the building fell in to a state of disrepair that there was no merit in retaining the existing fabric.

The existing terrace that extends from 2 – 14 Tavistock Place was rebuilt in its entirety in 1975 with a facsimile façade. It was Grade II listed the following year although nothing beyond the façade has any historical merit whatsoever. Figure 2 opposite illustrates some of archive drawings associated with the reconstruction.

During our visual inspection it was observed that the existing structure is constructed as a reinforced concrete frame. Subsequently intrusive opening up works area were then undertaken throughout the building to confirm the arrangement of the existing RC structure at all levels. Our findings are recorded and described on the Form existing structure drawings within our structural drawing package. (Refer to Appendix A of this report).

- Both the party walls are solid RC walls.
- Internally the lift shaft walls are also a structural RC element.
- The RC floor slabs span from side to side and take support from the lift shaft walls.
- The central spine wall is also a load-bearing RC element which supports the floor slabs and allows for the level changes between the front and the back of the building on all the lower levels.

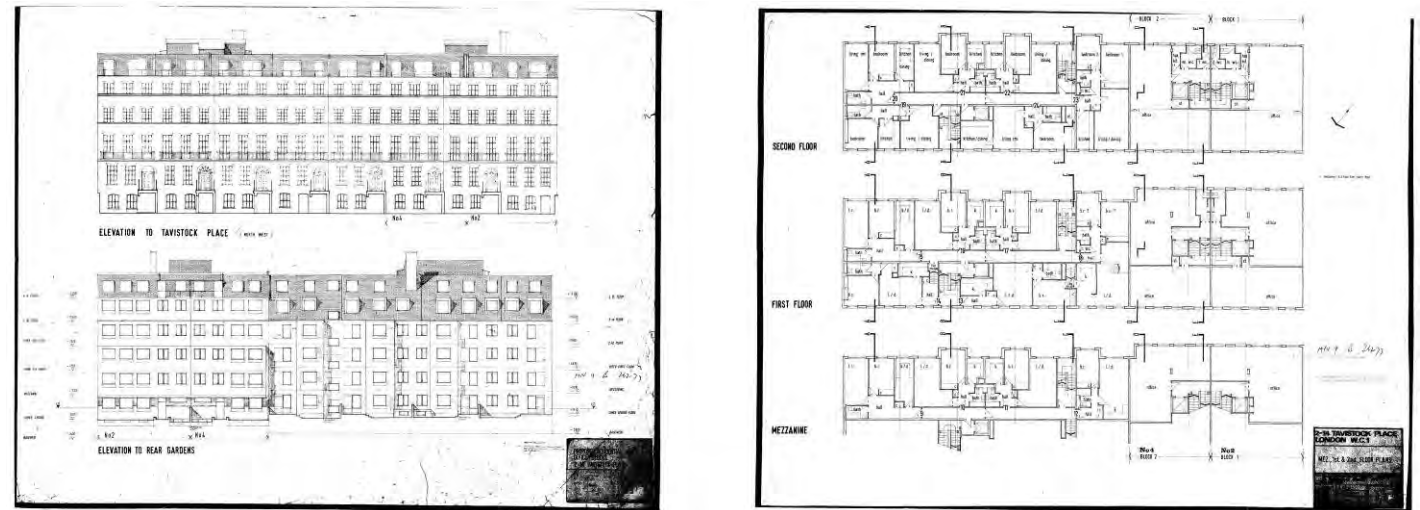


Figure 2: Examples of Historic Plans

Ground Conditions/Geology

According to British Geological Survey (BGS) map sheet 2563 the site is underlain by the Lynch Hill Gravel Member over the London Clay Formation. The nearest borehole log (70.0m west) reports Made Ground to a depth of 0.2m, Lynch Hill Gravel to a depth of 3.2m and London Clay to a depth of 16.6m.

Aviron Associates Ltd were instructed to undertake a site investigation to confirm the ground conditions and ground water levels. The conditions encountered were as expected and can be summarised as follows, for full details refer to the Aviron report within Appendix D.

The proposed basement will be founded on the gravel strata, which will provide a good bearing material and unlike London Clay is not susceptible to shrinkage or swelling. The conditions encountered are considered favourable for the excavation proposed for the extension of the basement. The construction techniques described on the following pages are common, and well established in the industry.

| Description of Strata | Depth (From Lower Ground Floor) |
|---|---------------------------------|
| Made Ground Concrete, crushed bricked, re-worked sandy, gravelly Clay | 0.0m – 0.95m |
| Lynch Hill Gravel Very Gravelly Sand, becoming very sandy Gravel | 0.95m – 2.50m |
| London Clay Sandy Clay (Confirmed with dynamic probe) | 2.50m – 6.05m |

Shallow groundwater was encountered at a depth of 1.75m BGL within the Lynch Hill Gravel Member resting above the top of the impermeable London Clay Formation. This concurs with CGL's previous experience in the area and is at a level almost equal to the proposed formation level. It is recommended that further monitoring of the site ground water level is undertaken prior to construction to establish whether any dewatering will be required during excavations.

1.0 Site Information

Boundary Conditions

The site is situated on the southern side of Tavistock Place within the rebuilt terrace. It is adjoined by Number 2 Tavistock Place to the west and Number 6 Tavistock Place to the east.

North (Front) Boundary

- The northern boundary along the front of the site is with Tavistock Place. This boundary is not impacted by the proposed works which are all to the rear of the site.

South (Rear) Boundary

- Along the rear of the site a masonry wall at the back of the garden forms the southern site boundary with the parking bays serving Thackeray House.
- The wall is approximately 3.5m high. It is freestanding, and it runs the length of the adjoining boundaries also.
- Refer to pictures 2, 3, 4, and 5 opposite.

East Boundary

- Internally the eastern boundary with Number 6 Tavistock Place is formed by an RC wall. The trial pits confirmed that the lower ground floor slab extends over a mass concrete strip footing approximately 1.5m wide and 600mm deep. It is not proposed to either interfere or undermine these foundations.
- The external area to the rear of Number 6 has not been lowered so there is no level change across the boundary which is formed by a wooden fence sat in front of a masonry wall approximately 2.0m high.
- Refer to pictures 1 and 6 opposite.

West Boundary

- Internally the eastern boundary with Number 2 Tavistock Place is formed by an RC wall. To avoid unnecessary noise and vibration a trial pit was not undertaken along this boundary however it is assumed that the wall is founded on a mass concrete strip footing exactly as the internal eastern boundary. Richard Jackson the Structural Engineer for the recent refurbishment at Number 2 was able to confirm this assumption.
- The external area to the rear of Number 2 has been lowered from the original level to the lower ground floor level in exactly the same manner that we are proposing. This was achieved with a reinforced L shaped underpinning designed to retain the earth (on our site) behind. Details of the underpinning are confirmed on the EDA drawing within Appendix C of this report.
- Refer to pictures 4, and 5 opposite which show the fence positioned above the underpinning.



Figure 3: Photographs Indicating the Rear Boundary Conditions

2.0 Development Proposals

Subterranean Construction

The proposals involve extending the existing lower ground floor level back in to the rear garden area which will be lowered throughout to provide level access to the external area. The structural proposals are described on the drawings contained within Appendix A of this report. They have been developed by Form SD in conjunction with the architects to address the specific site constraints and characteristics including:

- The ground conditions
- The support to the proposed structures above
- The stability of the neighbouring boundary retaining walls
- Health and Safety considerations
- The physical site constraints

Retaining Boundary Structures

To construct the lowered external area to the rear different structural solutions have been identified for the design and construction of the retaining walls along each boundary. These solutions are described below and described in detail on the structural drawings.

The Western Boundary – Mass Concrete Underpinning

As it is proposed to excavate to a level slightly below the current level at Number 2 it will be necessary to install underpinning beneath the existing underpinning that was installed to retain the earth on our site.

These underpins will extend up from a level below our proposed formation level to the underside of the existing underpins. As the depth of these underpins is less than 1.0m the lateral earth loading will be limited and therefore it is possible to provide unreinforced simple mass concrete underpins that are restrained from sliding and overturning by a combination of the new lower ground floor slab and the vertical load from the structure above..

All underpinning will be carried out following a fixed hit and miss sequence agreed beforehand and designed to consider all the necessary propping to the underside of the wall and the shoring of the excavations that will be required in the temporary condition.

The works will be carried out by an experienced groundworker to best practice and in accordance with the Form SD drawings. On this basis we would not expect significant movements and the structures above will therefore remain stable and unaffected by the works. A contractor's method statement will be required at this stage for comment by the engineer and party wall surveyors.

The Eastern Boundary – RC Retaining Wall

As it is proposed to excavate a to a full storey height below the current level at Number 6 (which unlike Number 2 has not been previously lowered) it will be necessary to install underpinning beneath the existing masonry boundary wall. The underpinning will be installed in a sequential manner exactly as the underpinning along the western boundary. The underpinning is designed to take the load of the retained masonry wall above and all lateral loading from the retained earth behind.

Construction of the underpinning will be in short sections carried out in a fixed hit and miss sequence agreed beforehand. In the temporary condition shoring to the excavation will ensure that stability is maintained. In the permanent condition the RC underpins are designed to act as a cantilever to ensure minimal deflection at the head. The connection to the new lower ground floor slab will act to prevent sliding.

The Northern Boundary – Inset RC Retaining Wall

Rather than install underpinning beneath the existing boundary wall foundation it is proposed to construct an RC retaining wall in the same manner as described for the eastern boundary. This wall will also be installed in a sequential manner in short sections in the same manner as the underpinning. The wall is designed to take all lateral loading from the retained earth behind and a surcharge due to the weight of the boundary wall.

Construction of the wall will be in short sections carried out in a fixed hit and miss sequence agreed beforehand. In the temporary condition shoring to the excavation will ensure that stability is maintained and there is no movement to the boundary wall foundation. In the permanent condition the RC wall is designed to act as a cantilever to ensure minimal deflection when connected to the new lower ground floor slab which also acts to prevent sliding.

Temporary Works

The previous sections describe the methods for the construction of the basement and the associated temporary works required to maintain the stability of the excavation and the adjacent properties.

The temporary works will be designed by a specialist. No works on site requiring the installation of any temporary works will commence on site without all the necessary drawings, calculations, and method statements in place which will require approval from the Structural Engineer. The envisaged construction sequence including the installation and removal of all temporary works is outlined on the Outline Construction Sequence drawings contained within Appendix A of this report.

Potential Ground Movement

The underpinning and retaining wall installation described in the previous section may cause localised movement to the earth adjacent along the boundaries.

Internally it is not proposed to excavate beneath the existing lower ground floor strip foundations level and therefore the risk of earth movement will be limited to the rear boundary wall only. This is expected to be minimal and movement will be suppressed by the stiffness of the wall above. Furthermore from experience this can be mitigated by appointing a suitably experience Contractor familiar with propping techniques and sequential operations.

Card Geotechnics Ltd have completed a Basement Impact Assessment and supplementary letter report, in which they expect that should any damage occur to the wall it will be limited to Category 0 (Negligible; hairline cracks of less than 0.1mm) based on the Boscardin and Cording / Burland and Potts Building Damage Classification Table found within Appendix B of this report. Refer to Appendix E for GCL's BIA.

3.0 Site Management

This section of the report has been produced at planning stage and before the main contractor has been fully appointed. It sets out the systems and procedures that the Contractor will utilise in controlling the construction operations on site, to ensure progress of the project in the most safe and efficient manner possible and to minimise impacts on the local environment and surrounding amenity.

Tendering contractors will be made aware of the contents below (alongside any planning conditions). Once planning permission is granted, the appointed contractor will be responsible for the submission of a Construction Traffic Management Plan prior to commencement of development.

Excavation of Soil

The soil will be excavated and removed using micro excavators and a conveyor system running to street level. Refer to the Marek Wojciechowski Architects; Construction Management Plan for further details.

Prior to works commencing, all neighbouring occupiers will be consulted to ensure that the construction process results in minimal disruption/disturbance. In particular, all reasonable endeavours will be made to organise vehicle arrivals/departures to avoid peak usage for neighbours i.e. early mornings, and early evenings.

The street adjacent to the Tavistock Place will remain open to the public throughout. It will be cleaned each evening and the frequency of vehicle movement will be confirmed by the chosen contractor and approved by the council before works commence.

Prior to the commencement of the works the specialist ground works contractor will provide detailed method statements for all aspects of the construction for approval by the engineer. These statements will address:

- All the site specific procedures described in the previous sections to necessary to minimises any noise and vibration that may affect the neighbouring properties.
- Construction requirements for temporary propping, movement monitoring, and waste disposal.

Throughout the duration of the works the engineer will also make site visits at regular intervals to ensure that construction is being progressed safely and in accordance with the agreed methods and design information.

Rubbish Removal and Recycling

An important part of the site management process involves site cleansing, rubbish removal and recycling.

To reduce and manage site waste:

- We will ensure that all material removed from site is taken to waste recycling stations and separated for recycling where possible. Records of the waste recycling will be provided by the recycling stations.
- Segregate waste types to facilitate recycling activities.
- Ensuring that all Duty of Care and other legal requirements are complied with during the disposal of wastes.
- Consulting with suppliers to determine correct / appropriate disposal routes for waste products and containers.
- It will be the responsibility of each contractor to keep the site area under his control safe from build-up of rubbish.

Local Environmental Considerations

The contractor will join the Considerate Contractors scheme.

Construction operations are likely to have impact on residential amenity on a day to day basis, it is our intention to minimise the impact that the construction process could cause to the Local Environment and the neighbouring community. All care will be taken not to cause the primary environmental nuisances, noise and dust pollution. Below are actions that will be carried out to abate these problems.

Reduction in noise disruption will be achieved by:

- Coordinated delivery times to avoid peak traffic times.
- Ensuring all plant has sound reduction measures (mufflers, baffles or silencers)
- Strict adherence to the site working hours.

Reduction in dust pollution and other airborne debris will be achieved by:

- Ensure that all materials transported to and from site are in enclosed containers or fully sheeted.
- During dry periods the works are to be damped down to control the generation of dust.
- Ensuring materials have a minimum of packaging.
- Ensuring all polystyrene and similar lightweight materials are weighted down
- Making sure all dust generating materials are adequately packaged.

In addition to the above provisions the following measures will be taken to reduce any further negative effects on the environment:

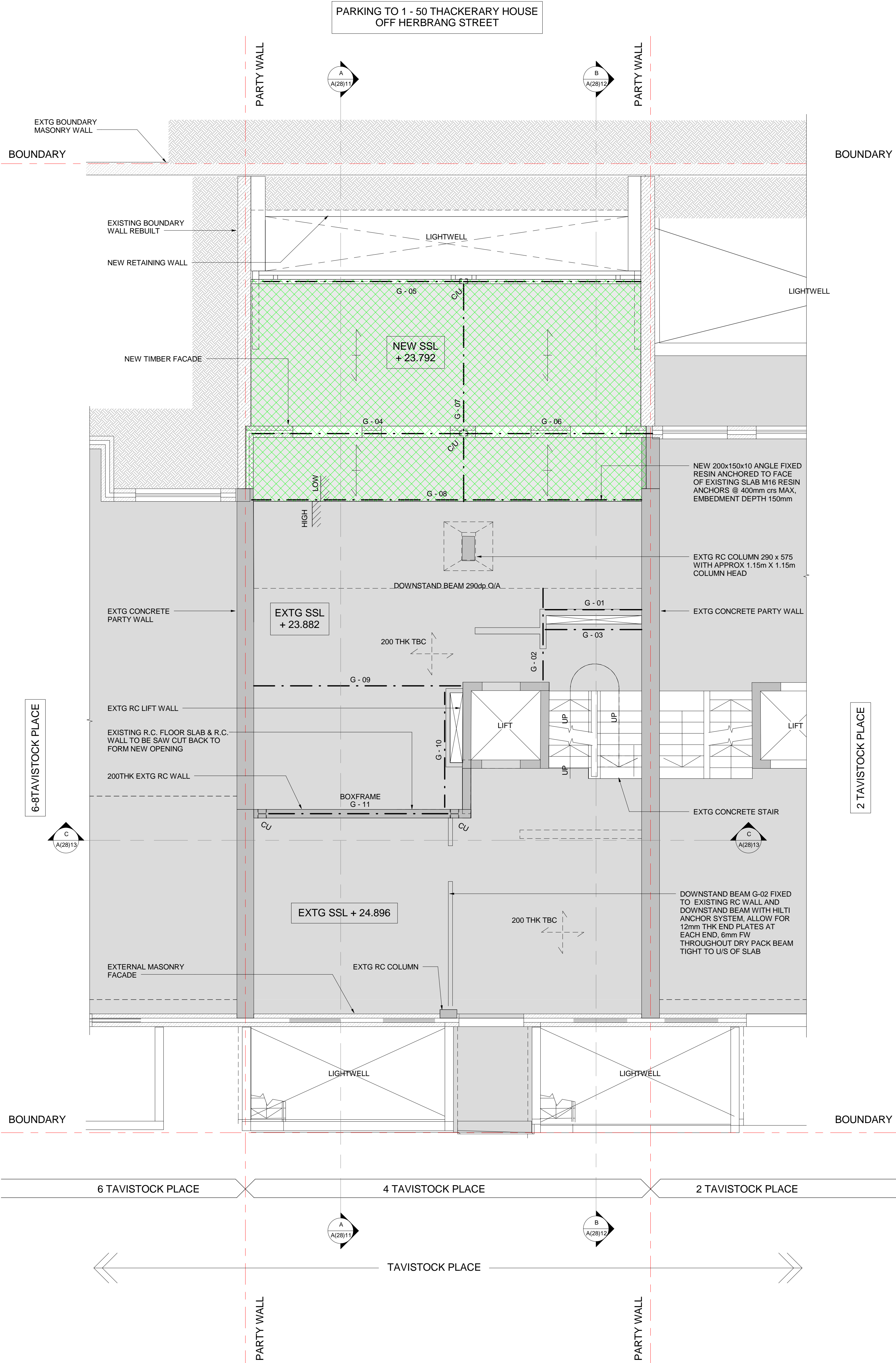
- Ensuring all contaminants kept on site are safely stored with the necessary procedures put in place for leaks and spillages etc.
- All temporary lighting, whether for the construction itself or for construction traffic, will be directional to ensure minimal light spillage across the site. The lighting will only be used as necessary during operational working hours.

Environmental issues must be treated seriously and must demonstrate good management practices are implemented to minimise the effects of noise and dust on the environment and local community.

Appendix A

Preliminary Form Structural Drawings

| Document No. | Title | Revision |
|----------------|---------------------------------------|----------|
| 142264 L(00)11 | Existing Lower Ground Floor Plan | P5 |
| 142264 L(00)12 | Existing Ground Floor Plan | P5 |
| | | |
| 142264 L(23)11 | Proposed Lower Ground Floor Plan | P7 |
| 142264 L(23)12 | Proposed Ground Floor Plan | P6 |
| | | |
| 142264 A(23)11 | Boundary Wall Sections 01 and 02 | P3 |
| 142264 A(23)12 | Boundary Wall Sections 01 and 02 | P2 |
| 142264 A(23)13 | Boundary Wall Sections 01 and 02 | P2 |
| 142264 A(23)14 | Boundary Wall Sections 01 and 02 | P3 |
| | | |
| 142264 TW01 | Outline Construction Sequence Sheet 1 | P1 |
| 142264 TW02 | Outline Construction Sequence Sheet 2 | P1 |



PROPOSED GROUND FLOOR

SCALE - 1 : 50

CUTTING CONCRETE NOTE:

IN ALL LOCATIONS WHERE EXISTING CONCRETE IS TO BE CUT, CONTRACTOR TO ALLOW FOR CONCRETE REPAIRS INCLUDING BONDING AGENT AND REPAIR MORTAR

| Notes | |
|---|--|
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| THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES ENGINEERS AND ENGINEERS DRAWINGS AND SPECIFICATIONS. | |
| KEY (EXISTING STRUCTURE) | |
| WALL TYPES | |
| | NON-LOAD BEARING MASONRY FACADE |
| | RC COLUMN / WALL (ALL WALLS 200mm THK U.N.O.) |
| | RC LOAD BEARING COLUMN / WALL UNDER |
| LEGEND | |
| | ASSUMED 2 WAY SPANNING RC FLAT SLAB (THICKNESS AS INDICATED ON PLAN) |

| KEY (PROPOSED GROUND FLOOR STRUCTURE) | |
|---------------------------------------|--|
| | NEW FLOOR |
| | NEW BEAM UNDER. |
| | DENOTES SPAN OF NEW 50x225 C24 TIMBER JOISTS AT 400c/c U.N.O. |
| | DENOTES SPAN OF NEW 200 THK RC SLAB OVER COMFLOR 80 METAL DECK |
| CU | COLUMN UNDER |

| STRUCTURAL BEAM SCHEDULE GROUND FLOOR | | |
|---------------------------------------|------------------|--------------------|
| Mark | SIZE | Comments |
| G - 01 | UC203x203x60 TBC | DOWNSTAND BEAM TBC |
| G - 02 | UC203x203x60 TBC | DOWNSTAND BEAM TBC |
| G - 03 | UC203x203x60 TBC | DOWNSTAND BEAM TBC |
| G - 04 | UC254x254x73 TBC | TBC |
| G - 05 | UC254x254x73 TBC | TBC |
| G - 06 | UC254x254x73 TBC | TBC |
| G - 07 | UC203x203x60 TBC | TBC |
| G - 08 | L200x150x10 TBC | TBC |
| G - 09 | UC203x203x60 TBC | DOWNSTAND BEAM TBC |
| G - 10 | UC203x203x60 TBC | DOWNSTAND BEAM TBC |
| G - 11 | UC203x203x60 | BOXFRAME TBC |

| STRUCTURAL COLUMN SCHEDULE | | |
|----------------------------|-----------------|-----|
| MARK | SIZE | |
| C1 | RHS200x120x12.5 | TBC |
| C2 | UC203x203x60 | TBC |
| C3 | SHS100x100x10.0 | TBC |

PLANNING

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|------|----------|-----------------------------|-------|------|
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| P5 | 12.10.15 | PRELIMINARY ISSUE | P.E | C.E |
| P4 | 18.05.15 | PRELIMINARY ISSUE | CC | SP |
| P3 | 01.05.15 | PRELIMINARY ISSUE | SM | KZ |
| P2 | 24.04.15 | PRELIMINARY ISSUE | SM | KZ |
| P1 | 17.04.15 | PRELIMINARY ISSUE | SM | SP |
| Rev. | Date | Amendment | Drawn | Chkd |

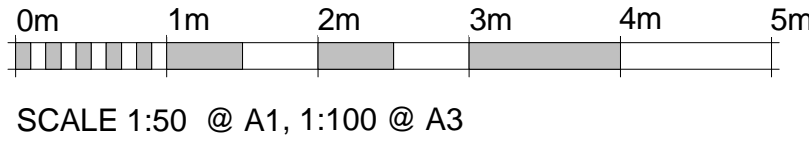
Drawing Status PRELIMINARY

Job Title
4 TAVISTOCK PLACE
HOLBORN
WC1H 9RA

Drawing Title
PROPOSED GROUND FLOOR

Form Structural Design Ltd 77 St John Street London EC1M 4NN
T:020 7253 2893 E:studio@form-sd.com W:www.form-sd.com

| | | | |
|---------|--------------|----------|---------|
| Date | Scale | Drawn | Checked |
| MAR 15 | As indicated | SM | SP |
| Job No. | Drawing No. | Revision | |
| 142264 | L(23)12 | P6 | |



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KEY (EXISTING STRUCTURE)

WALL TYPES

NON-LOAD BEARING MASONRY FACADE

RC COLUMN / WALL
(ALL WALLS 200mm THK U.N.O.)

RC LOAD BEARING COLUMN / WALL UNDER

LEGEND

EXISTING 3350mm THK GROUND BEARING RC SLAB

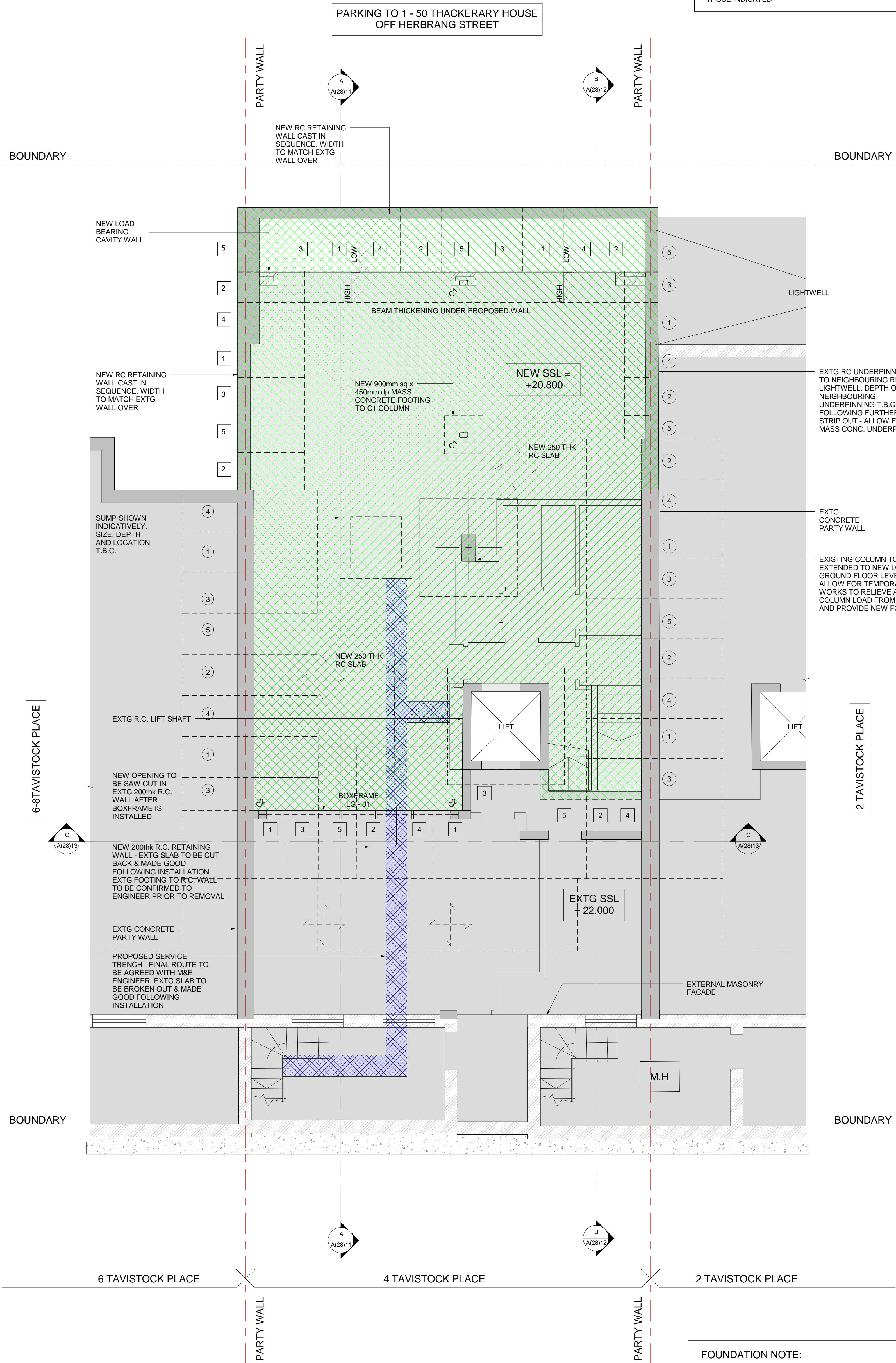
KEY (PROPOSED LOWER GROUND FLOOR STRUCTURE)

PROPOSED NEW GROUND BEARING CONCRETE SLAB. THICKNESS AS INDICATED ON PLAN

NEW FLOOR

| STRUCTURAL BEAM SCHEDULE LOWER GROUND FLOOR | | | |
|---|--------------|----------|-----|
| Mark | Type | Comments | |
| LG - 01 | UC203x203x60 | BOXFRAME | TBC |

| STRUCTURAL COLUMN SCHEDULE | | | |
|----------------------------|-----------------|--|-----|
| MARK | SIZE | | |
| C1 | RHS200x120x12.5 | | TBC |
| C2 | UC203x203x60 | | TBC |
| C3 | SHS100x100x10.0 | | TBC |



PROPOSED LOWER GROUND FLOOR

SCALE - 1 : 50

UNDERPINNING

- X

DENOTES MASS CONCRETE UNDERPINS. TO BE INSTALLED IN A 'HIT AND MISS' SEQUENCE (UNLESS NOTED OTHERWISE) AS SHOWN ON PLAN. MAXIMUM WIDTH 1m. UNDERPINNING TO SUIT WIDTH AND CENTRE OF WALL
- X

DENOTES RC 'L' UNDERPINS. TO BE INSTALLED IN A 'HIT AND MISS' SEQUENCE (UNLESS NOTED OTHERWISE) AS SHOWN ON PLAN. MAXIMUM WIDTH 1m. UNDERPINNING TO SUIT WIDTH AND CENTRE OF WALL

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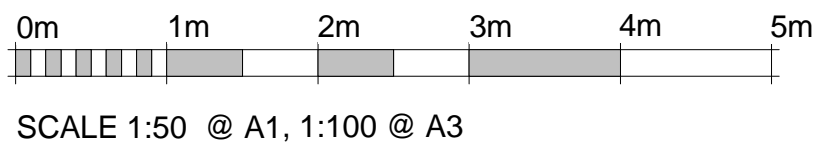
FOR EXISTING FOUNDATIONS REFER TO FORM DRAWING NUMBERED 142264-L(00)11

DRAINAGE NOTE:

PROPOSED UNDERGROUND DRAINAGE NOT SHOWN. TBC BY SPECIALISTS DESIGN AND DETAIL

CUTTING CONCRETE NOTE:

IN ALL LOCATIONS WHERE EXISTING CONCRETE IS TO BE CUT, CONTRACTOR TO ALLOW FOR CONCRETE REPAIRS INCLUDING BONDING AGENT AND REPAIR MORTAR



PLANNING

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| P3 | 01.05.15 | PRELIMINARY ISSUE | SM | KZ |
| P2 | 24.04.15 | PRELIMINARY ISSUE | SM | KZ |
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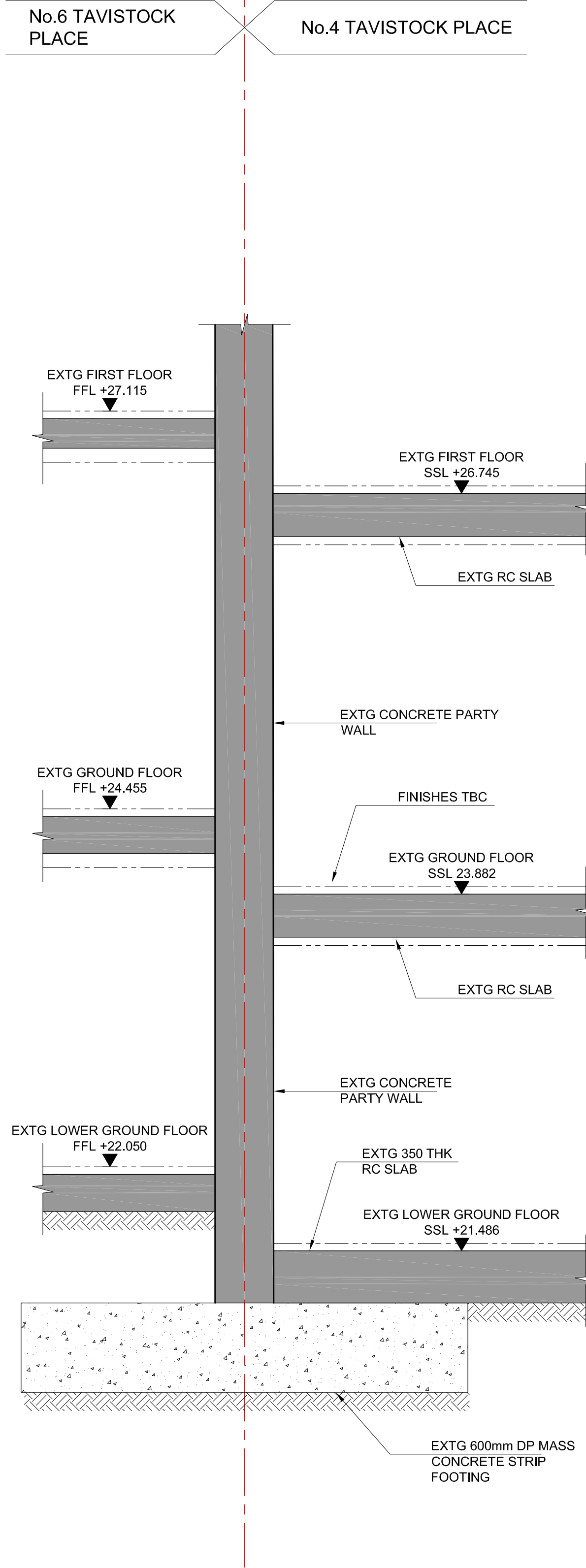
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HOLBORN
WC1H 9RA

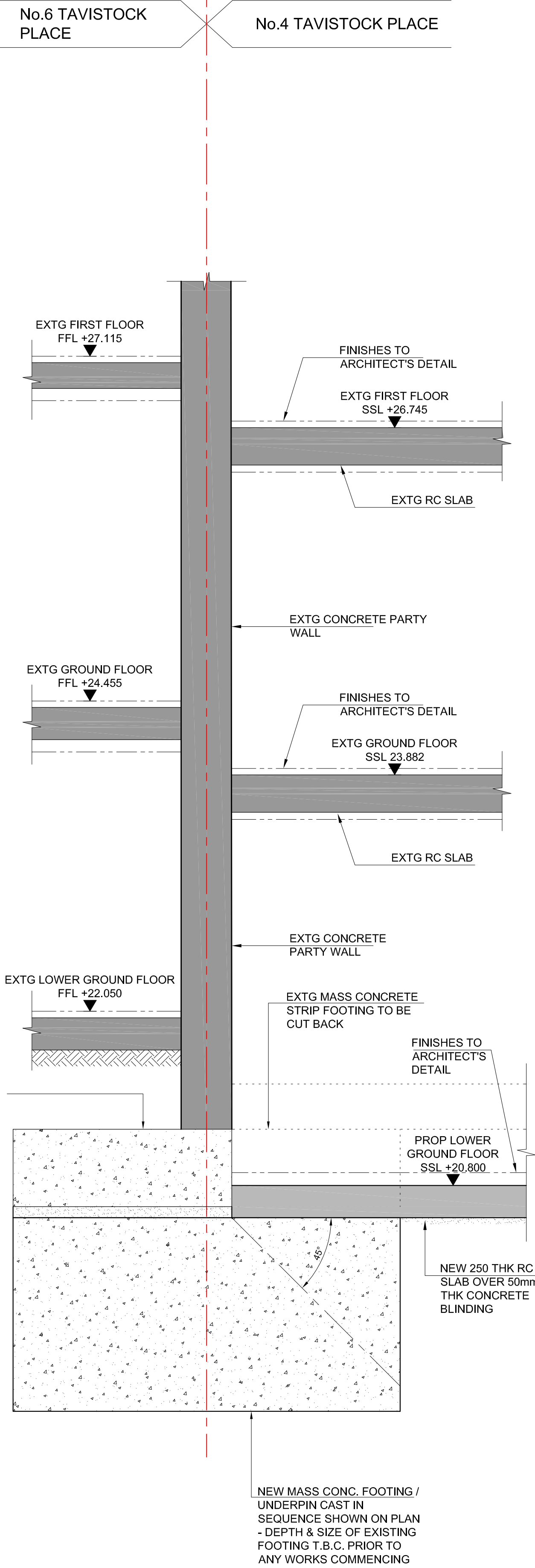
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PROPOSED LOWER GROUND FLOOR

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| Form Structural Design Ltd T:020 7253 2893 | 77 St John Street E:studio@form-sd.com | London W:www.form-sd.com | EC1M 4NN |
| Date MAR 15 | Scale As indicated | Drawn SM | Checked SP |
| Job No. 142264 | Drawing No. L(23)11 | Revision P7 | |



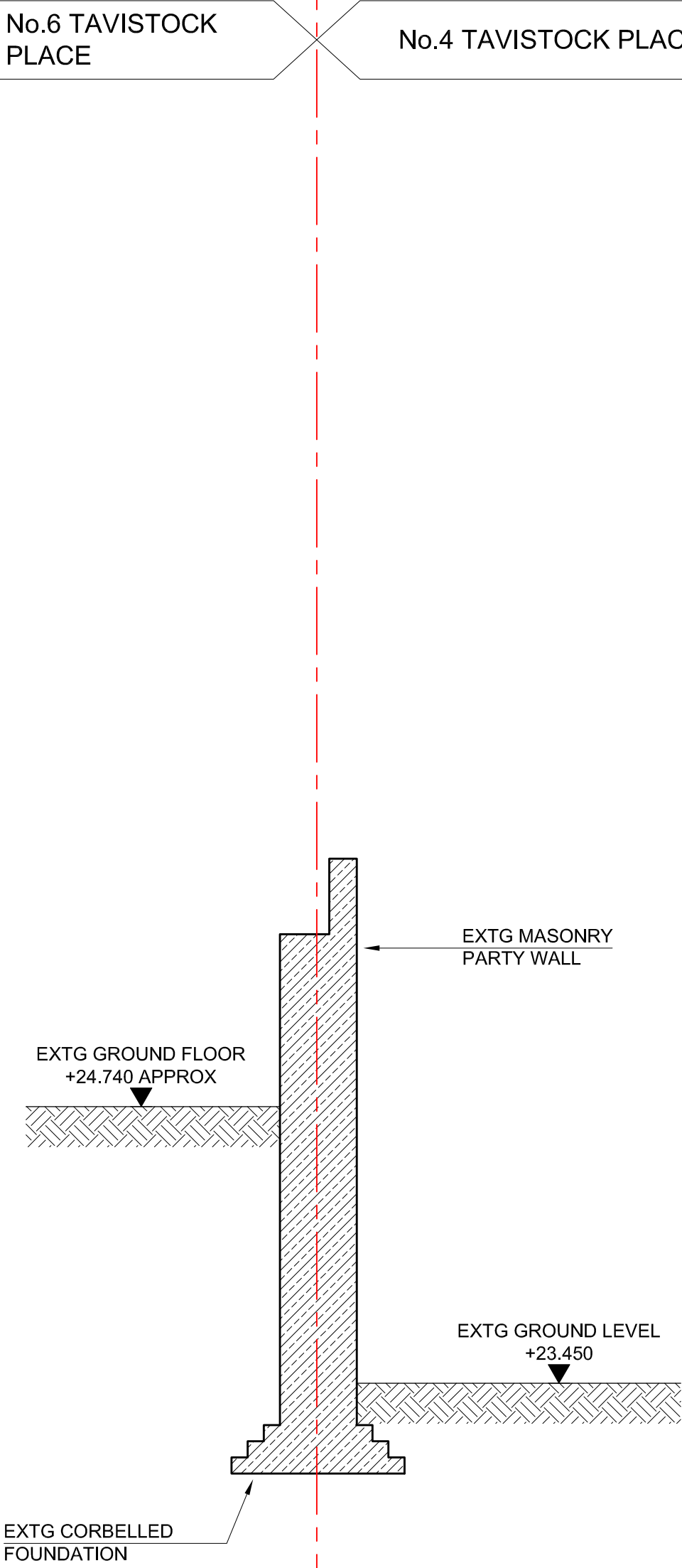
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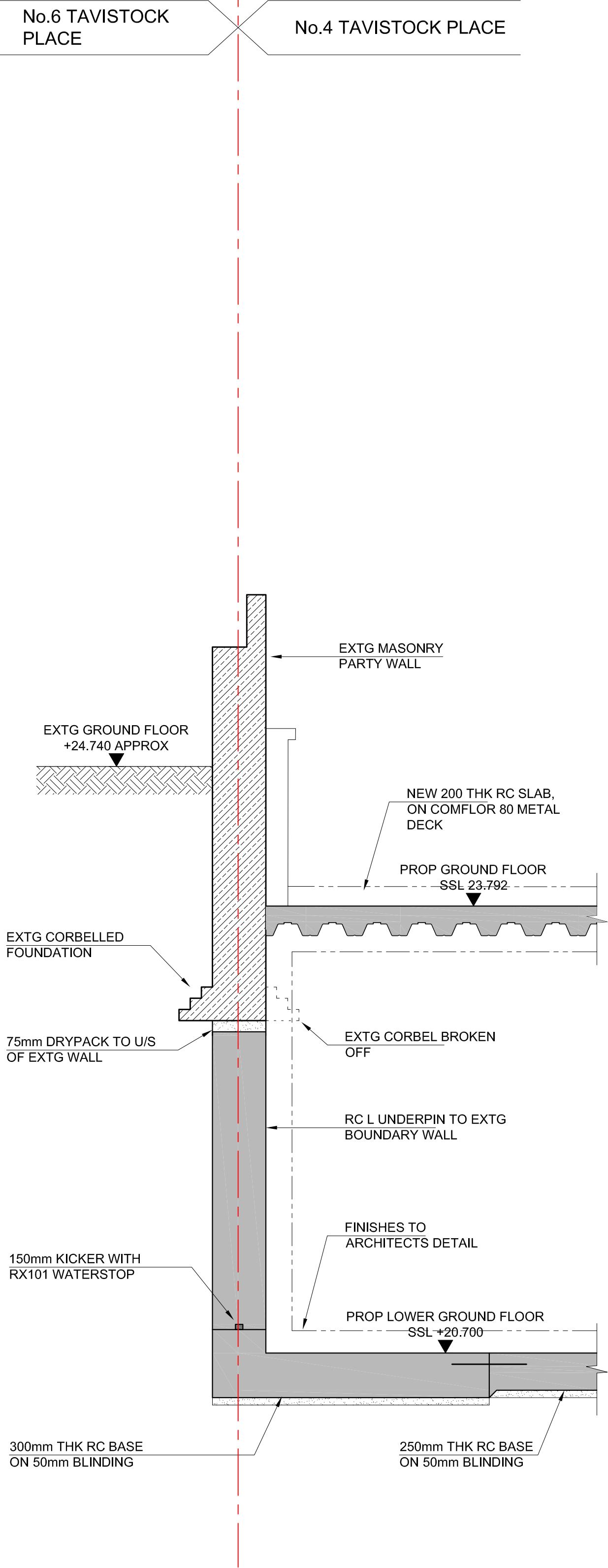
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SECTION 02 - EXISTING

SCALE 1:25 @ A1, 1:50 @ A3



SECTION 02 - PROPOSED

SCALE 1:25 @ A1, 1:50 @ A3

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| NOT FOR CONSTRUCTION | | | | |
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| P2 | 18.05.15 | PRELIMINARY ISSUE | CC | SP |
| P1 | 01.05.15 | PRELIMINARY ISSUE | SPM | KZ |
| Rev. | Date | Amendment | Drawn | Chkd |

Drawing Status

PRELIMINARY

Form

Job Title

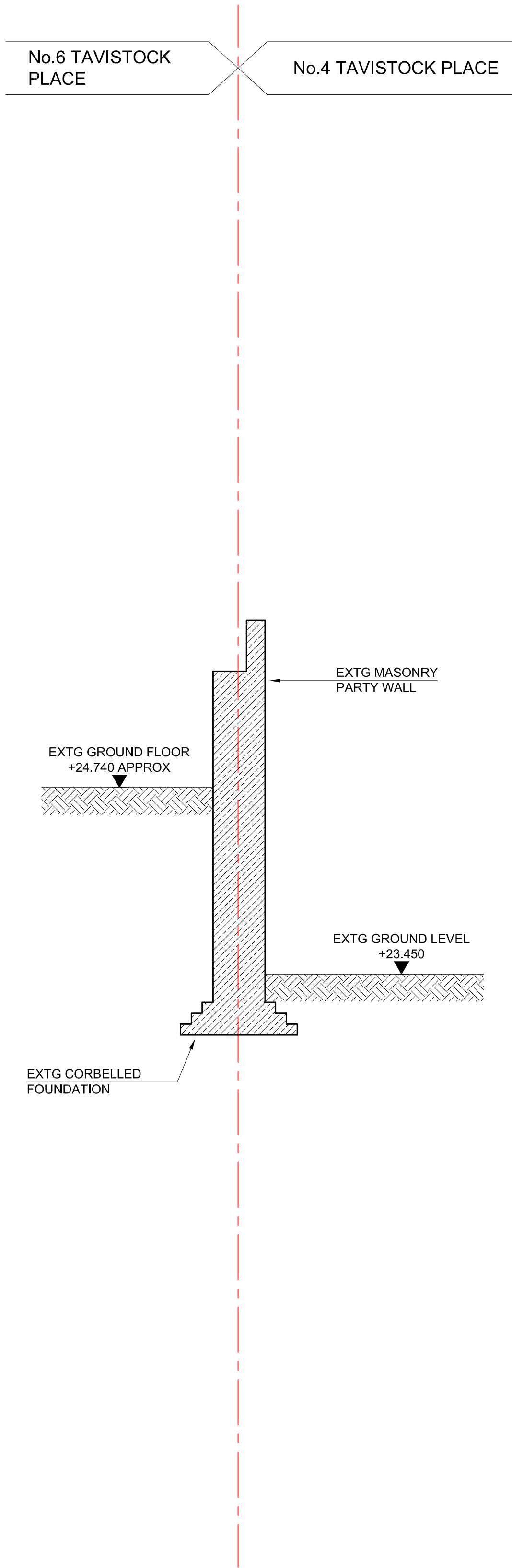
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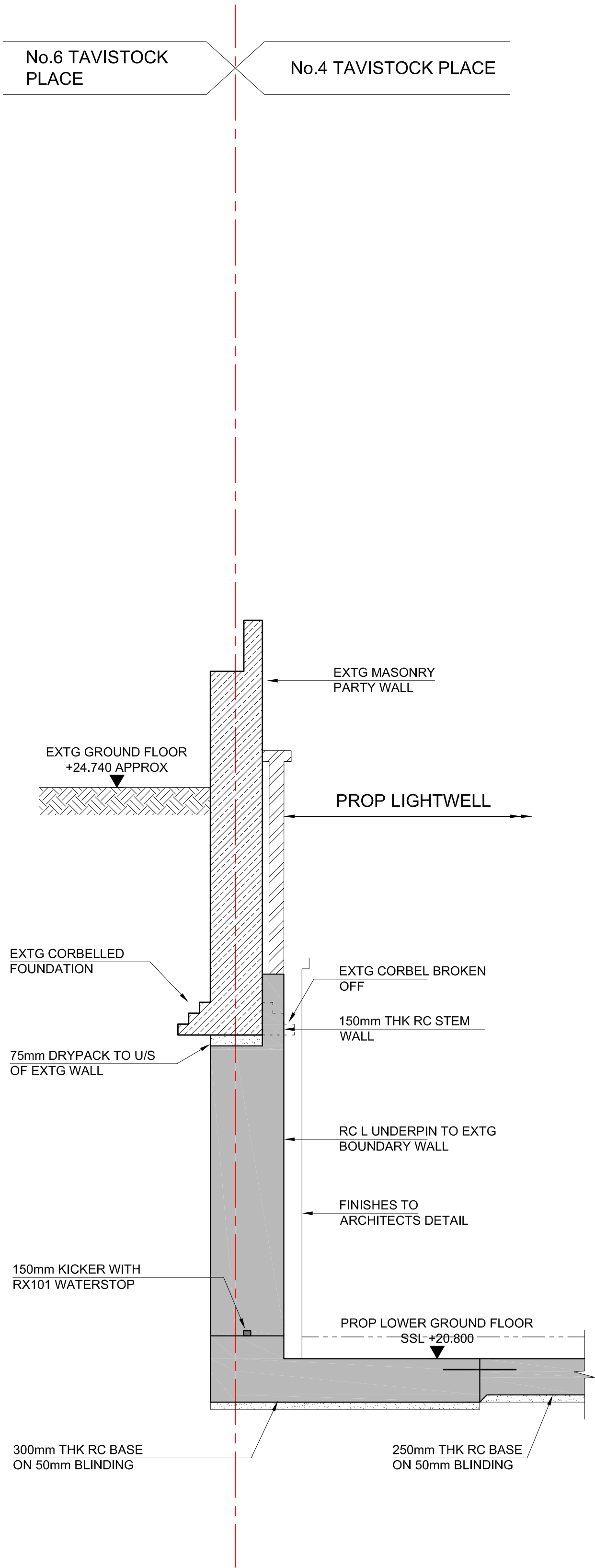
BOUNDARY WALL SECTIONS
01 & 02

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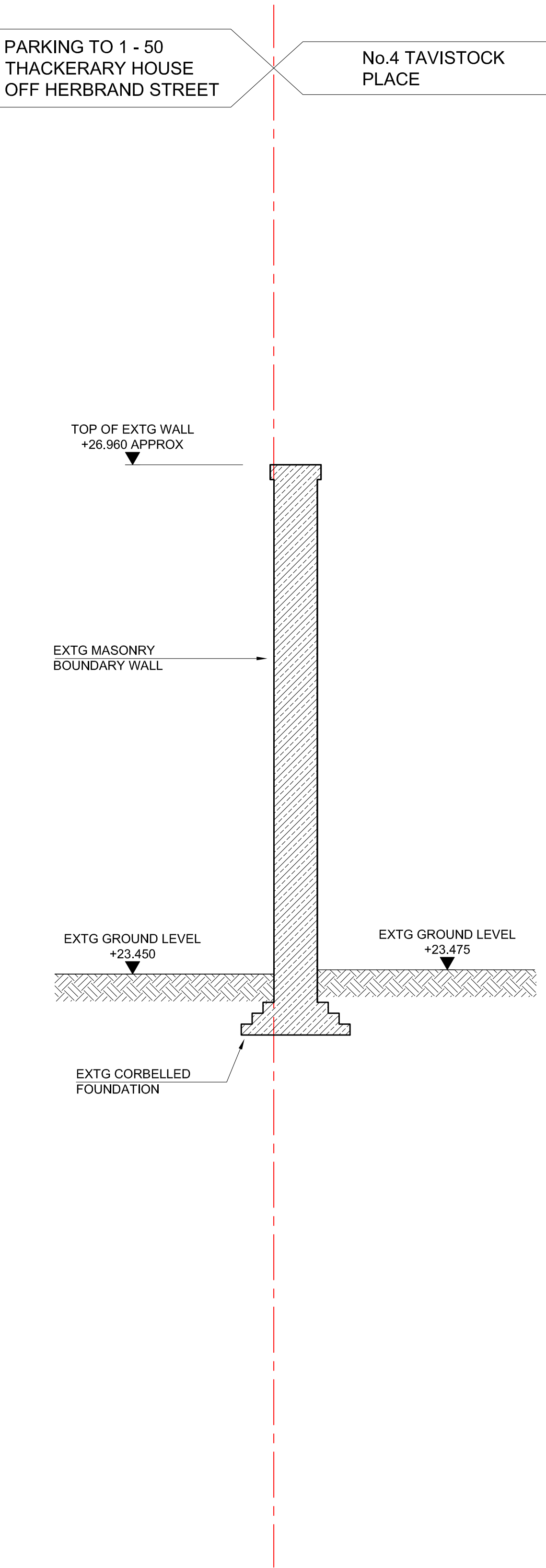
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| Job No. | Drawing No. | Revision | |
| 142264 | A(23)11 | P3 | |



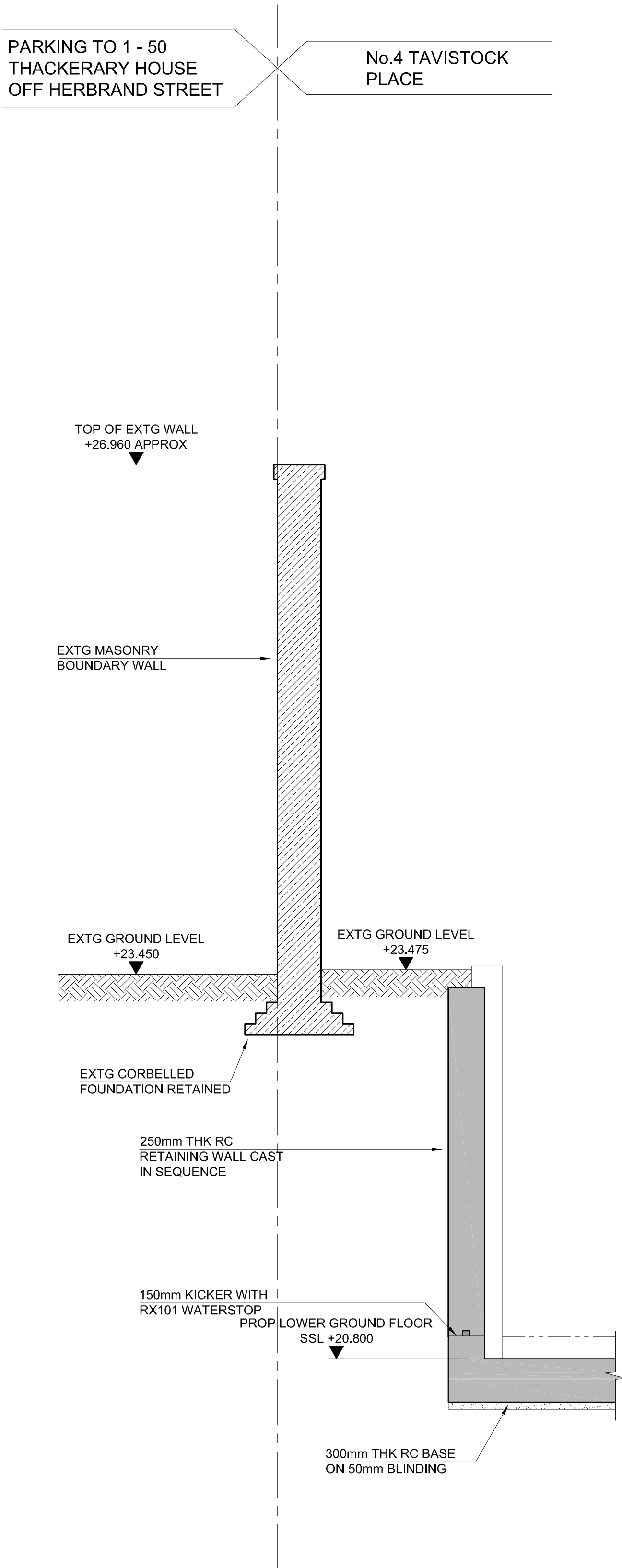
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SCALE 1:25 @ A1, 1:50 @ A3



SECTION 03 - PROPOSED
SCALE 1:25 @ A1, 1:50 @ A3



SECTION 04 - EXISTING
SCALE 1:25 @ A1, 1:50 @ A3



SECTION 04 - PROPOSED
SCALE 1:25 @ A1, 1:50 @ A3

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| P2 | 18.05.15 | PRELIMINARY ISSUE | CC | SP |
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| Rev. | Date | Amendment | Drawn | Chkd |

Drawing Status

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Job Title

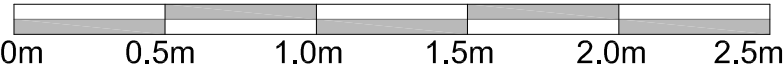
4 TAVISTOCK PLACE
HOLBORN
WC1H 9RA

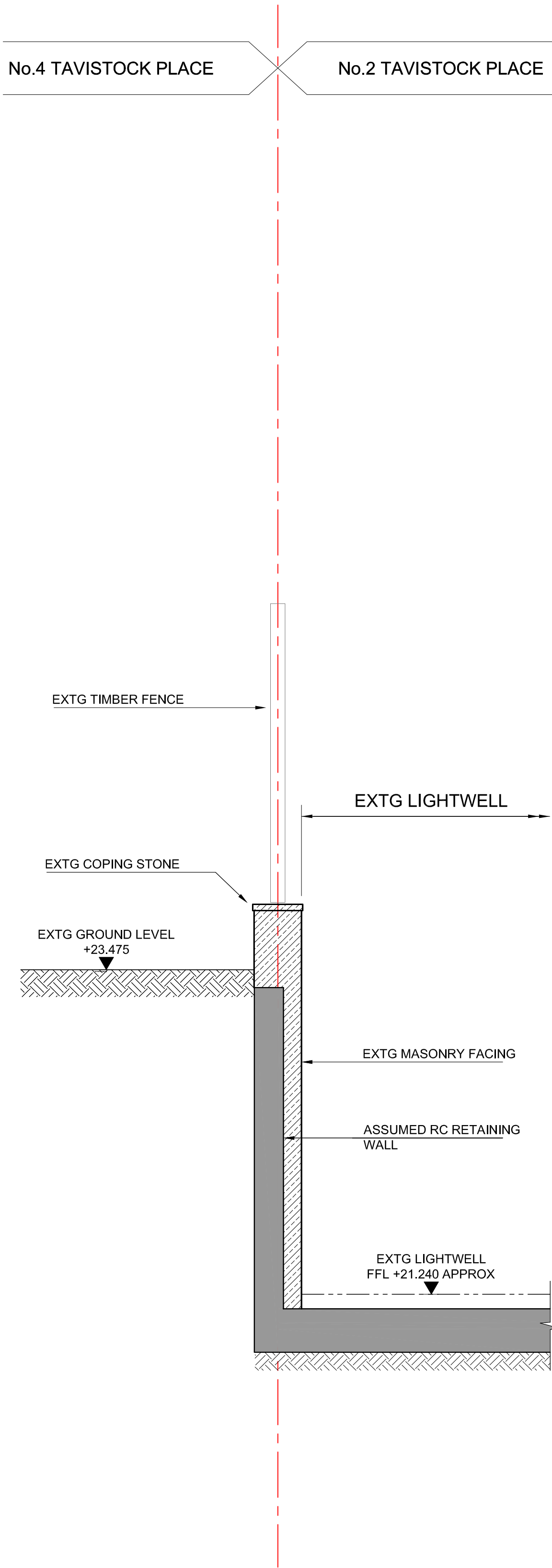
Drawing Title

BOUNDARY WALL SECTIONS
03 & 04

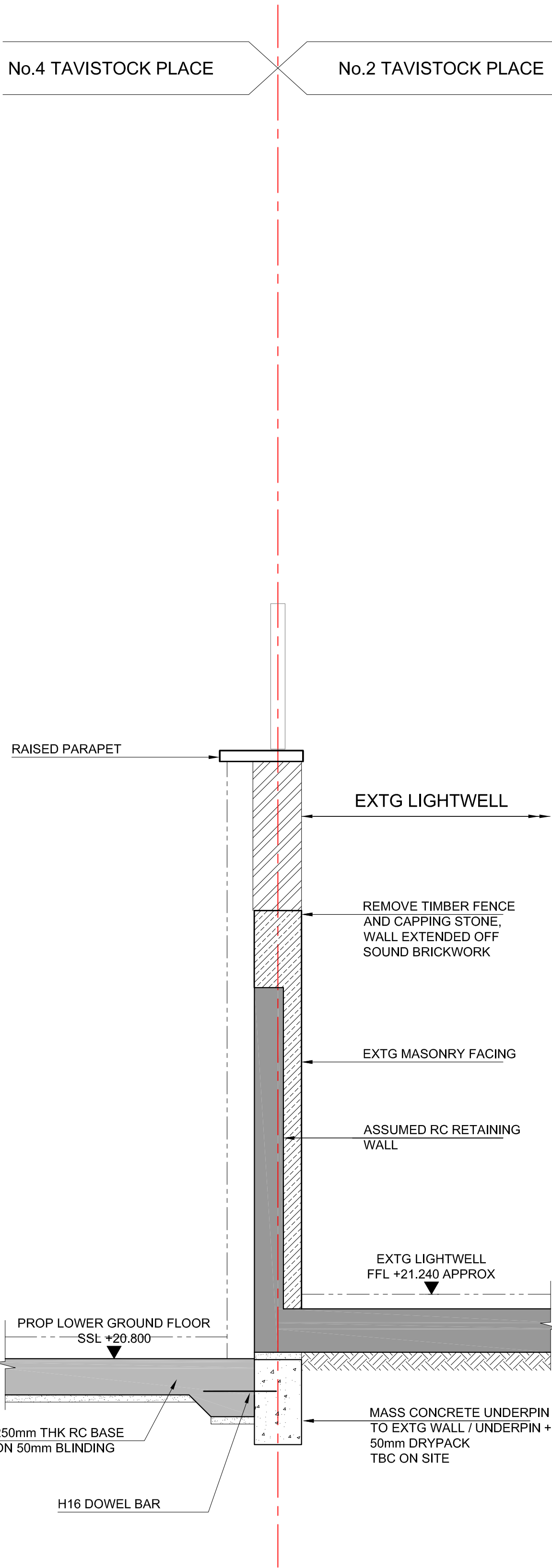
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| 142264 | A(23)12 | P2 | |

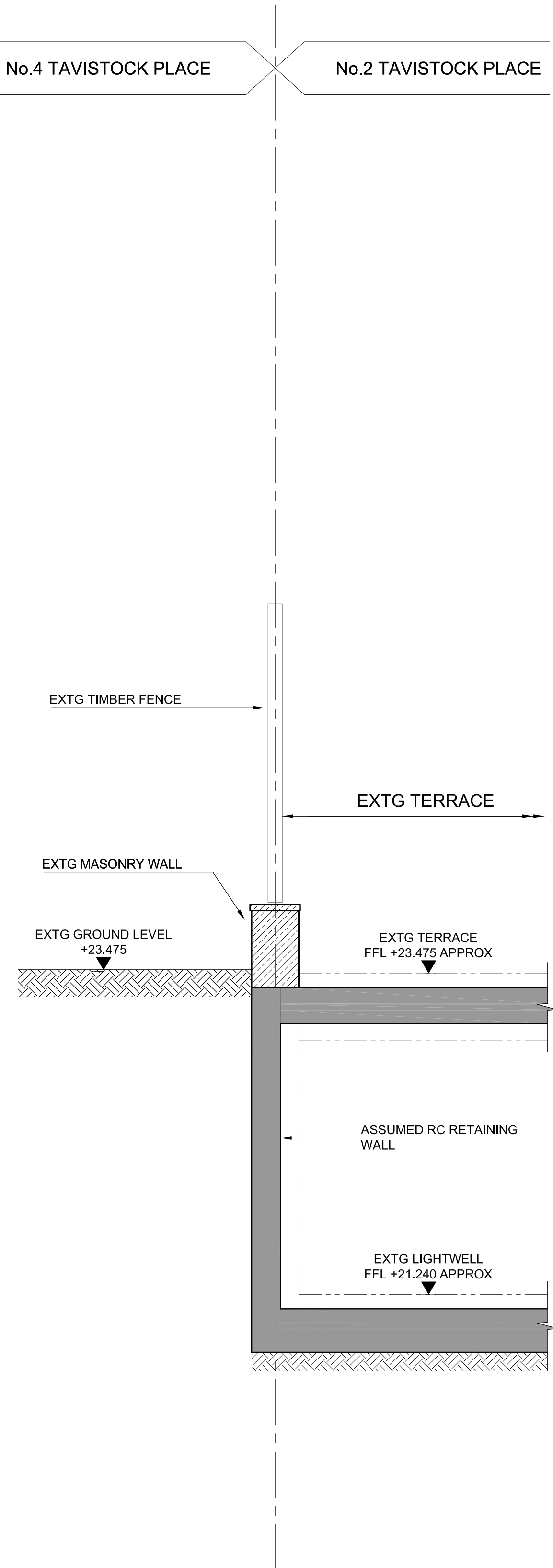




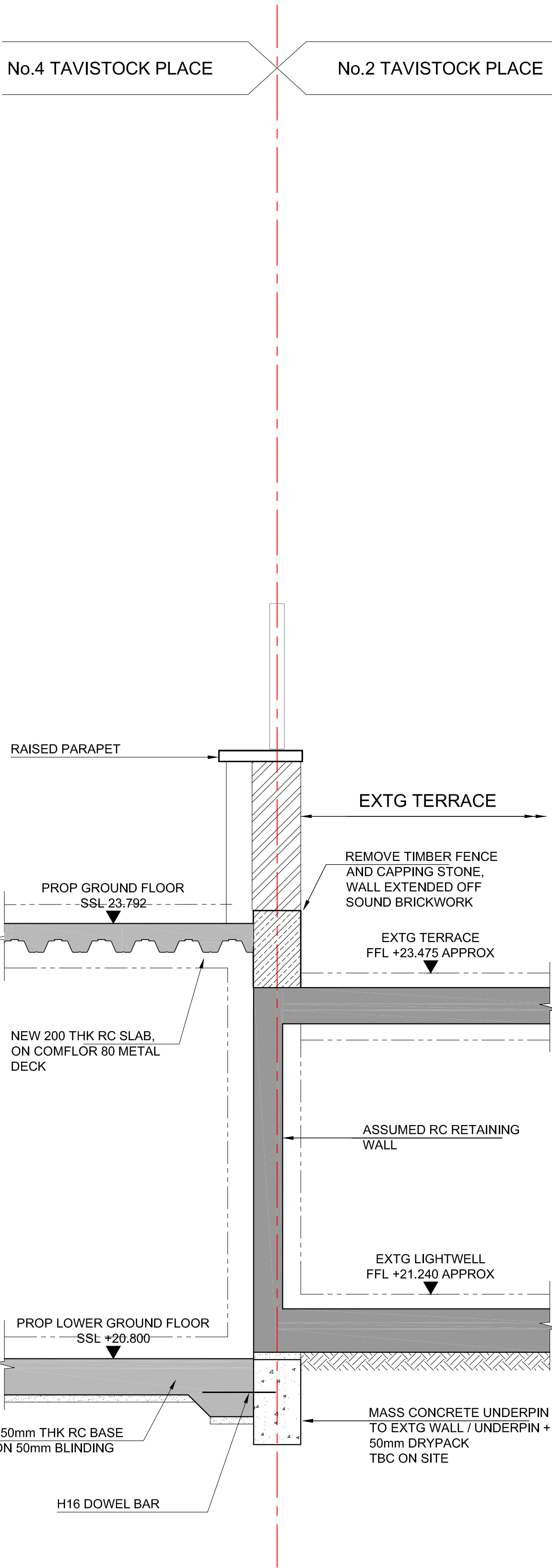
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SECTION 05 - PROPOSED
SCALE 1:25 @ A1, 1:50 @ A3



SECTION 06 - EXISTING
SCALE 1:25 @ A1, 1:50 @ A3



SECTION 06 - PROPOSED
SCALE 1:25 @ A1, 1:50 @ A3

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4 TAVISTOCK PLACE
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WC1H 9RA

Drawing Title

BOUNDARY WALL SECTIONS
05 & 06

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| 142264 | A(23)13 | P2 | |



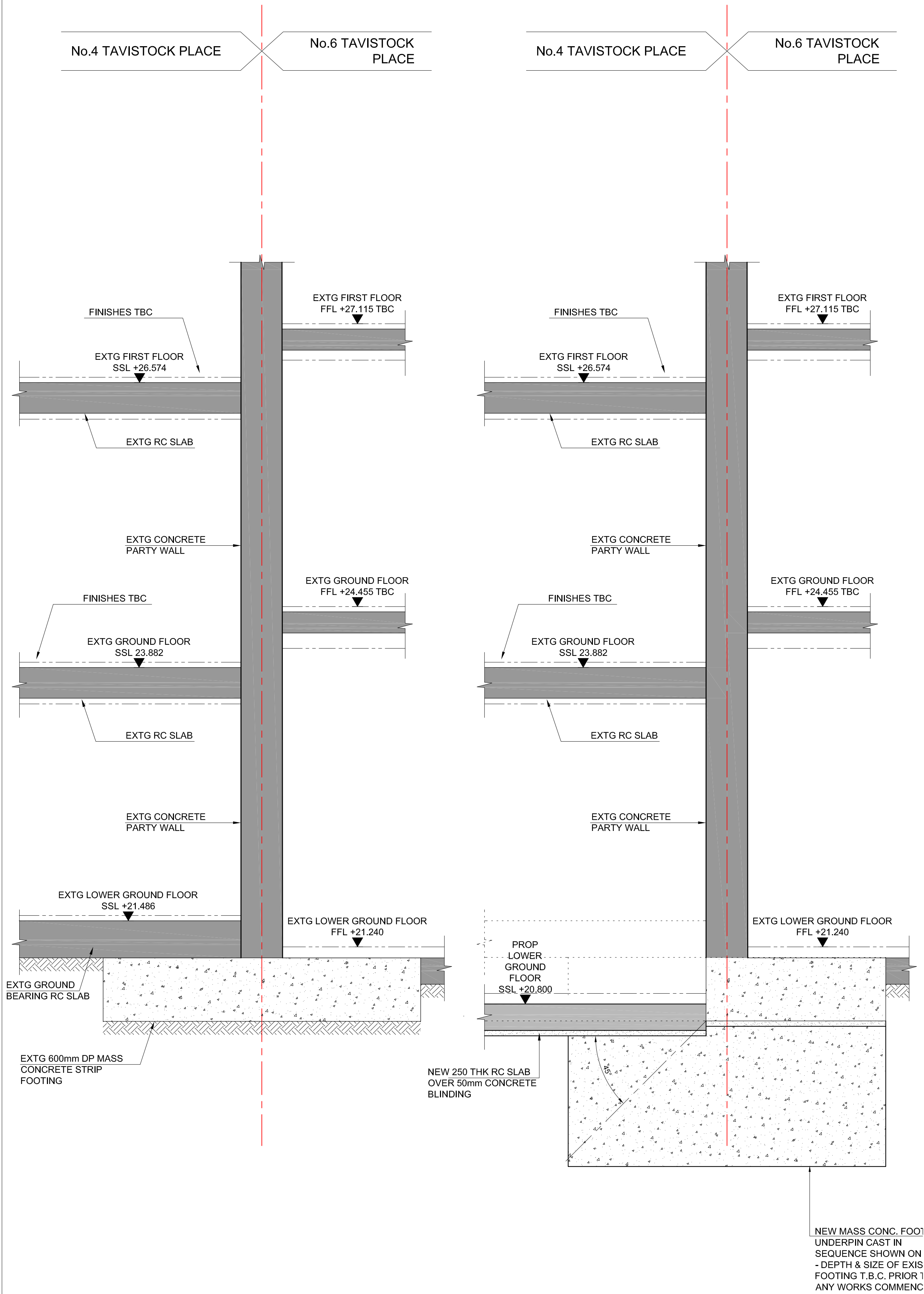
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SECTION 07 - EXISTING
SCALE 1:25 @ A1, 1:50 @ A3

SECTION 07 - PROPOSED
SCALE 1:25 @ A1, 1:50 @ A3

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| P3 | 12.10.15 | PRELIMINARY ISSUE | P.E | C.E |
| P2 | 18.05.15 | PRELIMINARY ISSUE | CC | SP |
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Drawing Status **PRELIMINARY**

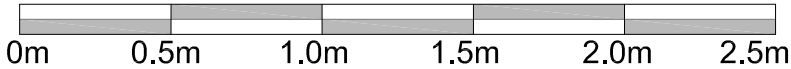
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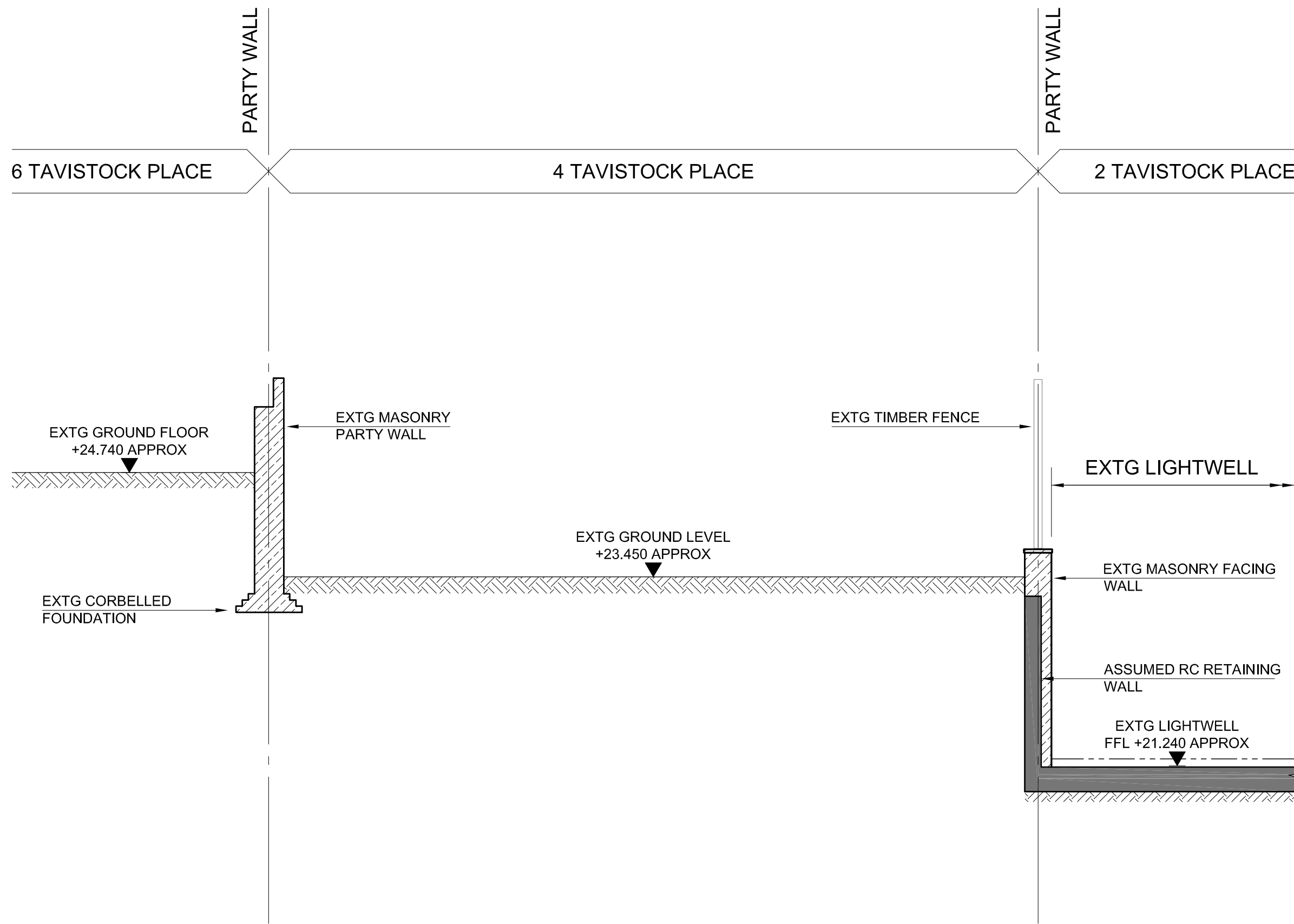
Job Title
**4 TAVISTOCK PLACE
HOLBORN
WC1H 9RA**

Drawing Title
BOUNDARY WALL SECTION 07

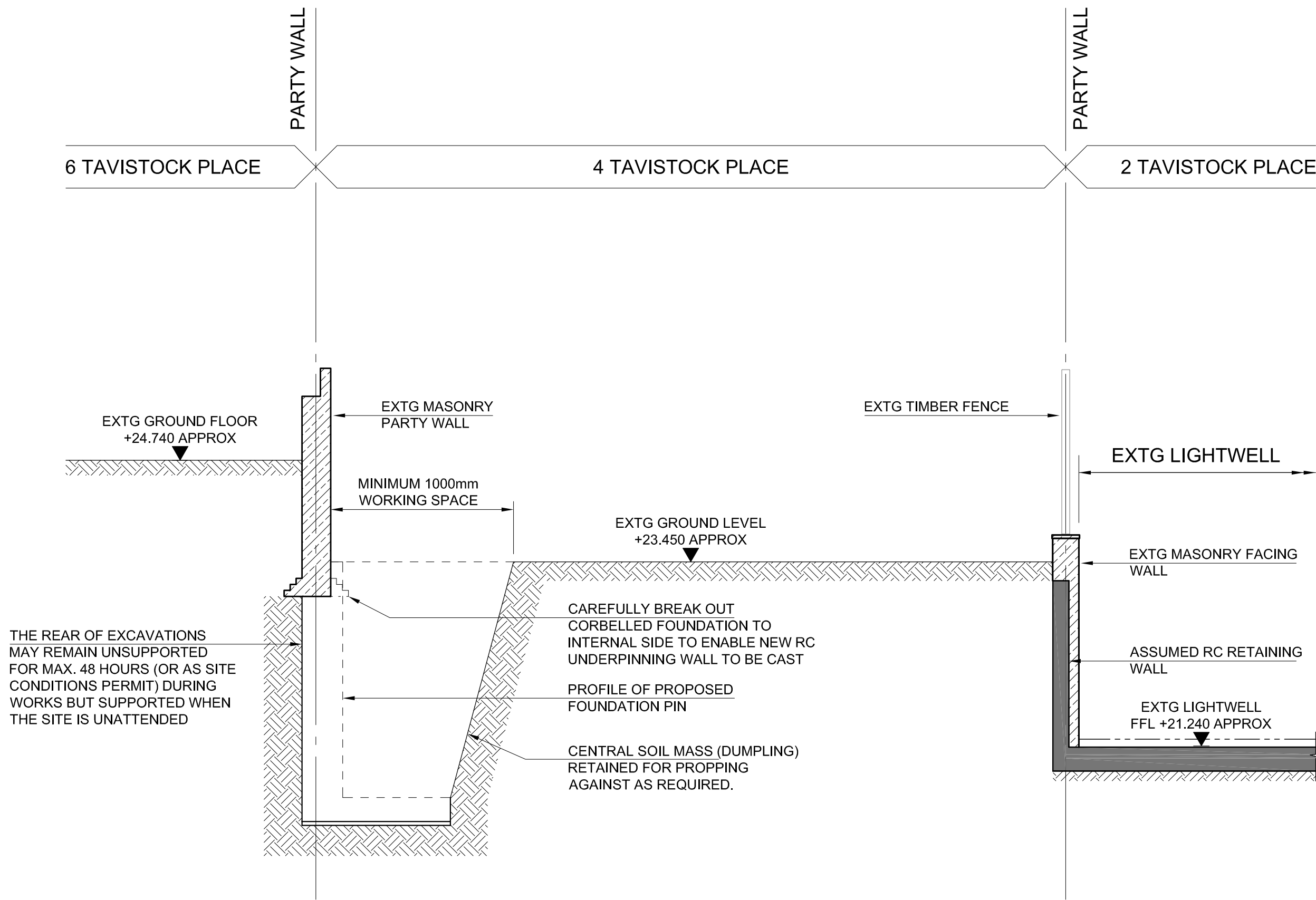
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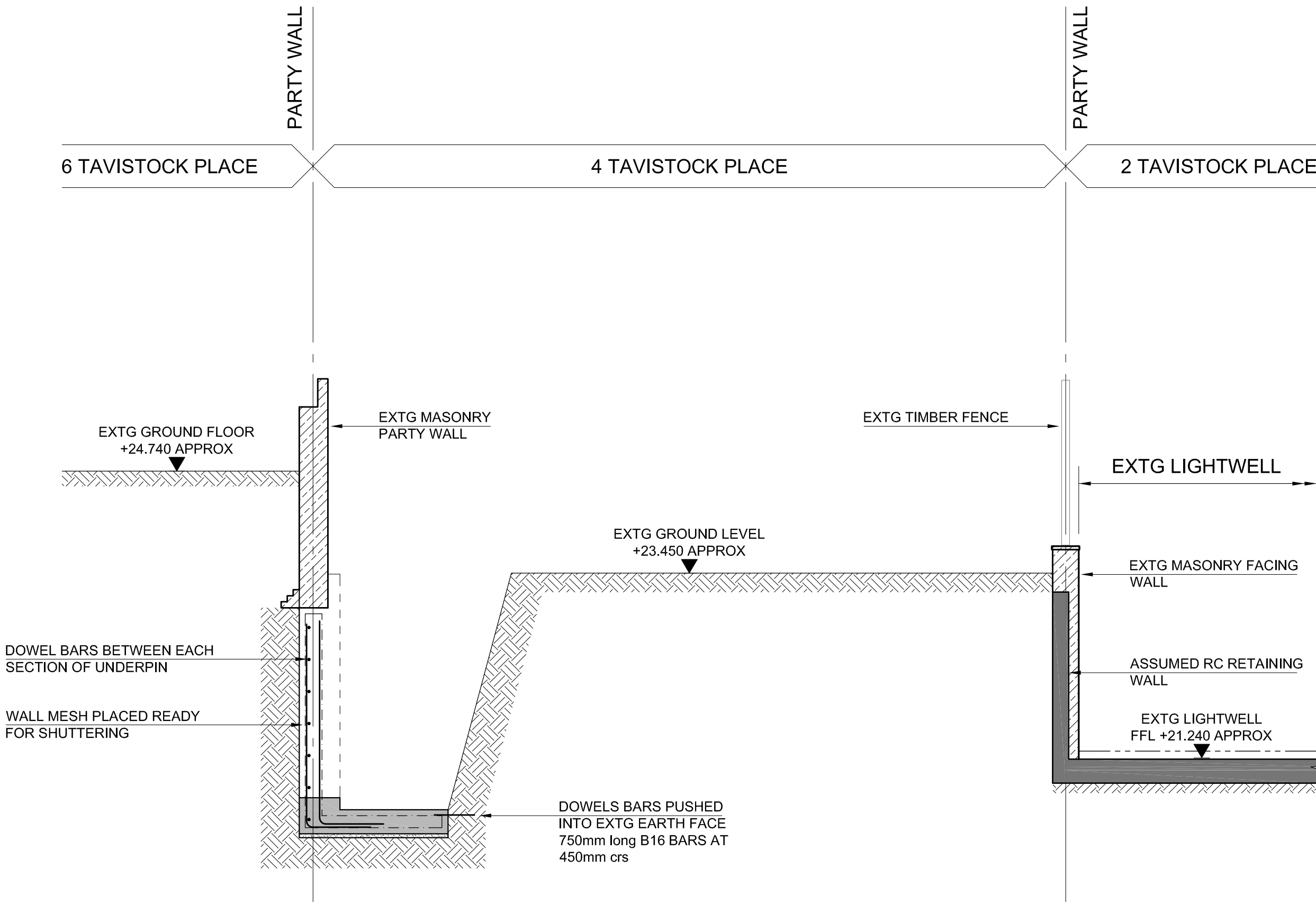




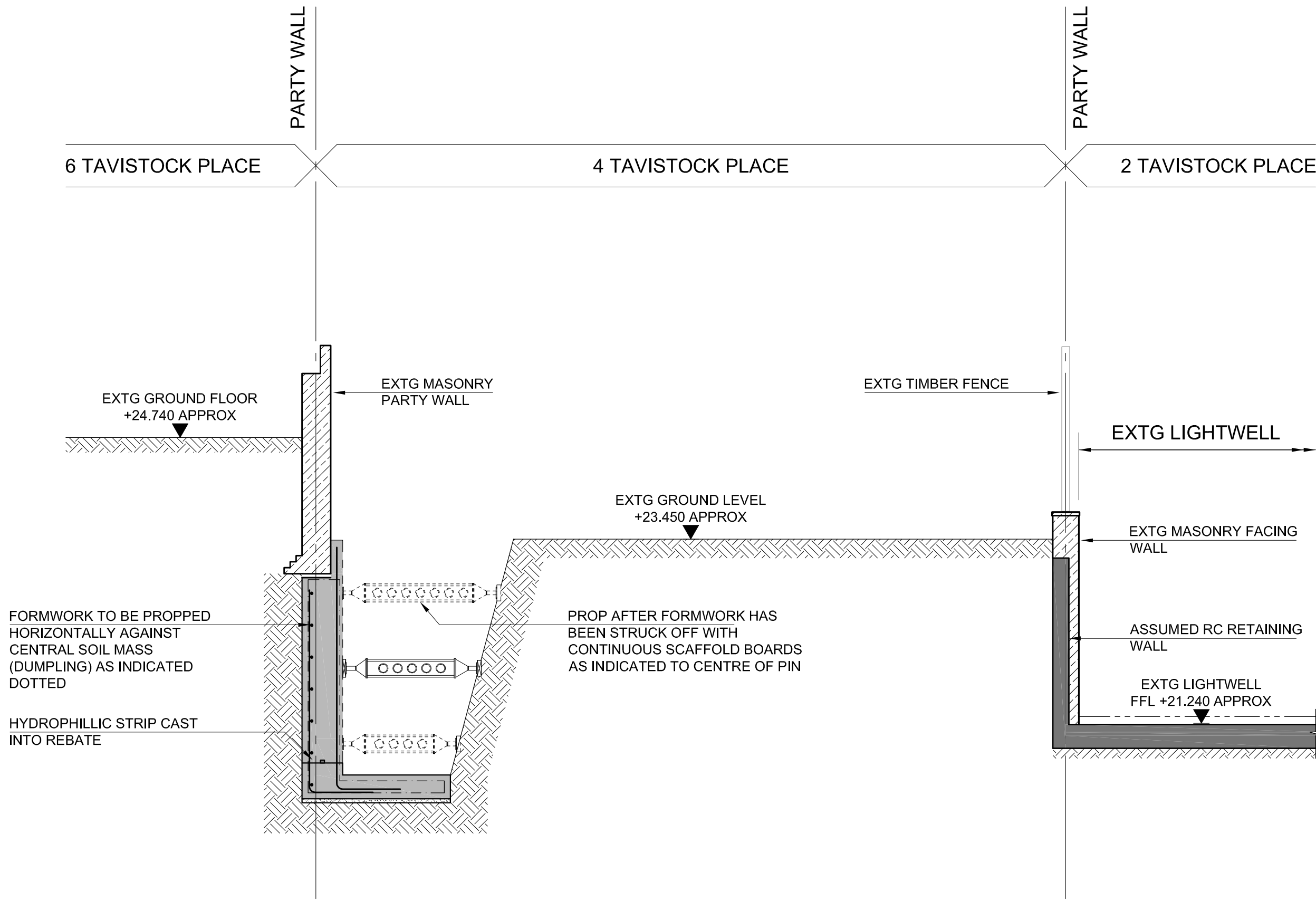
EXISTING CROSS SECTION
SCALE 1:50 @ A1, 1:100 @ A3



STAGE 1 - EXCAVATE UNDERPIN PITS
SCALE 1:50 @ A1, 1:100 @ A3



STAGE 2 - UNDERPIN REINFORCEMENT
SCALE 1:50 @ A1, 1:100 @ A3



STAGE 3 - CAST UNDERPIN
SCALE 1:50 @ A1, 1:100 @ A3

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| P1 | 06.02.15 | PRELIMINARY ISSUE | SPM | SP |
| Rev. | Date | Amendment | Drawn | Chkd |

Drawing Status: **PRELIMINARY**

Job Title

**4 TAVISTOCK PLACE
HOLBURN
WC1H 9RA**

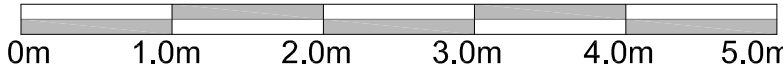
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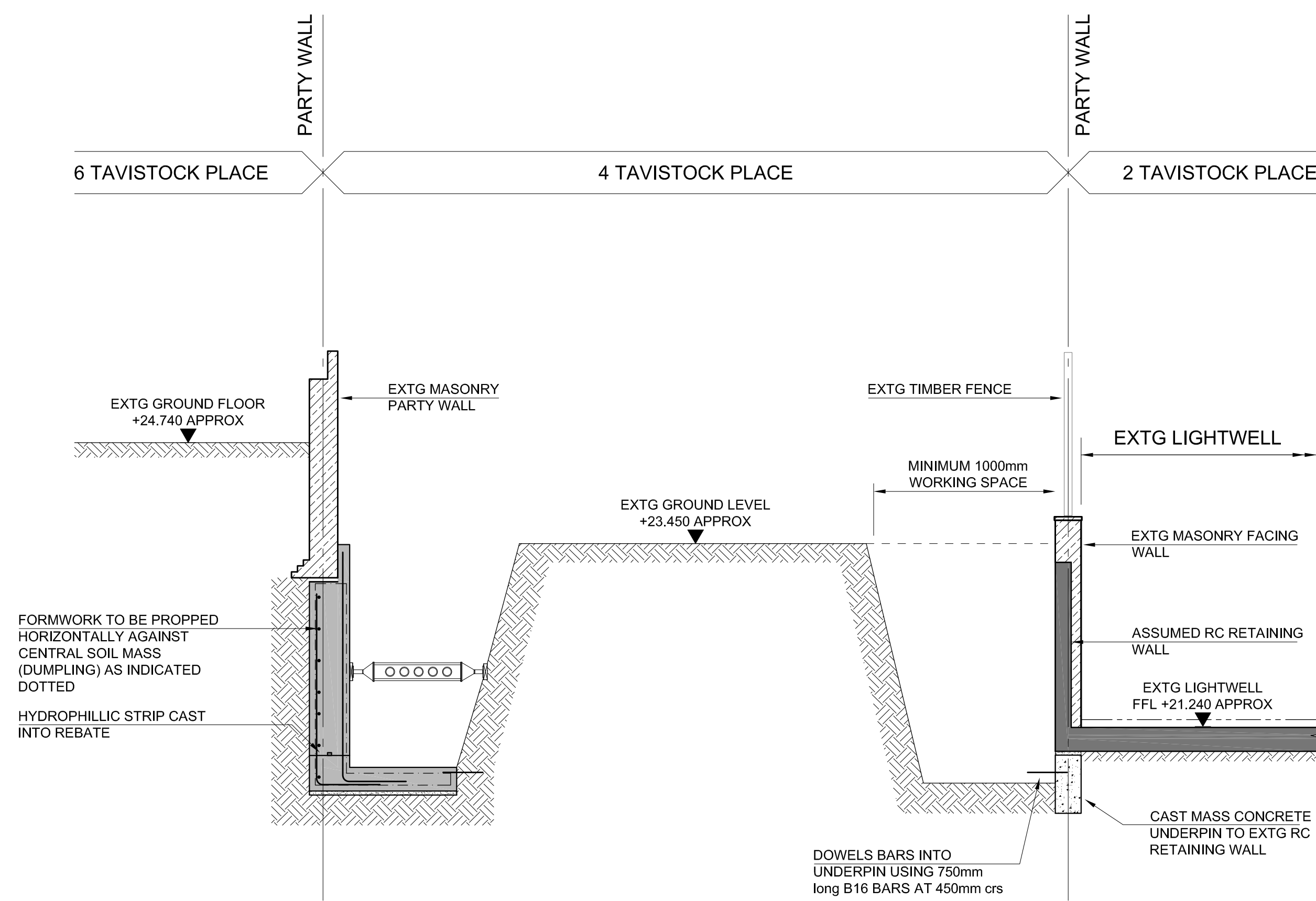
**OUTLINE CONSTRUCTION
SEQUENCE SHEET ONE**

Form

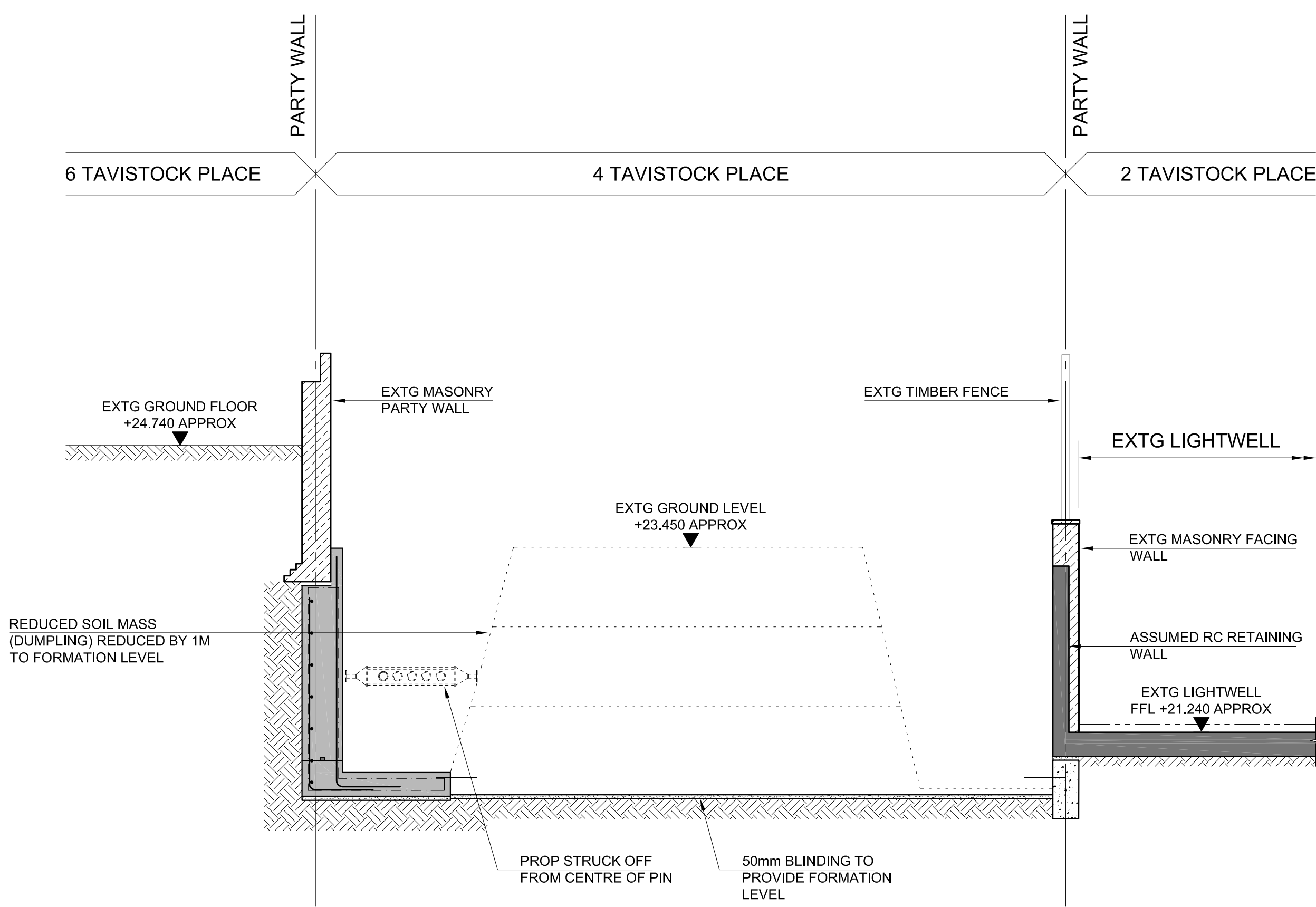
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| FEB 15 | 1:25 (A1) | SPM | SP |
| Job No. | Drawing No. | Revision | |
| 142264 | TW01 | P1 | |

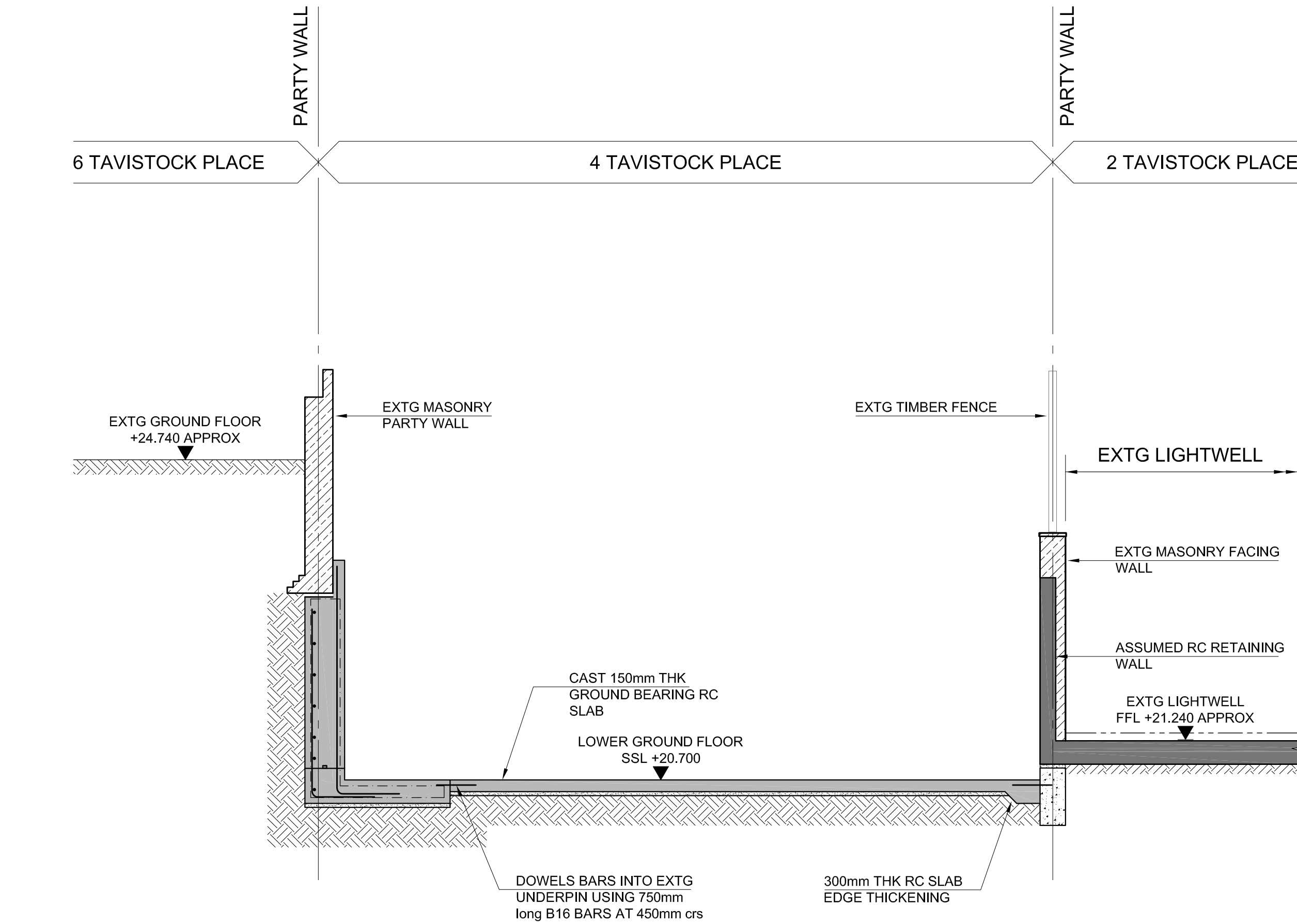




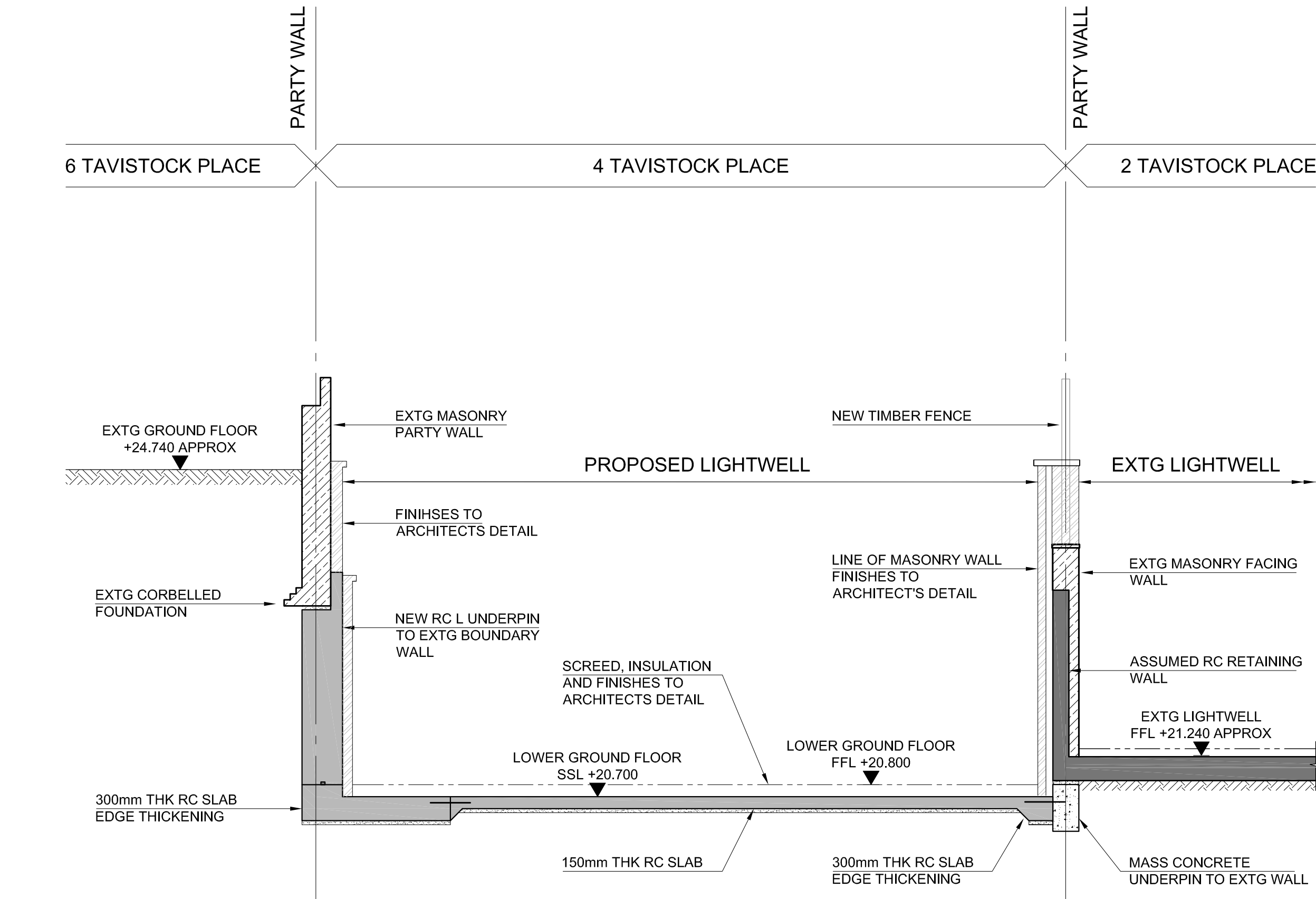
STAGE 4 - MASS CONCRETE UNDERPIN
SCALE 1:50 @ A1, 1:100 @ A3



STAGE 5 - CENTRAL SOIL MASS EXCAVATION
SCALE 1:50 @ A1, 1:100 @ A3



STAGE 6 - CAST NEW SLAB
SCALE 1:50 @ A1, 1:100 @ A3



PROPOSED CROSS SECTION
SCALE 1:50 @ A1, 1:100 @ A3

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| P1 | 06.02.15 | PRELIMINARY ISSUE | SPM | SP |
| Rev. | Date | Amendment | Drawn | Chkd |

Drawing Status

PRELIMINARY

Form

Job Title

4 TAVISTOCK PLACE
HOLBURN
WC1H 9RA

Drawing Title

OUTLINE CONSTRUCTION
SEQUENCE SHEET TWO

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| FEB 15 | 1:25 (A1) | SPM | SP |
| Job No. | Drawing No. | Revision | |
| 142264 | TW02 | P1 | |

Appendix B

Building Damage Classification Table

During the later detailed design phases of the project a geotechnical specialist will undertake a ground movement analysis to confirm the foundation widths and limit movement to within the trigger values agreed under the Party Wall awards. Monitoring will be undertaken during the works to ensure these values are not exceeded.

Classification of visible damage to walls (after Burland et al, 1977, Boscardin and Cording, 1989; and Burland, 2001)

| Category of damage | Description of typical damage (ease of repair is underlined) | Approximate crack width (mm) | Limiting tensile strain ϵ_{lim} (per cent) |
|--------------------|---|---|---|
| 0 Negligible | Hairline cracks of less than about 0.1 mm are classed as negligible. | < 0.1 | 0.0–0.05 |
| 1 Very slight | <u>Fine cracks that can easily be treated during normal decoration.</u> Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection. | < 1 | 0.05–0.075 |
| 2 Slight | <u>Cracks easily filled. Redecoration probably required.</u> Several slight fractures showing inside of building. Cracks are visible externally and <u>some repointing may be required externally</u> to ensure weathertightness. Doors and windows may stick slightly. | < 5 | 0.075–0.15 |
| 3 Moderate | <u>The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced.</u> Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired. | 5–15 or a number of cracks > 3 | 0.15–0.3 |
| 4 Severe | <u>Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows.</u> Windows and frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted. | 15–25 but also depends on number of cracks | > 0.3 |
| 5 Very severe | <u>This requires a major repair involving partial or complete rebuilding.</u> Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion. Danger of instability. | usually > 25 but depends on number of cracks. | |

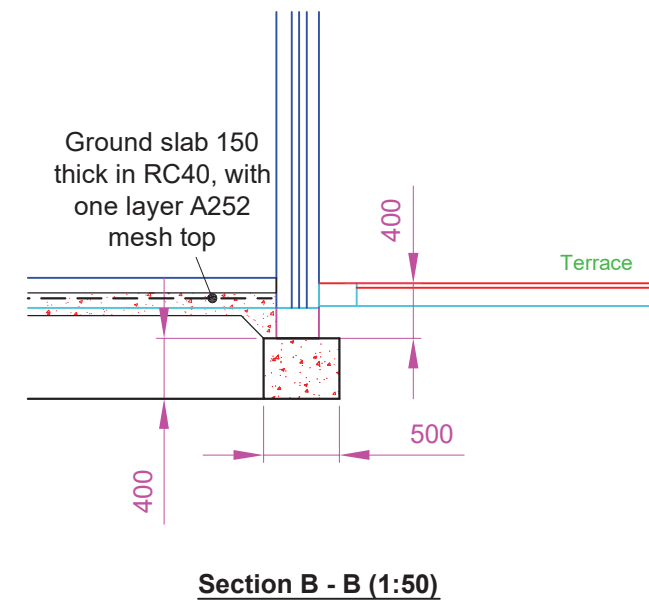
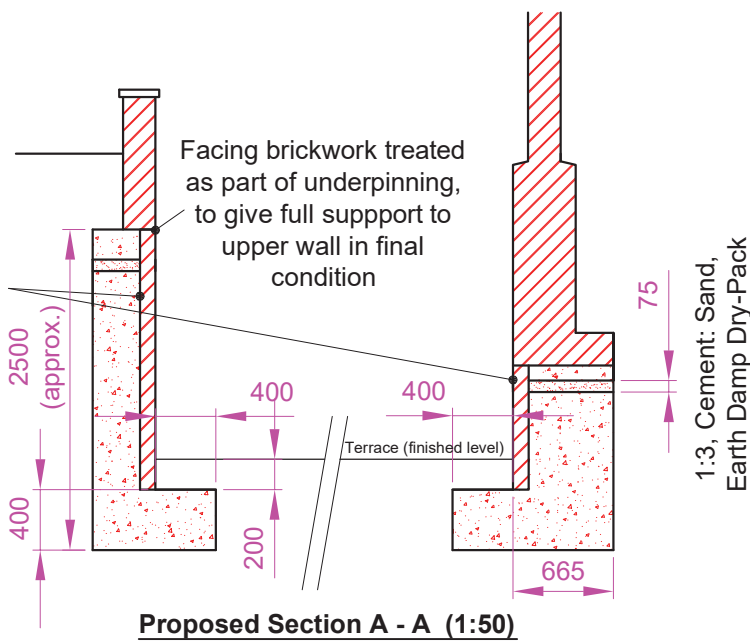
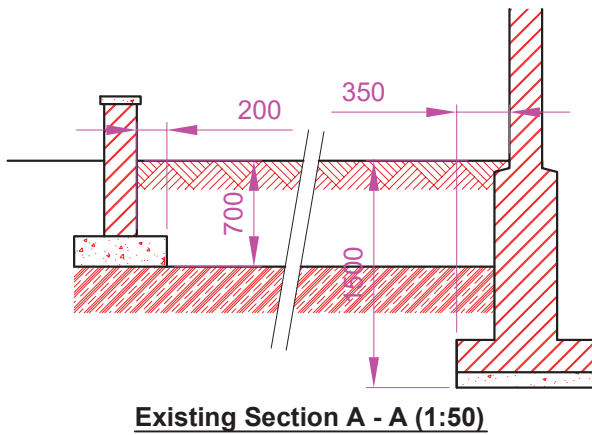
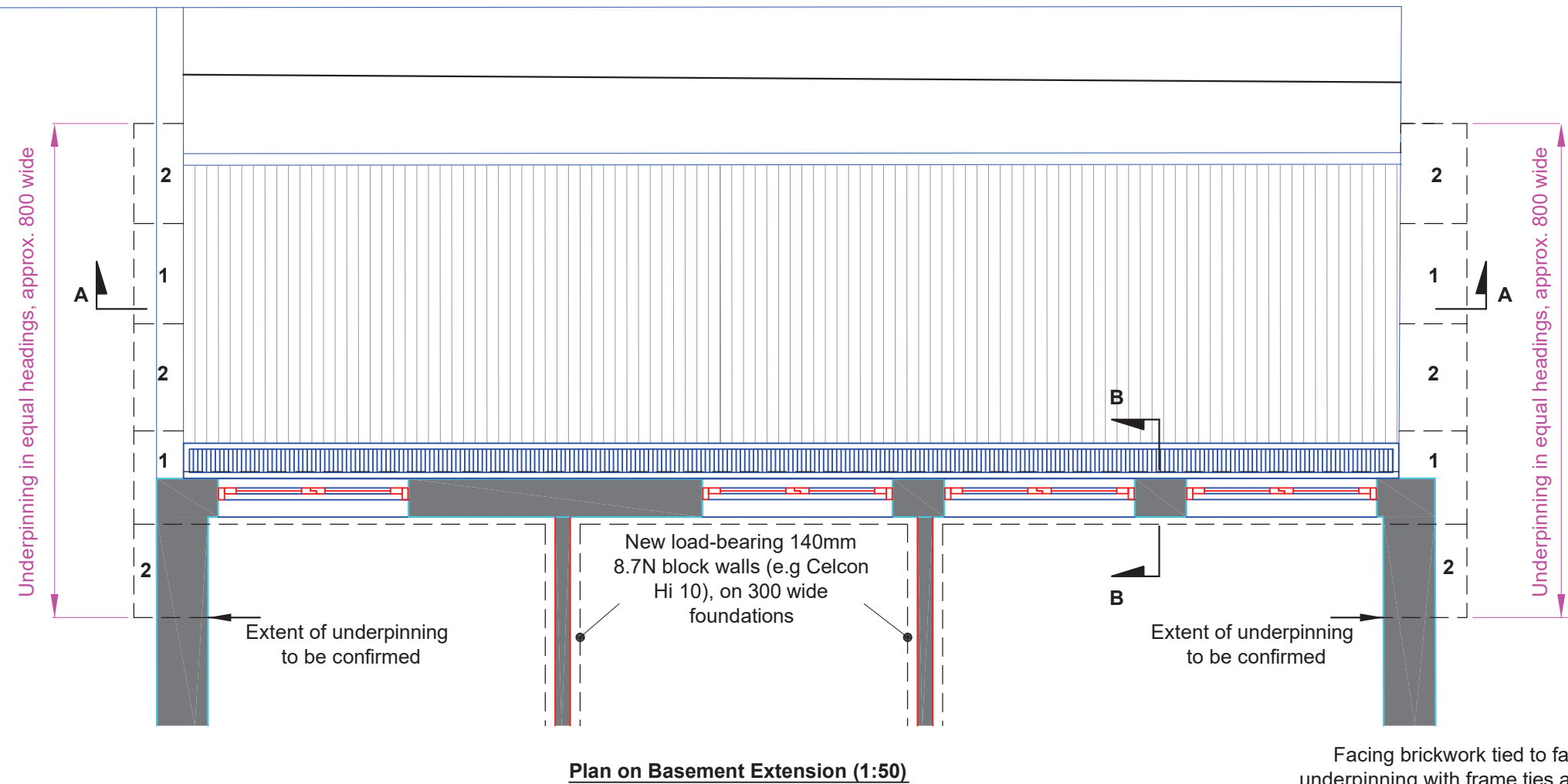
Notes

1. In assessing the degree of damage, account must be taken of its location in the building or structure.
2. Crack width is only one aspect of damage and should not be used on its own as a direct measure of it.

Appendix C

Number 2 Tavistock Place - EDA Rear Foundation Drawing

Loose brickwork exposed in this wall to be removed in sections no more than 1m wide and backfilled in concrete (as underpinning specification), except where it will be exposed in final condition, where matching facing brickwork is to be used to repair wall



Notes and Method Statement (for underpinning)

- 1) Excavate for new heading, no larger than 1m in width thoroughly cleaning the underside of the existing foundations, in sequence indicated on plan
- 2) Cast new heading in GEN 3 Designated concrete mix to BS 8500
- 3) Allow heading to cure for a minimum of two days, before drypacking to the underside of the existing foundation, and constructing new facing brickwork
- 4) Allow bed reinforcement to project at edges of underpinning panels by not less than 300mm (to lap with reinforcement in adjacent panel)
- 5) Allow a further three days before excavating adjacent heading, and repeating underpinning process
- 6) For all setting out see drawings by Brooks/Murray Architects
- 7) See Drawing S100 for full structural specification

Drawing No: 1520/S1E
Date: 27.11.09
Scale: 1:50 @ A3

Revisions

Rev C: Section A - A amended
16.06.10

Rev D: Section A - A amended
18.06.10

Rev E: Note to rear wall added;
underpinning MS amended
18.07.10

eda

engineering design and analysis

5 Sanderstead Hill, South Croydon CR2 0HB
tel: 020 8405 6287
e-mail: eda@blueyonder.co.uk

Project: 2 Tavistock Place, London WC1

Drawing: Foundations to Rear Extension

Client: Mr S Firth