TTW Structural Civil Traffic Façade

Heritage Structural Construction Methodology Report for DA

50 Phillip Street

Prepared for Built / 22 December 2020

171566

Taylor Thomson Whitting (NSW) Pty Ltd (ACN 113 578 377)
as trustee for the Taylor Thomson Whitting NSW Trust
(ABN 59 514 956 558) I Consulting Engineers
Level 3, 48 Chandos Street, St Leonards NSW 2065

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Contents

1.0 Executive Summary

This report outlines the key design considerations that have been taken into account for the conservation of the significant heritage fabric. On review of GBA Heritage's SOHI, critical heritage elements which are presented with a risk of damage have been identified with structural solutions and restrictions to control the risks identified.

With our extensive experience in retaining heritage structures, we have developed a concept which directs all additional load from the proposed structure away from the existing and onto new structure and isolated from the existing heritage structural system. This allows the new building to be structurally independent, reducing the risk of adverse impacts onto the existing fabric.

Through limiting construction vibration and settlement induced deflections with engineering controls and detailed construction methodologies, associated risks with critical heritage elements can be mitigated. This will involve restricting the use of jack hammering and construction of retrofitted supporting beams of high stiffness to ensure the high value heritage fabric is protected.

The existing site conditions, particularly of the ground, are briefly explored before the design philosophy and approach behind each of the major structural elements of the design is elucidated. Following this, the engineering criteria that govern the design are presented. Recommended structural monitoring parameters related to the heritage structure at 50 Phillip St are outlined below:

The settlement limits are based on the resultant ground curvature and consequential strain within the masonry walls.

Restriction	Limits
Ground Deflection	1/3000
Strain in masonry structure	0.05%

The vibration limits listed below are based on the sensitive and heritage nature of the existing building.

Line	Type of Structure	Vibration at the foundation at a frequency of		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*
1	Commercial / Industrial Buildings	20	20 - 40	40 - 50
2	Dwellings and Buildings of similar design and occupancy	5	5 - 15	15 - 20
3	**Structures that are particularly sensitive to vibration and cannot be classified above.**	**3**	**3 - 8**	**8 - 10**

* At Frequencies above 100Hz, the values given in this column many be used as minimum values.

2.0 Introduction

This report identifies how significant elements of the heritage building will be retained and protected from damage during the construction of the proposed building. Critical heritage elements are listed, along with risks associated with works around them and structural solutions.

The purpose of this document forms part of the Stage 1 State Significant Development (SSD) Development Application (DA) for the redevelopment of a new mixed-use hotel and branded residential building at 50-52 Phillip Street, Sydney. The Staged SSD DA proposes a concept proposal or Stage 1 DA for the retention and refurbishment of the heritage building on the site, demolition of other existing buildings on the site and construction of a new mixed-use building. The Stage 1 SSD DA specifically seeks consent for land uses, a maximum gross floor area, a maximum building envelope, pedestrian and vehicle access and circulation arrangements, and associated car parking provision.

Built is seeking to transform the current site to deliver a new and modern mixed-use development which contributes to overcoming a shortage of hotel accommodation in Sydney, and positively contributes to the character and vibrancy of Sydney's Central Business District (CBD). As part of the redevelopment project, the existing heritage listed building on the site will be retained and refurbished for hotel purposes.

As the proposal is for the development of a predominately tourist related purpose, being a hotel, that has a capital investment value in excess of $100 million, it is SSD as prescribed in Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP).

3.0 Site Description

The site is located in Central Sydney, along the eastern edge of Sydney's core Central Business District (CBD). The immediate surrounds of the site in the eastern edge of the Sydney CBD present a mix of commercial, residential, and tourism uses. The prevailing built form in the vicinity of the site includes a range of building typologies and heights, as well as several significant state-listed heritage buildings, such as the Chief Secretary's Building immediately to the north of the site.

The site itself is located at 50-52 Phillip Street, Sydney and has a total area of approximately 1,726m^2, with frontages to Phillip Street and Phillip Lane. Two commercial buildings sharing a built-to-boundary condition currently occupy the site. The heritage-listed sandstone building in the northern portion of the site is six generous storeys in height and contains commercial office space. The building located on the southern portion of the site is 12 storeys in height, and contains a ground level café/bar use, with commercial office space above.

Phillip Lane, which forms part of the 50 Phillip Street lot, connects through the site from Phillip Street at the northern boundary of the site. Phillip Lane is not proposed to be altered from its current form as an access point to the remainder of Phillip Lane at the rear of the site.

An aerial image of the site is provided at Figure 1 and a photograph of the existing buildings fronting Phillip Street is provided at Figure 2.

Figure 1 - Aerial photograph of the Site - Source: Nearmaps (edits by Ethos *Urban*)

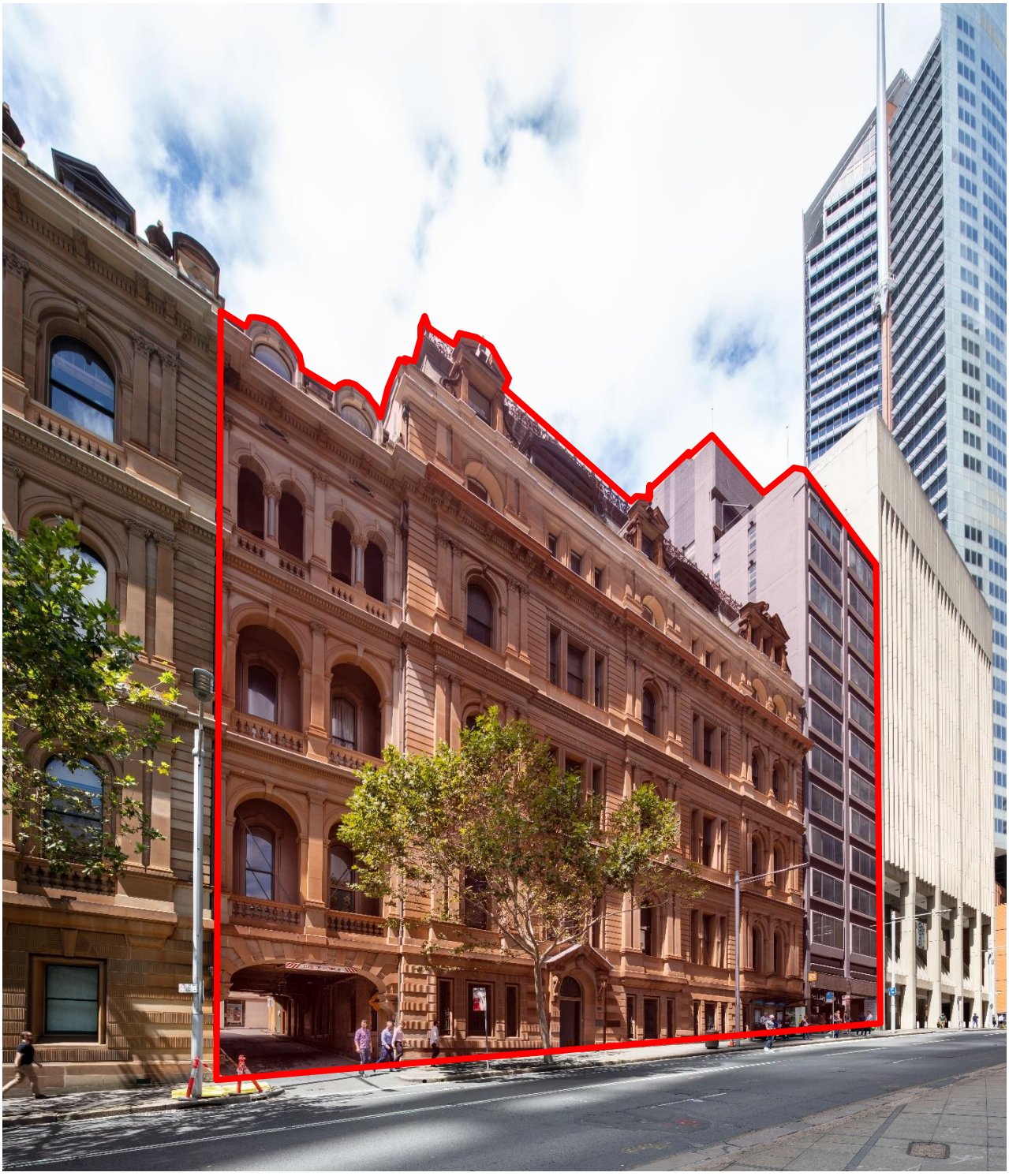

Figure 2 – Existing Building Fronting Phillip Street - Source: Built

4.0 Background

On 15 October 2019, the NSW Government published details of the Built Unsolicited Proposal for the leasehold purchase of 50 Phillip Street, Sydney to allow for the proposed hotel redevelopment. The Built proposal has progressed to Stage 2 of the Unsolicited Proposal process, and has been deemed unique as Built owns the adjacent property (52 Phillip Street, Sydney) to the Government owned 50 Phillip Street, Sydney. As there are no other privately owned properties immediately contiguous to 50 Phillip Street, Built possesses unique property ownership that enables it to amalgamate 50 and 52 Phillip Street, and take full advantage of the unused developable air space.

The proposed redevelopment project will combine both private and Government land, breathing new life into an underutilised heritage-listed NSW Government owned building and Built's aging privately-held commercial office building.

Built is well recognised for work in the refurbishment and restoration of iconic heritage properties across Australia. As such, a foremost principle of the project is to ensure that the integrity of the heritage listed Government building is not compromised. Rather, the heritage qualities of the building will be celebrated and revitalised for the people of NSW. The Chief Secretary's Building which fronts Bridge Street will not be leased as part of this redevelopment project, and it is intended to remain in Government ownership and control.

4.1 Project Vision

The vision for the redevelopment is to revitalise the lower end of Sydney's financial services district by delivering a new luxury mixed use hotel with a portion of branded residential apartments. The proposal will provide an important and much needed asset to the people of NSW and visitors. Sydney will have, as part of the amalgamation of the properties, its finest luxury hotel with associated retail areas providing ground floor public activation accessible to the general public and hotel guests alike.

Overall, the project will provide the following key public benefits:

- Job creation and benefits to the tourism industry from construction and operation of a new 5/6 star hotel in Central Sydney.
- Contribution to the NSW State's economic activity and Gross State Product, including the generation of construction phase revenue for the Government in the form of payroll tax, stamp duty and GST payments.
- Rejuvenation and adaptive reuse of a Government owned heritage building.
- Regeneration, enhancement and activation of the surrounding public domain, particularly upgrades to Phillip Lane.
- Creation of a heritage-tourism precinct with a new hotel as the centrepiece.
- A portion of branded residential apartments to support the deliver of the hotel and provide a variety of uses to contribute to the liveability of Central Sydney.
- The potential to deliver a capital return to Government to fund future Government investment in services and infrastructure.

5.0 Project Description

This SSD DA seeks consent for a concept proposal for a new landmark mixed use building with approximately 331 new hotel rooms and 23 branded residential apartments in Sydney's CBD. The Stage 1 SSD DA Concept Proposal will establish a maximum building envelope, land uses, a maximum total quantity of floor space, pedestrian, vehicle circulation, and drop-off arrangements and associated car parking provision.

Specifically, the Stage 1 SSD DA seeks concept approval for:

- In-principle site preparation works, including termination/relocation of site services and infrastructure, demolition of the existing buildings/structure on the site, excluding the existing heritage-listed building;
- A new 47 storey mixed use building envelope containing:
  - lower level café/bar uses and associated servicing and back-of-house facilities;
  - a new basement containing waste rooms, loading space, and car parking spaces;
  - hotel uses on levels 1 to 35; and
  - residential uses on levels 36 to 47.
- Retention of the existing heritage-listed building on the site, and refurbishment of this building for hotel purposes.
- A new driveway crossing over Phillip Street at the southern end of the site.
- Maintenance and retention of the existing vehicular access over Phillip Lane.

Development consent is not sought for any detailed component of development. A future separate Stage 2 SSD DA will be lodged for the detailed design and construction of the development, following the completion of a competitive design process.

A further detailed description of the proposal is contained in the supporting Environmental Impact Statement prepared for the SSD DA by Ethos Urban.

6.0 Existing Condition

6.1 Existing Structure

The building at 50 Phillip Street is proposed to be maintained as part of the overall project. It is understood that the building was constructed as an extension to the Chief Secretary's building in 1890. The building was designed to accommodate the railway commissioners' offices.

TTW has had the opportunity to undertake an initial inspection of 50 Phillip St. but existing structural drawings are not available for assessment. As the proposed State Significant Development at 50-52 Phillip St, Sydney (SSD 10464) intends for the adaptive reuse of 50 Phillip St as part of a hotel development some areas of the existing structure load capacity may need to be assessed for the change of use and proposed finishes within building. A historic assessment of the heritage building is recommended to be undertaken prior to the stage 2 SSDA. The purpose of this assessment is to determine the structural systems, geometry, condition and capacity. This will provide a basis of design for the heritage structure and inform subsequent structural and remediation and alterations works within the heritage structure and at interface zones with the new structure. It is unlikely that the building will comply with the seismic performance requirements under the current code of practice. It is suggested that the heritage structure component of the project have a seismic assessment in accordance with AS3826 to minimise the level of intervention that the building requires. AS3826 was developed specifically for the seismic assessment and strengthening of existing structures and would be a performance based solution under the NCCA.

Our experience around the upgrade and adaptive reuse of existing heritage structures would lead us to the view that this structure will require a number of performance based solutions from a Structural, Fire and Acoustic perspective which needs to be clear to the design team from the outset of the project. We note however that the vertical occupancy loads applied in the original design are likely higher than those required for the building adaption, indicating less intervention to the existing fabric may be required.

There are also some interventions into the floor of the existing building to facilitate the construction of the new loading dock and function spaces. A review of the scheme design has taken place to address the requirements around the retention of the highly significant heritage fabric and the temporary works requirements to support the existing structure.

6.2 Existing Ground Conditions

Based on a desktop geotechnical report provided by Golder (*20144636-002-L-Rev1 Geo and Contam Desktop Study*) class III/V sandstone is anticipated at depths of 1-2m. Previous geotechnical reports produced for projects surrounding the site provide similar data. Based on our experience it is expected that the existing heritage structure is founded on Class III/V sandstone at 1-2m depth below ground level. Through TTW's archives, several existing geotechnical reports have been performed within approximately half a kilometre of the site, with the closest being approximately 100 m to the north. A list of the available reports is given below, followed by a map showing the approximate locations of these geotechnical investigations relative to the site.

Map Indicator	Report No.	Date	Author
1	31504SMrpt	13 June 2018	JK Geotechnics
2	GEOTLCOV25264AA-AE	16 March 2015	Coffey Geotechnics
3	86245.00.R.003.Rev1	April 2019	Douglas Partners
4	PSM1172.R1 Rev2	May 2008	Pells Sullivan Meynink
5	S10820I-AK	October 1997	Coffey Partners International
6	21/22364	May 2013	Gutteridge Haskins & Davey
Site Location	20144636-002-L-Rev1 Geo and Contam Desktop Study	June 2020	Golder Associates Pty Ltd

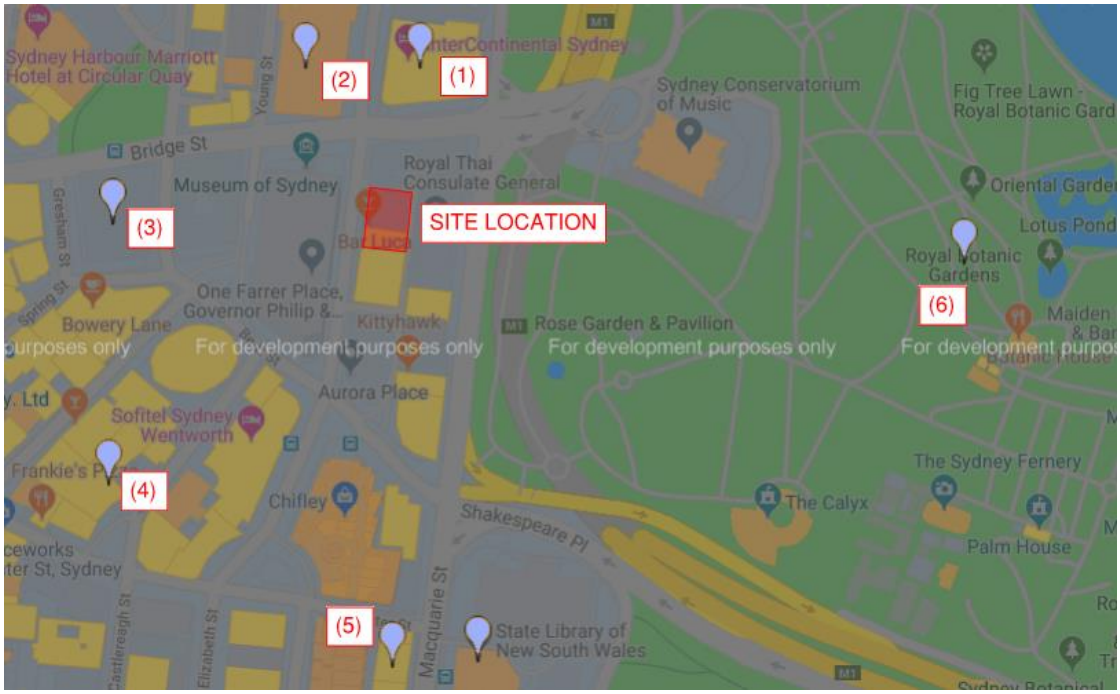

Figure 3 - Site Location with Previous Geotechnical Reports

The closest boreholes to the site generally consist of fill overlaying sandstone Class II sandstone is generally quite shallow with some adjacent sites encountering rock within 1m of the surface. Class I Sandstone is present between 7-9m in the surrounding area. Defect spacing in the Class I&II Sandstone is generally wide with groundwater being encountered close to the surface.

7.0 Heritage Elements to be Retained

The following heritage elements have been graded as having exceptional, high or moderate significance as per GBA Heritage's SOHI. External and structural elements have been included in this list for the purpose of this report on structural retention and preservation.

7.1 Elements of Exceptional Significance

- The exterior façade of No. 50 Phillip Street facing Phillip Street including stonework, balconies, and joinery (west elevation),
- Exterior Mansard roofs with crested iron railings, and Wunder-lich external dormer architraves, dormer windows and louvred ventilation consoles

7.2 Elements of High Significance

- North and east facades of the building to Phillip Lane.
- Current extent of bridging of Phillip Lane.
- Current extent of lightwells above Phillip Lane and south of the main staircase.
- External cantilevered walkways on the southern side of the light-well over Phillip Lane on level 3.
- Masonry archways to Phillip Lane
- Phillip Lane as a bridged public thoroughfare
- Kerbstones to Phillip Lane.
- Remaining two original fireplaces to Level 6.
- Original doors and windows

7.3 Elements of Moderate Significance

- External walls around the central lightwell and the south facade of the building.
- Some of the original internal walls which have undergone several alterations over time.

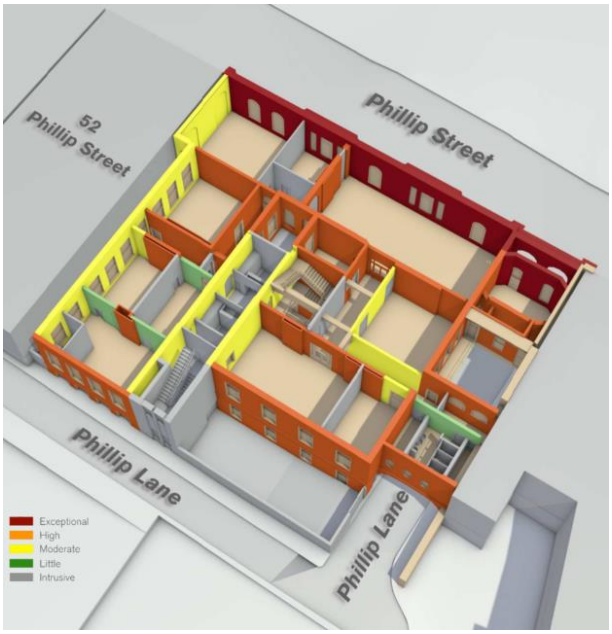

Figure 4 – Heritage Significance of Structural Elements (FJMT)

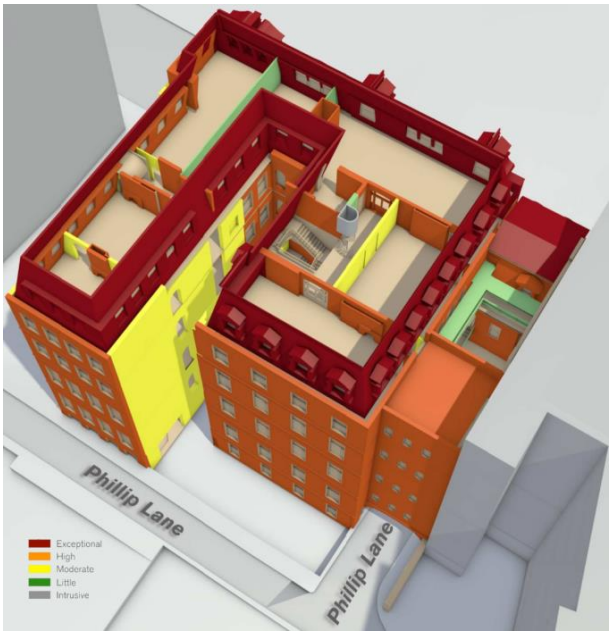

Figure 5 – Heritage Significance of Structural Elements (FJMT)

8.0 Critical Construction Works Requiring Consideration

The following built elements proposed as part of the SSDA have been identified as critical items and reviewed in detail as identified below to mitigate the risk of damaging critical heritage building fabric.

Figure 6 – Locations of Critical Construction Works around Heritage Fabric

8.1 Phillip Lane Pier Removal

Part of the proposed intervention works to 50 Phillip St. includes removing four piers along the northern façade of the arched underpass along Phillip Lane to facilitate hotel drop off and vehicle & pedestrian movements. To prevent adverse effects on the heritage fabric and support the new openings, transfer steel beams will need to be installed as part of a needling procedure. If required, jacking can be installed to prevent settlement during the intervention works to ensure full support is maintained during the process. Please refer to appended sketches for details on sequencing.

8.2 Phillip Lane Basement

The proposed development includes excavating underneath the Phillip Lane wing on the eastern extremity of the building. This involves digging underneath highly and moderately significant heritage fabric. To prevent settlement and subsequent cracking to these elements, it is proposed in appended sketches to construct concrete beams of high stiffness beneath the existing walls and pile down to basement. This will provide the existing wall with adequate support and allow for water and soil retention in the basement area.

Due to the construction of the new basement structure along Phillip Lane, provision for shoring within the current design should be allowed for at this stage. The geotechnical report provided by Golder outlines the shoring system should be designed to retain 5-7m of soil including 2m of fill and residual soils and a depth of weathered sandstone. Vibration will also need to be limited during this excavation to avoid disturbing the heritage fabric. Please refer to appended sketches for details on sequencing.

8.3 Lightwell Column

The proposed column in the lightwell of 50 Phillip St provides critical support to the new proposed structure above and is independent to 50 Phillip St. To minimise the impact on the existing heritage structure permanent steel formwork is recommended. Due to the sensitivity of the surrounding masonry walls, which are listed as highly significant, excavation for the column footing may require lateral shoring props to maintain confinement

of the supporting rock until the new concrete footing is poured. To control the risk of vibration propagation through the existing masonry walls, vertical coring and diamond cutting around the perimeter of the excavation will control the magnitude of vibration waves from oscillating through the to the existing masonry wall footings. Please refer to appended sketches for details on sequencing.

The column will be constructed in a method that allows for careful deconstruction, acknowledging that the adjacent heritage building will outlive the new proposed works. This will allow the demolition to be carried out at the end of the buildings life with minimal impact on the surrounding heritage fabric.

9.0 Impacts of Working Under the Structure

The construction of the basement levels under the existing heritage building has the potential to cause localised differential ground settlement due to its proximity to the heritage structures foundations. This section of the report looks at likely contributors to ground movement, the structures likely response to ground movement and recommend design limitations to control the risk of damage.

9.1 Potential Impact Factors

9.1.1 Theoretical Effect of Ground Movement – Ground Strain

The existing building is of considerable age, comprising predominantly of masonry construction along the façade and internal walls. Excavation below is expected to cause some level of localised settlement. As the soil settles, it creates curves in the ground surface. In the creation of ground curvature, stresses are subjected to stiff buildings above. In the case of the building at 50 Phillip street, which is predominantly of masonry construction, the structure is typically not designed to adequately handle minor ground movements.

Localised settlements will have an impact on the natural ground, causing distortions. These distortions to the ground surface will induce strains in the masonry walls which bear onto the ground. The level of acceptable strain in a masonry structure has been identified as 0.05 – 0.1% in J.B. Burlands study, “Assessment of Risk of Damage to Buildings due to Tunnelling and Excavation.” [1] Strain is a measure of a change in the length of a material in comparison to its initial length. Strains in excess of 0.075% (average) are thought to put the masonry element at risk of cracking.

Damage Category	Damage Description	Approximate Crack Width (mm)	Limiting Tensile Strain
0	**Negligible**	**<0.1**	**0 - 0.05%**
1	Very Slight	<1	0.05% - 0.075%
2	Slight	<5	0.075% - 0.15%
3	Moderate	5-15	0.15% - 0.3%
4	Severe	15-25	>0.3%
5	Very Severe	>25	>0.3%

Table 1: Relationship Between Category of Damage and Limiting Tensile Strain[2]

[1] Burland J.B
[2] Boscardin and Cording 1989

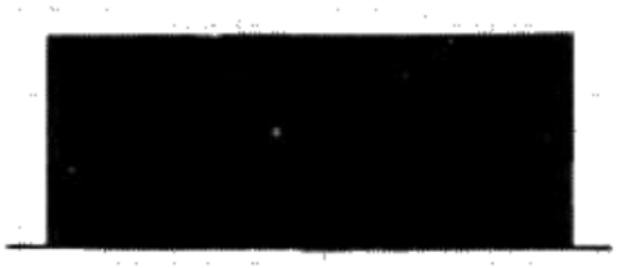

Figure 7 – Wall Undergoing Hogging Strain Stage 1[1]

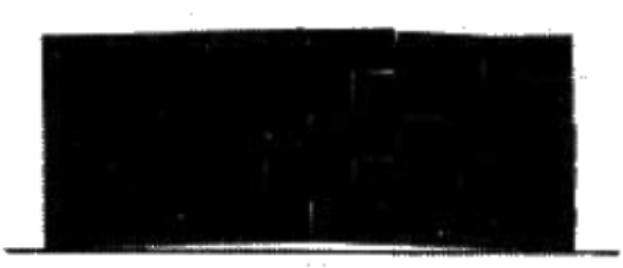

Figure 8 – Wall Undergoing Hogging Strain Stage 2[1]

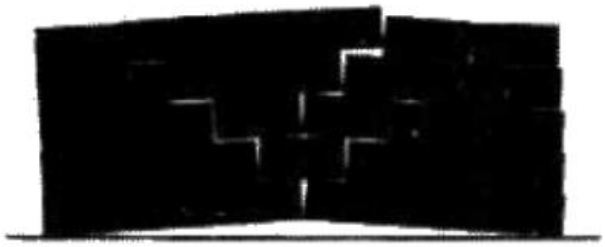

Figure 9 – Wall Undergoing Hogging Strain Stage 3[1]

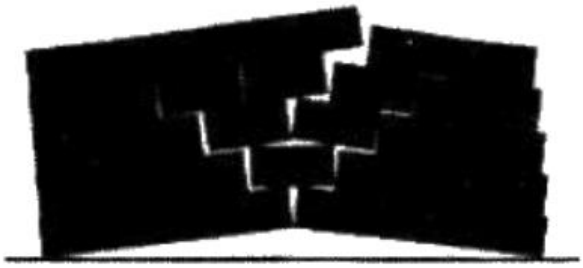

Figure 10 – Wall Undergoing Hogging Strain Stage 4[1]

9.1.2 Measurement of Ground Movement

During the process of excavation, the ground levels should be monitored, to record settlement levels. It is to be noted that ground movement and its affects on building strain are relative. For example, settlement becomes a critical issue when one part of a structure which is fixed to another, settles independently.

Tunnelling is known to create a wave effect of settlement. As the tunnelling moves through the rock it creates a slow wave behind it of displacement / settlement. The damage profile is consequently on either side of the wave, as one side has settled relative to another (differential settlement). The critical level of differential settlement depends on the construction of the masonry, the foundations, the loading and the finishes to the masonry.

9.1.3 Angular Distortion and Numerical Analysis

The damage associated to a wall can be related to the imposed angular distortion (relative rotation), which is defined as the ratio of differential settlement and the distance between two points. The angular distortion is a representation of a deflection limit, assigned to a specific length. Considering a deflection limitation of span / 3000, an acceptable angular distortion would be 0.33mm per m (mm/m).

9.1.4 Vibration

Construction / demolition in close proximity to existing structures presents a risk of structural damage due to ground borne vibrations originating from the site. Reasonable steps should be taken to control and monitor vibration levels. Considering the age and general poor condition of the structures, and in terms of permissible vibration from the site works, the properties should be regarded as a building that is “sensitive” to vibration.

Permissible vibration to buildings from construction works is complex. Anticipated vibration frequencies at foundation level first need to be assessed before a peak particle velocity (PPV) can be recommended and then monitored. The effect of vibrations on building structures is dependent on the period of the event, how often it occurs and the frequency of the vibrations.

Line	Type of Structure	Vibration at the foundation at a frequency of		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*
1	Commercial / Industrial Buildings	20	20 - 40	40 - 50
2	Dwellings and Buildings of similar design and occupancy	5	5 - 15	15 - 20
3	**Structures that are particularly sensitive to vibration and cannot be classified above.**	**3**	**3 - 8**	**8 - 10**

* At Frequencies above 100Hz, the values given in this column many be used as minimum values.

Table 2: Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on structures based on DIN 4150.3

Due to the sensitive condition of the masonry structure, vibration should be limited to the following peak particle velocities for the specified frequency ranges:

- 1Hz to 10Hz: 3mm/s peak particle velocity (PPV)
- 10Hz to 50Hz: 3-8mm/s peak particle velocity (PPV)
- 50Hz to 100Hz: 8-10mm/s peak particle velocity (PPV).

3mm/s PPV is the most conservative limit specified in DIN 4150.3 (Das Deutsche Institut für Normung) which is a German standard for vibration and considered the authoritative standard for the effects of vibration on sensitive buildings. Limiting vibration to a maximum of 3mm/s PPV is advised for structures that are of ‘great intrinsic value e.g. listed buildings under preservation order.

We advise that human perception of vibration occurs at much lower PPV levels than the levels than that specified above. The threshold of perception is approximately 0.15 mm/s. “Adverse comment” may occur at levels of approximately 0.3 mm/s to 0.6 mm/s. A level of 1.0 mm/s is noticeable and may cause loose items to rattle (crockery for example). Levels of 2.2 mm/s and above are easily noticeable. As a consequence, the ‘perception’ that damage is occurring by the building owner may occur at a much lower threshold than those recommended in DIN4150. The effects of vibration need to be considered against background vibration which can be any form of sound including traffic and planes overhead.

Loose items which do not have adequate restraint should be secured to prevent risk of fall. The following items should be considered to be restrained as part of a make safe:

- Masonry chimneys
- Balustrades
- Glass Windows should be inspected
- Internal ceilings

9.2 Recommended Design Parameters

Based on the structural limitations and the heritage value of the existing building we recommend the following design parameters / limitation in terms of excavation design.

9.2.1 Ground Strain

In accordance with recognised mining subsidence papers we recommend limiting deflection ratios to span / 3000. In walls spanning across the proposed shaft which would likely to be the most affected by predicted settlements, we recommend the span on 3000 criteria be followed.

Lateral ground strain should be monitored at footing locations near the access shaft where the footings zone of influence is intersected by the access cut-out.

9.2.2 Vibration

Vibration limits should be conservative considering the sensitive nature and high heritage value of the structure. Vibration should be limited to the following peak particle velocities for the specified frequency ranges:

- 1Hz to 10Hz: 3mm/s peak particle velocity (PPV)
- 10Hz to 50Hz: 3-8mm/s peak particle velocity (PPV)
- 50Hz to 100Hz: 8-10mm/s peak particle velocity (PPV).

Loose items which do not have adequate restraint should be secured to prevent risk of fall. The following items should be considered to be restrained as part of a make safe:

- Masonry chimneys
- Balustrades
- Glass Windows should be inspected
- Internal ceilings

As a make safe strategy to minimise risk of façade elements from falling, we recommend encapsulating the façade in a scaffold.

9.2.3 Excavation and Shoring

The new structure is expected to be supported directly on shallow foundations on sandstone. Depending on the final depth of suitable support material, local excavation may be required to reach higher quality rock. The new structure will not induce additional vertical loading on the existing structure at 50 Phillip Street. There are some localised tension forces within the analysis model, but it is expected that these will be able to be resolved through further analysis at the next stage of the project.

Retention of the basement is likely to be required at the upper level of the basement, where fill & the presence of services in the footpaths are expected. Based on the geotechnical report provided by Golder, up to 7m of retained fill and weathered sandstone should be allowed for prior to reaching Class I/II sandstone.

10.0 Conclusion

Considering the existing condition of the existing building and the proposed loads provided, we have provided a set of recommended construction and design limitations to be imposed on excavation beneath the building and general construction. The aim of the limitations is to control the risk of damage to the existing structure and façade.

With our extensive experience in retaining heritage structures, we have developed a concept which directs all additional load from the proposed structure away from the existing and onto new isolated piles. This allows the new building to be structurally independent, reducing the risk of adverse impacts onto the existing fabric.

Through identifying elements of high heritage significance, we can input controls to mitigate the risk of damage to critical building fabric. Attached sketches in this report illustrate the sequencing of works to ensure global stability is maintained during the excavation of the basement levels and construction of the tower above.

The existing site conditions, particularly of the ground, are briefly explored before the design philosophy and approach behind each of the major structural elements of the design is elucidated. Following this, the engineering criteria that govern the design are presented.

10.1 Summary of Settlement / Deflection Limits:

The settlement limits are based on the resultant ground curvature and consequential strain within the masonry walls.

Restriction	Limits
Ground Deflection	1/3000 (1.7mm for 5m span of masonry)
Strain in masonry structure	0.05%

10.2 Summary of Vibration Limits:

The vibration limits listed below should are based on the sensitive and heritage nature of the existing building.

Line	Type of Structure	Vibration at the foundation at a frequency of		
		1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz*
1	Commercial / Industrial Buildings	20	20 - 40	40 - 50
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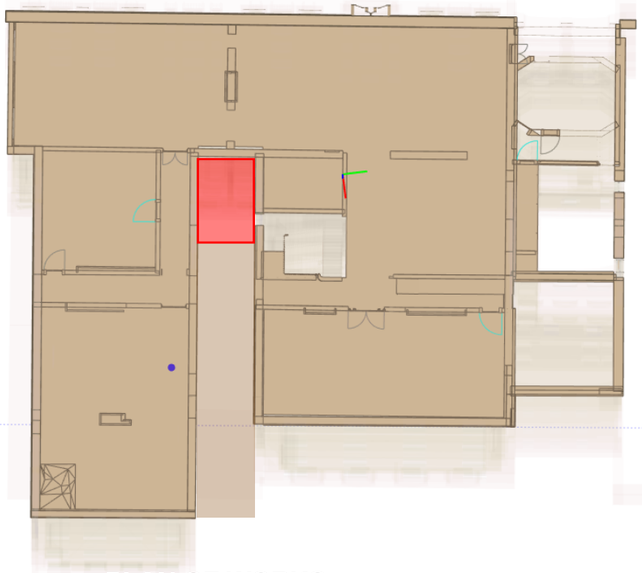
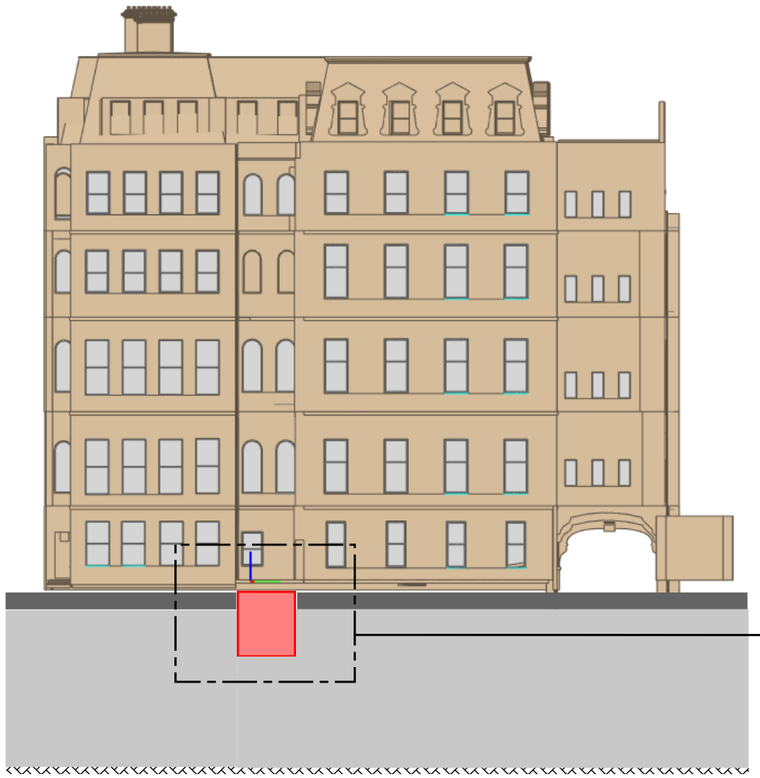
Appendix A

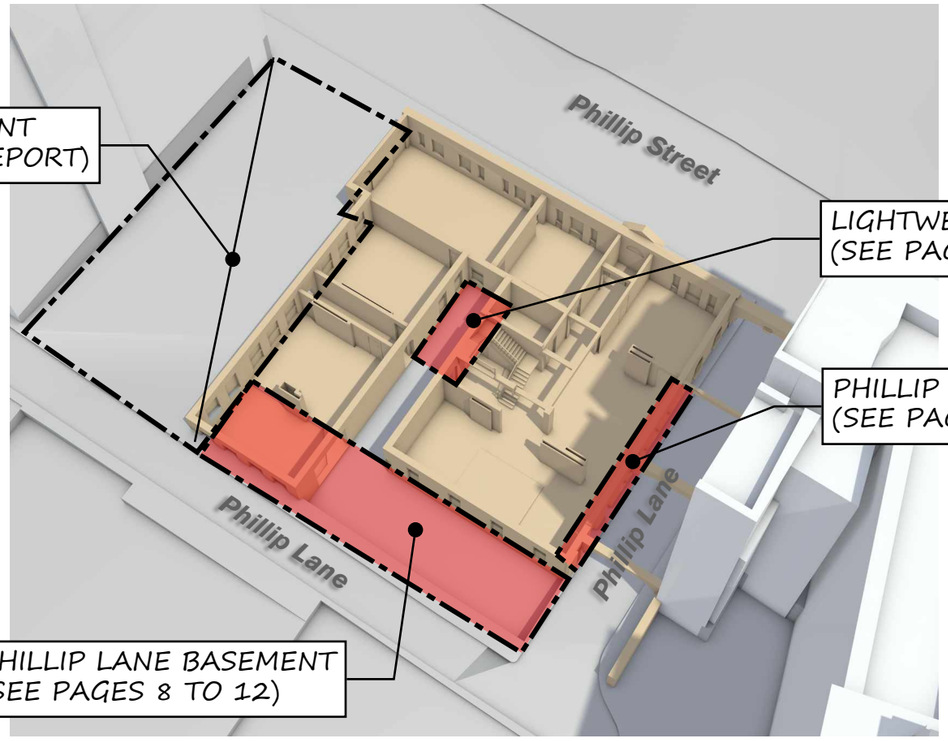
Structural Sketch Information



PLAN OF WORKS



REFER TO PAGE 2 & 3 FOR DETAILS



PHILLIP LANE BASEMENT
(OUTSIDE SCOPE OF REPORT)

LIGHTWELL COLUMN
(SEE PAGE 1 TO 3)

PHILLIP LANE PIER REMOVAL
(SEE PAGES 4 TO 7)

PHILLIP LANE BASEMENT
(SEE PAGES 8 TO 12)

SCOPE OF SKETCH PACK

REVISION	AMENDMENT	DATE
01	FOR INFORMATION	09-10-20

CLIENT: BUILT

ARCHITECT: FJMT

Taylor Thomson Whitting

Taylor Thomson Whitting (NSW) Pty Ltd, Consulting Engineers | ABN 81 113 578 377
48 Chandos Street, St Leonards NSW 2065 | +612 9439 7288 | ttw.com.au

PROJECT: 50 PHILLIP STREET

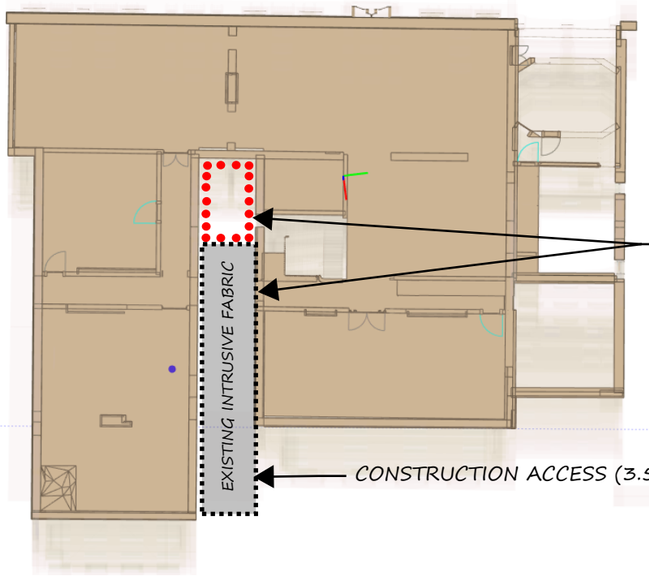
TITLE: NEW COLUMN INSTALLATION SEQUENCE

DRAWN	DESIGNED	CHECKED
A.B	A.B	M.F

DATE	APPROVED	SCALE
09-10-20	M.F	NTS

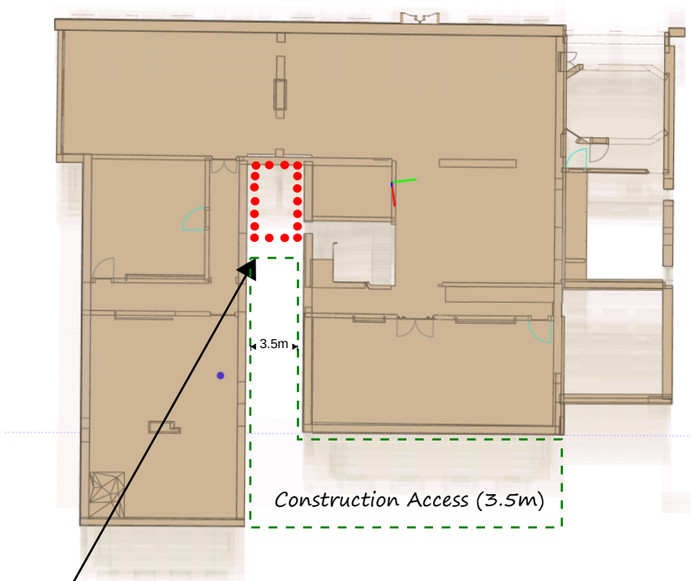
DRAWING NUMBER: 171566-TTW-CE-SK-002-R01

REVISION: 01



STEP 1: REMOVE INTRUSIVE BUILDING FABRIC TO FACILITATE CONSTRUCTION ACCESS

STEP 2 - CORE AROUND FUTURE FOOTING PERIMETER

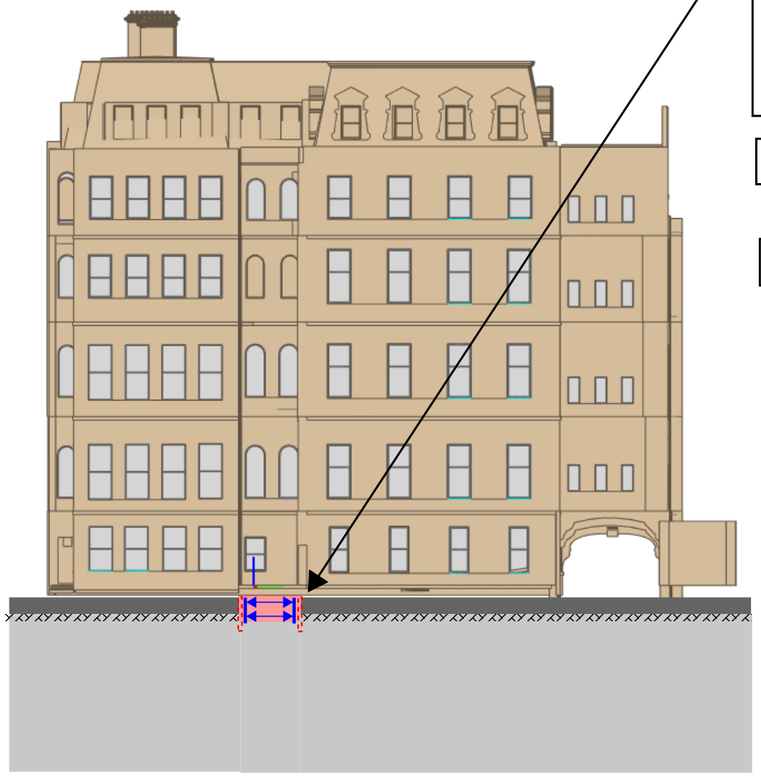


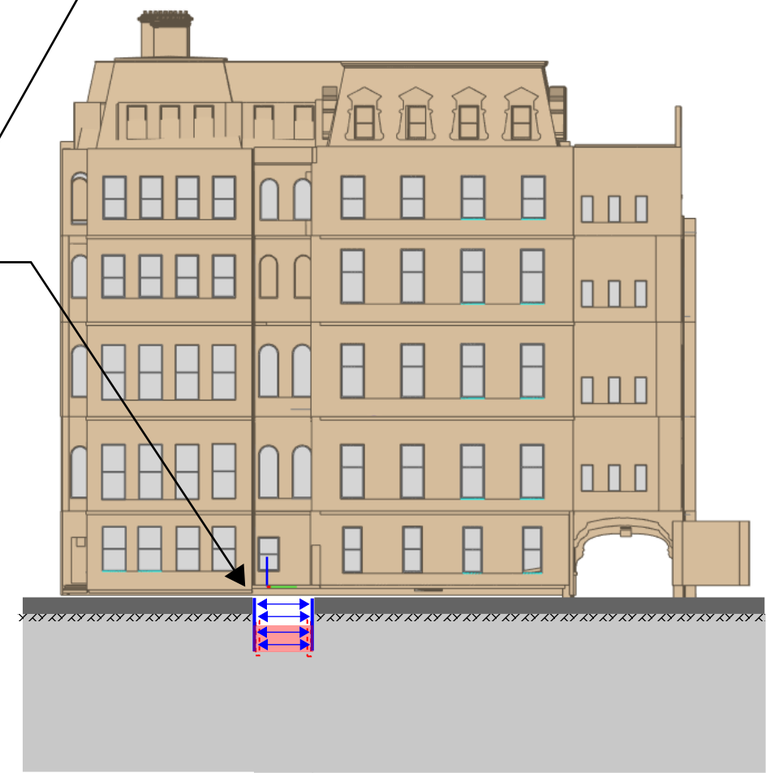
STEP 3 - EXCAVATE USING SAW CUTTING EQUIPMENT AND HAND TOOLS TO SPECIFIED DEPTH LIMITING VIBRATION

STEP 4 - INSTALL PERMANENT SHORING TO RESTRAIN EXCAVATION WALLS

STEP 5 - REPEAT STEP 1

STEP 6 - REPEAT STEPS 2 & 3





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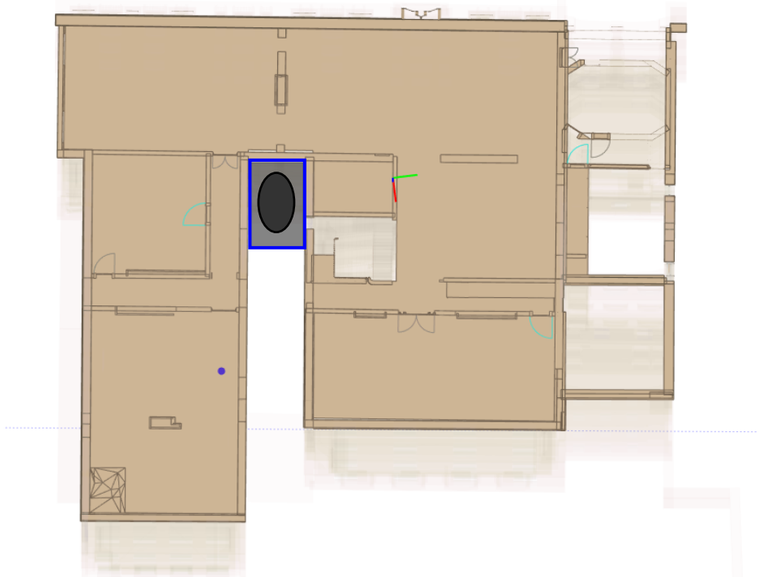

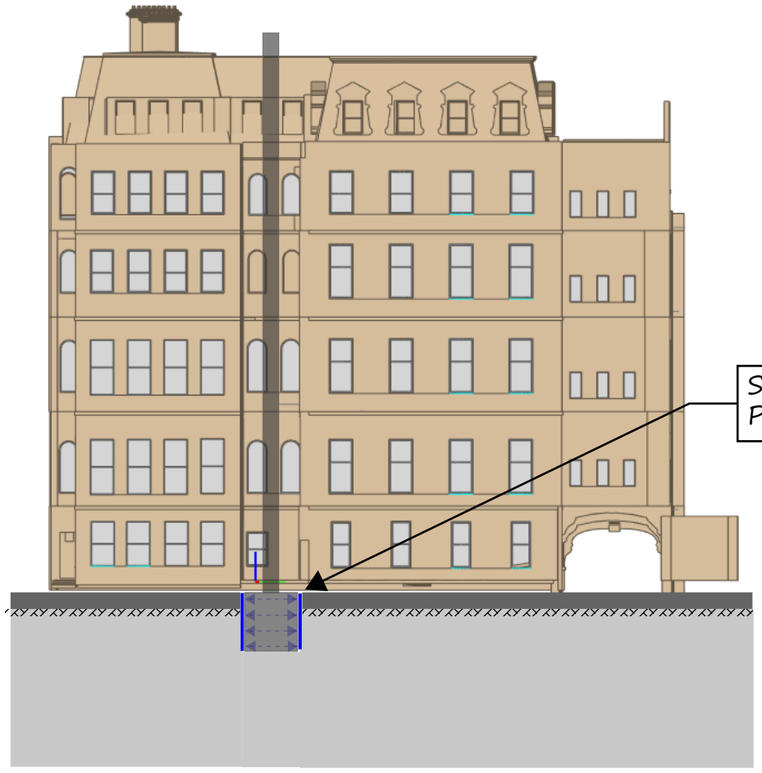

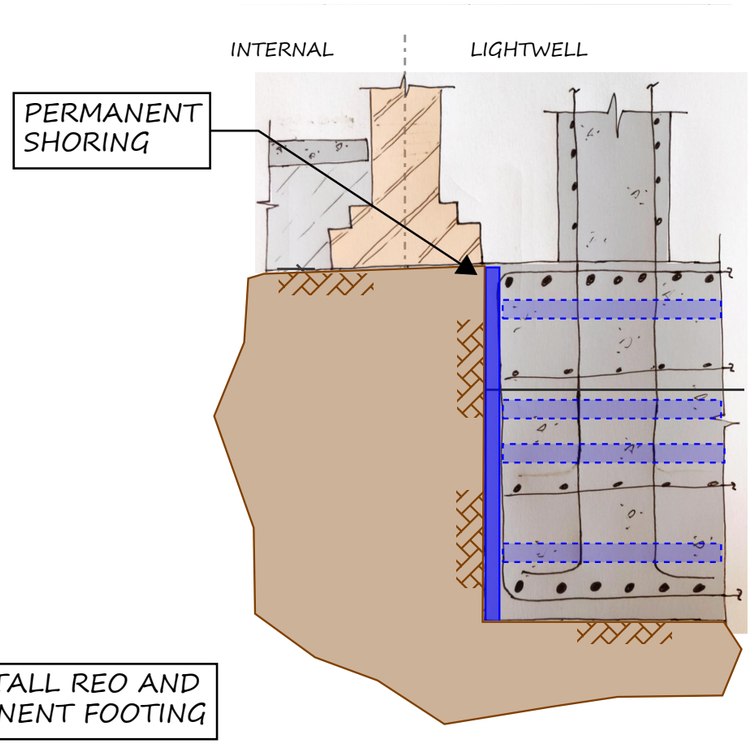

PROPOSED MEGACOLUMN FOOTING DETAIL

REVISION	AMENDMENT	DATE
01	FOR INFORMATION	09-10-20

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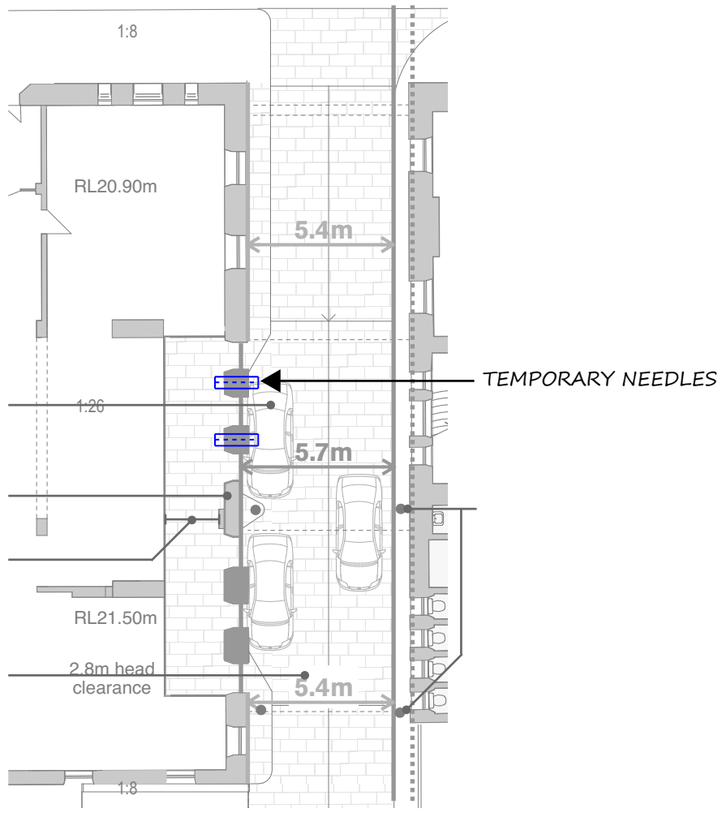
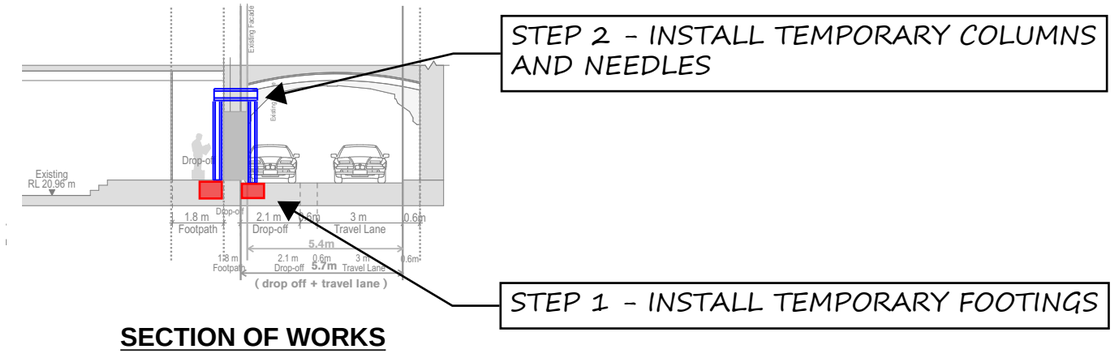
ELEVATION OF WORKS

CONSTRUCTION NOTE - WORKS TO BE CARRIED OUT ON ONE DOORWAY AT A TIME ONLY



PLAN OF WORKS



SECTION OF WORKS

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PROJECT: 50 PHILLIP STREET

TITLE: PHILLIP LANE PIER REMOVAL

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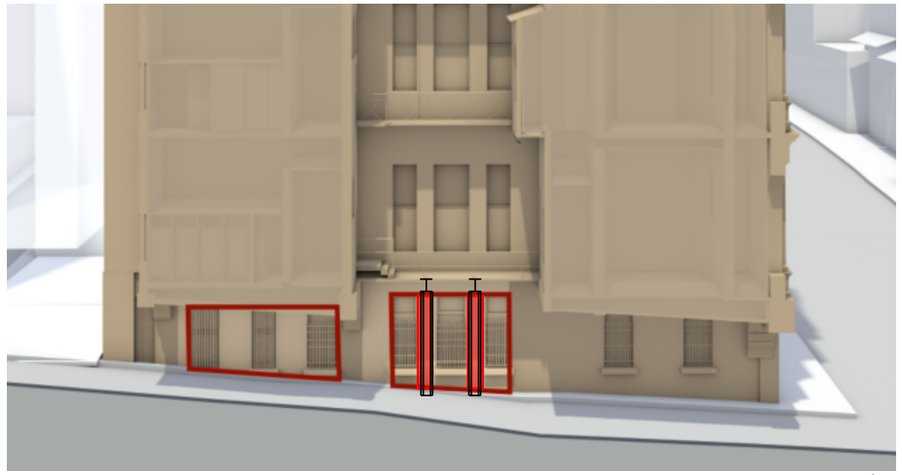
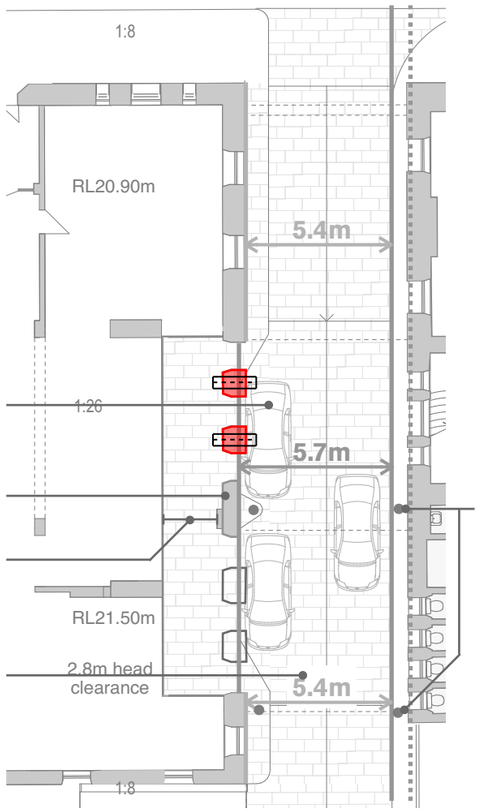
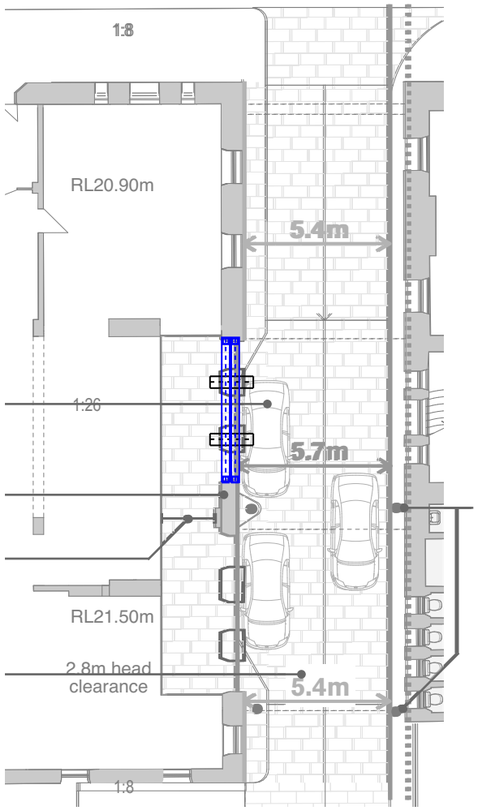


ELEVATION OF WORKS

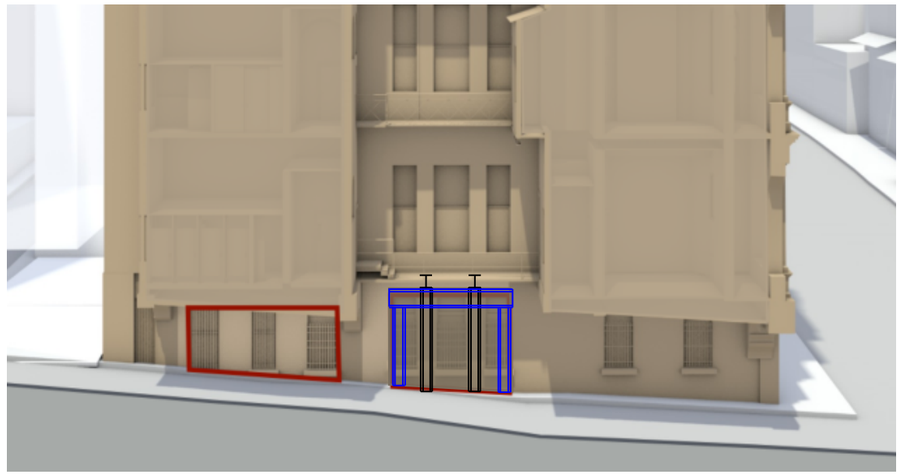
LOCAL DEMOLITION OF PIERS



PLAN OF WORKS

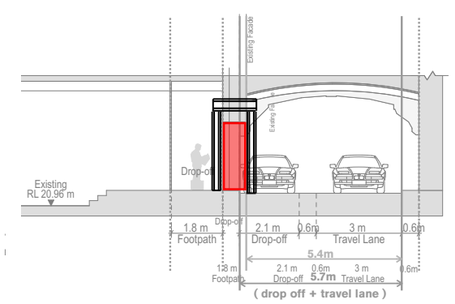


PLAN OF WORKS

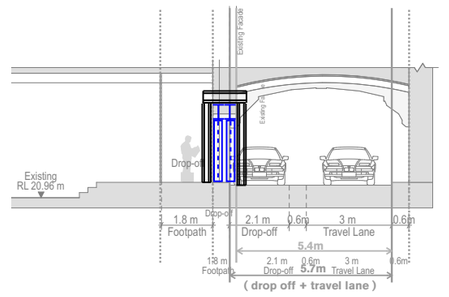


ELEVATION OF WORKS

INSTALL PERMANENT TRANSFER BEAM AND COLUMNS



SECTION OF WORKS



SECTION OF WORKS

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PROJECT: 50 PHILLIP STREET

TITLE: PHILLIP LANE PIER REMOVAL

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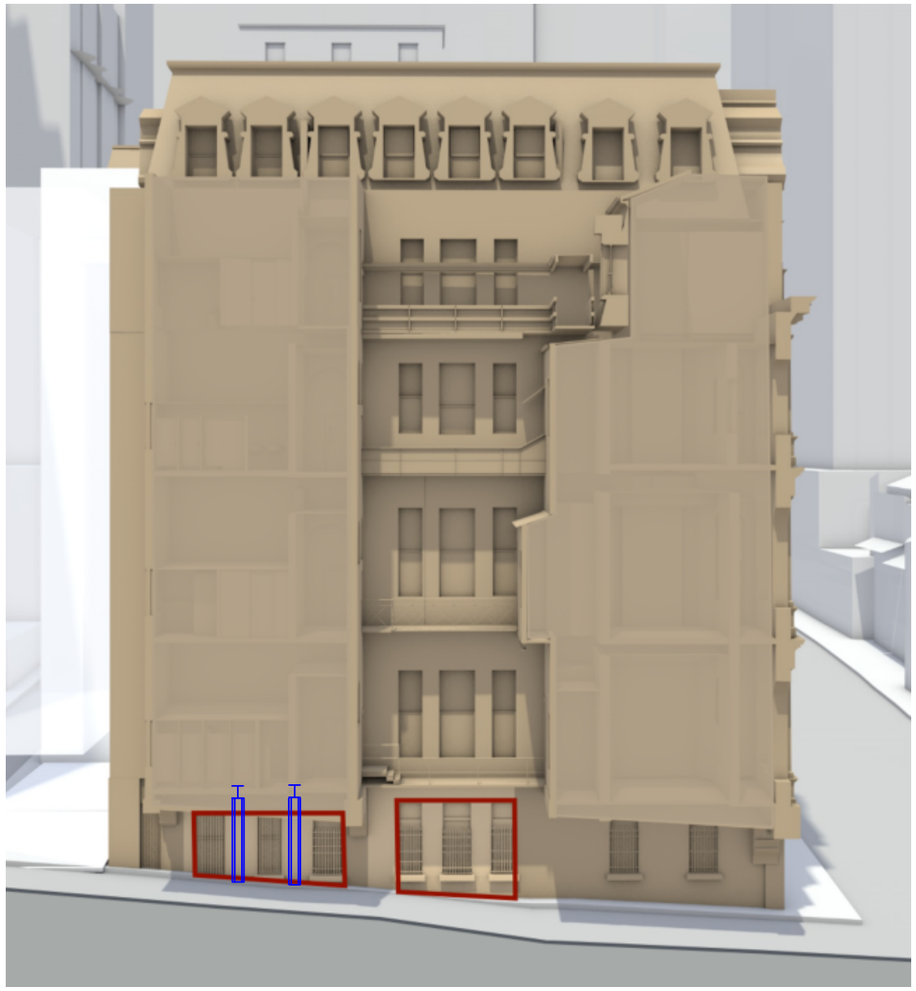
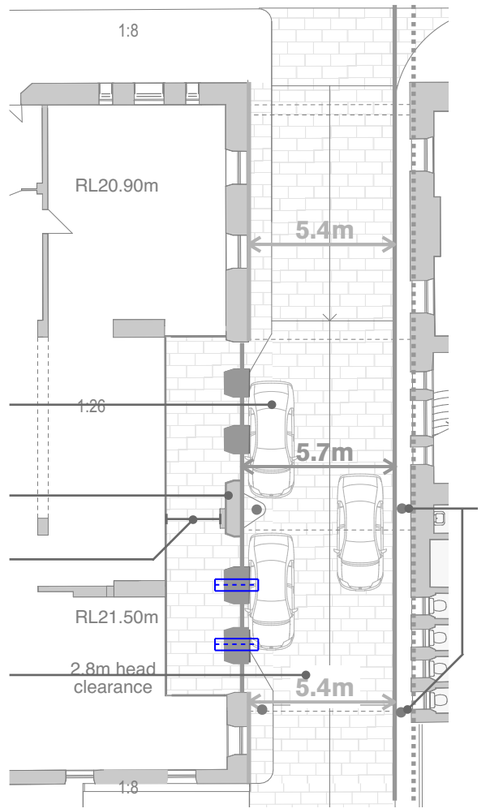
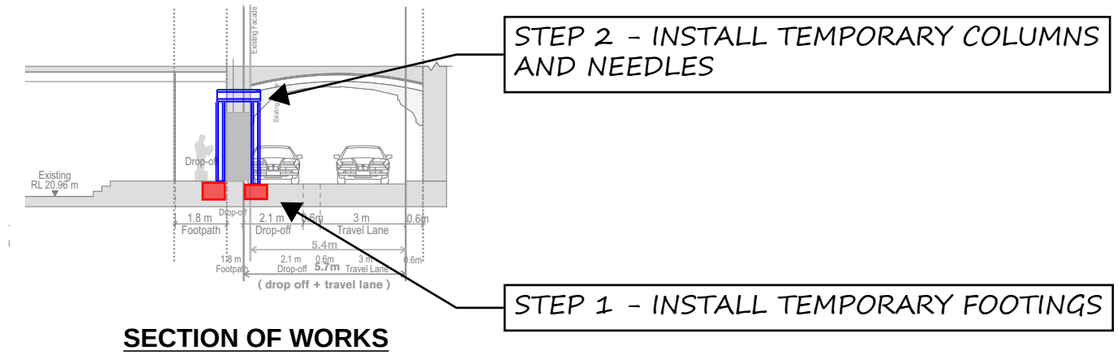


ELEVATION OF WORKS

CONSTRUCTION NOTE - WORKS TO BE CARRIED OUT ON ONE DOORWAY AT A TIME ONLY



PLAN OF WORKS



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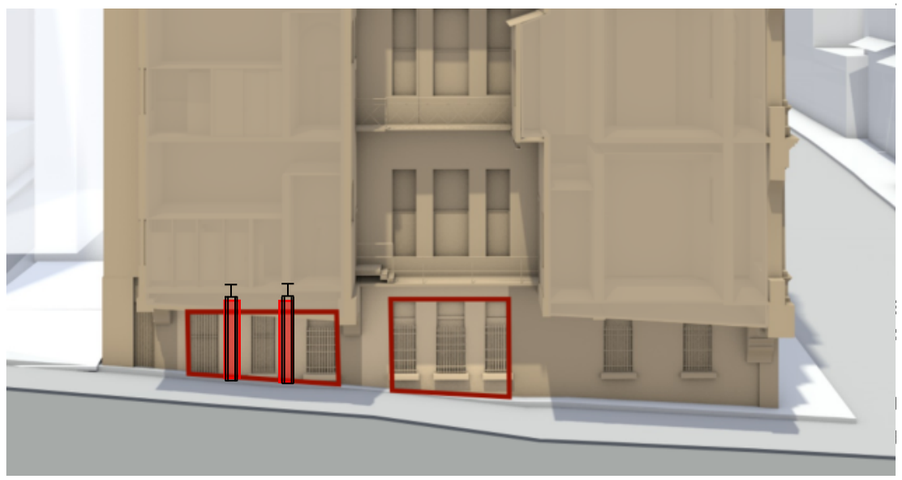
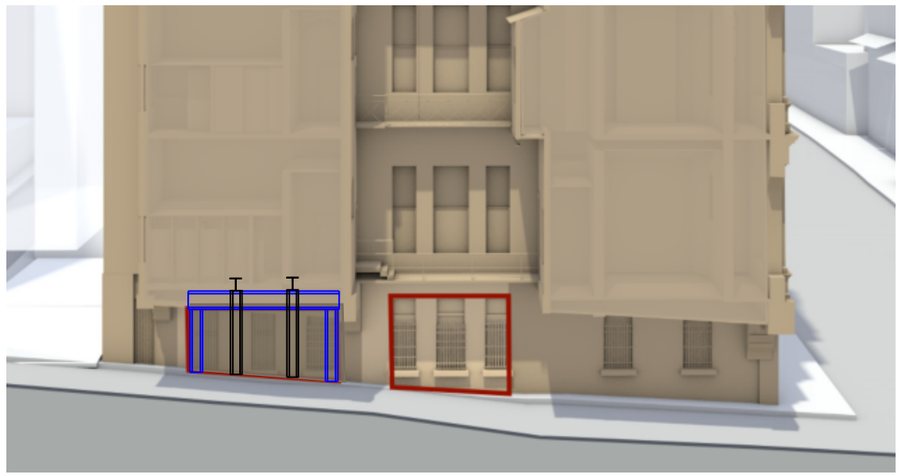


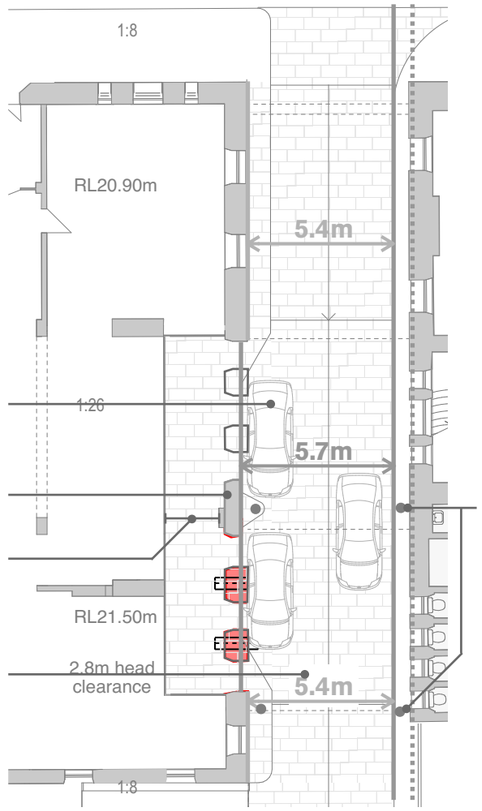
ELEVATION OF WORKS

LOCAL DEMOLITION OF PIERS

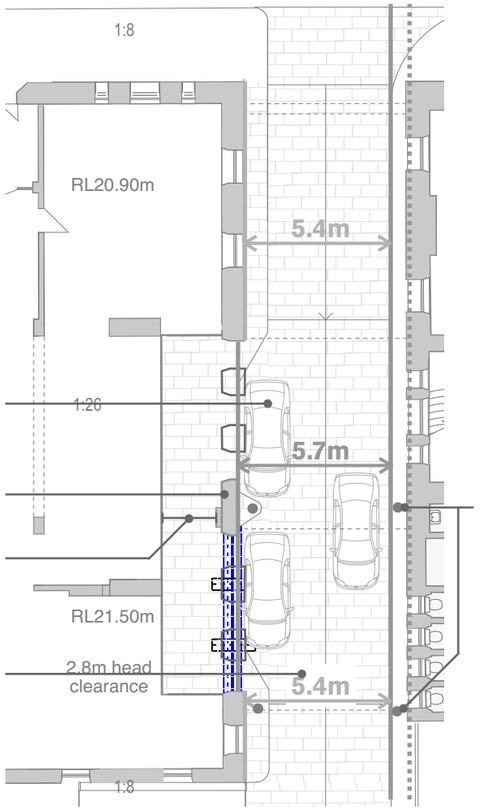


ELEVATION OF WORKS

INSTALL PERMANENT TRANSFER BEAM AND COLUMNS



PLAN OF WORKS



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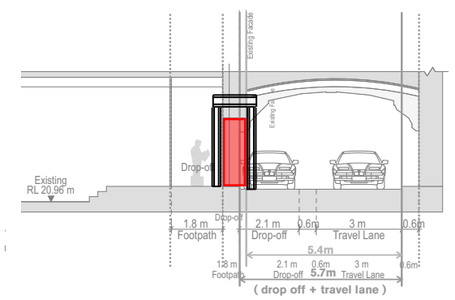
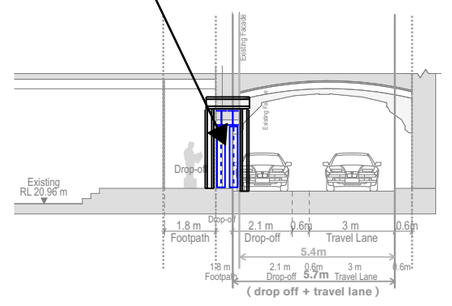


SECTION OF WORKS

INSTALL PERMANENT COLUMNS AND BEAMS



SECTION OF WORKS

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PROJECT: 50 PHILLIP STREET

TITLE: PHILLIP LANE PIER REMOVAL

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ELEVATION OF WORKS

REMOVE NEEDLES AND TEMPORARY COLUMNS

ELEVATION OF WORKS

PERMANENT OPENING ACHIEVED

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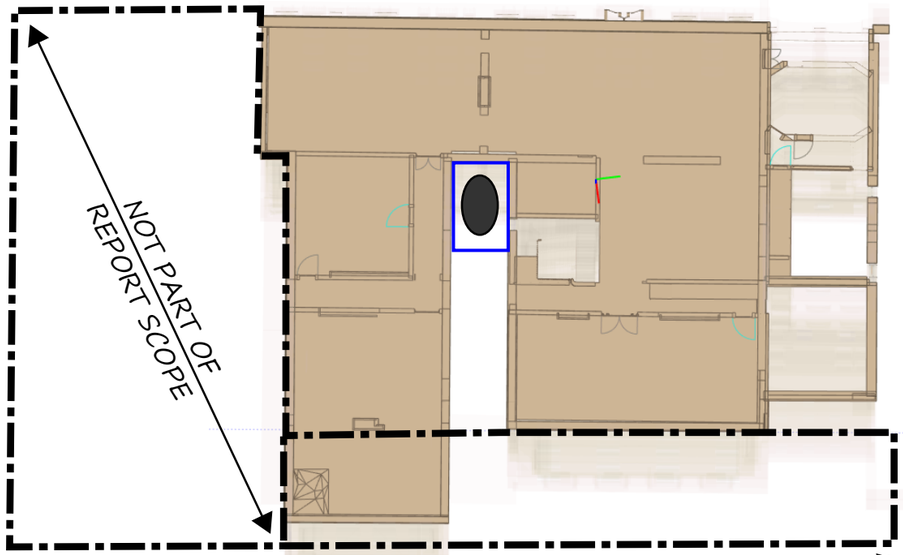
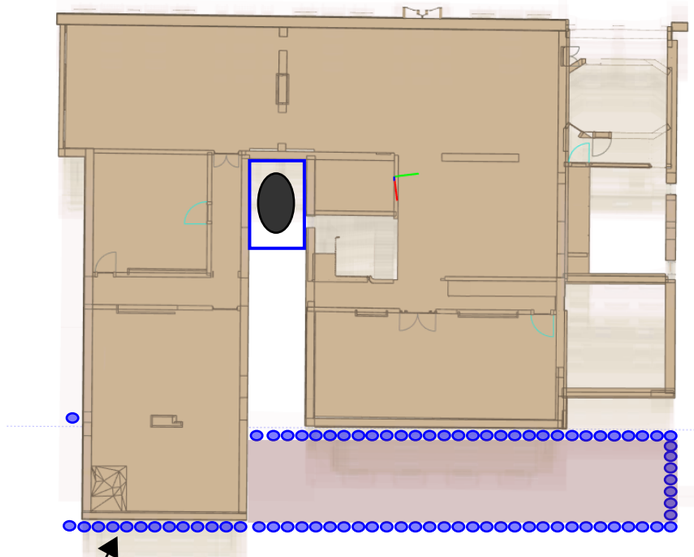


PLAN OF WORKS

FUTURE BASEMENT EXTENT



PLAN OF WORKS

STEP 1 - INSTALL BASEMENT PERIMETER SHORING WALL

STREET LEVEL +22.200

FUTURE BASEMENT +12.220

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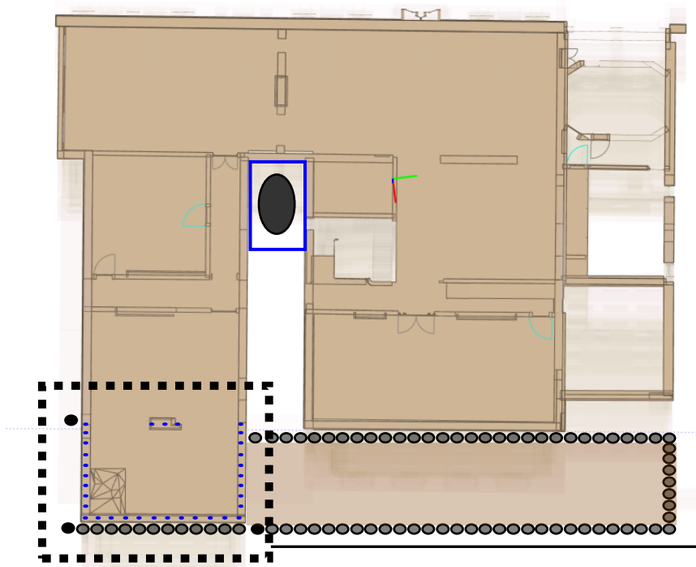
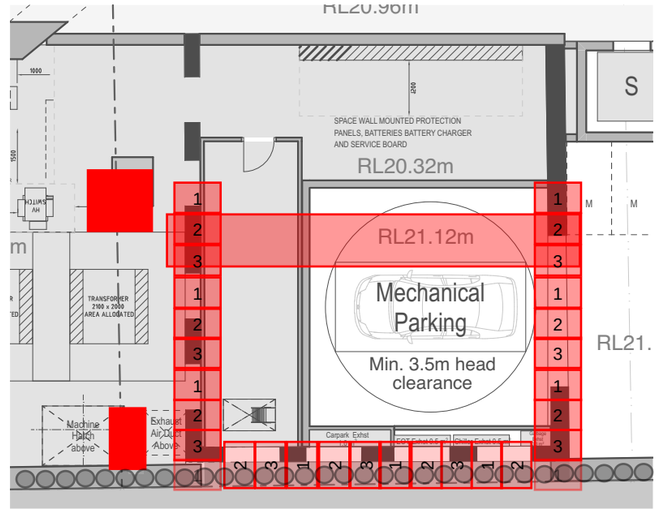
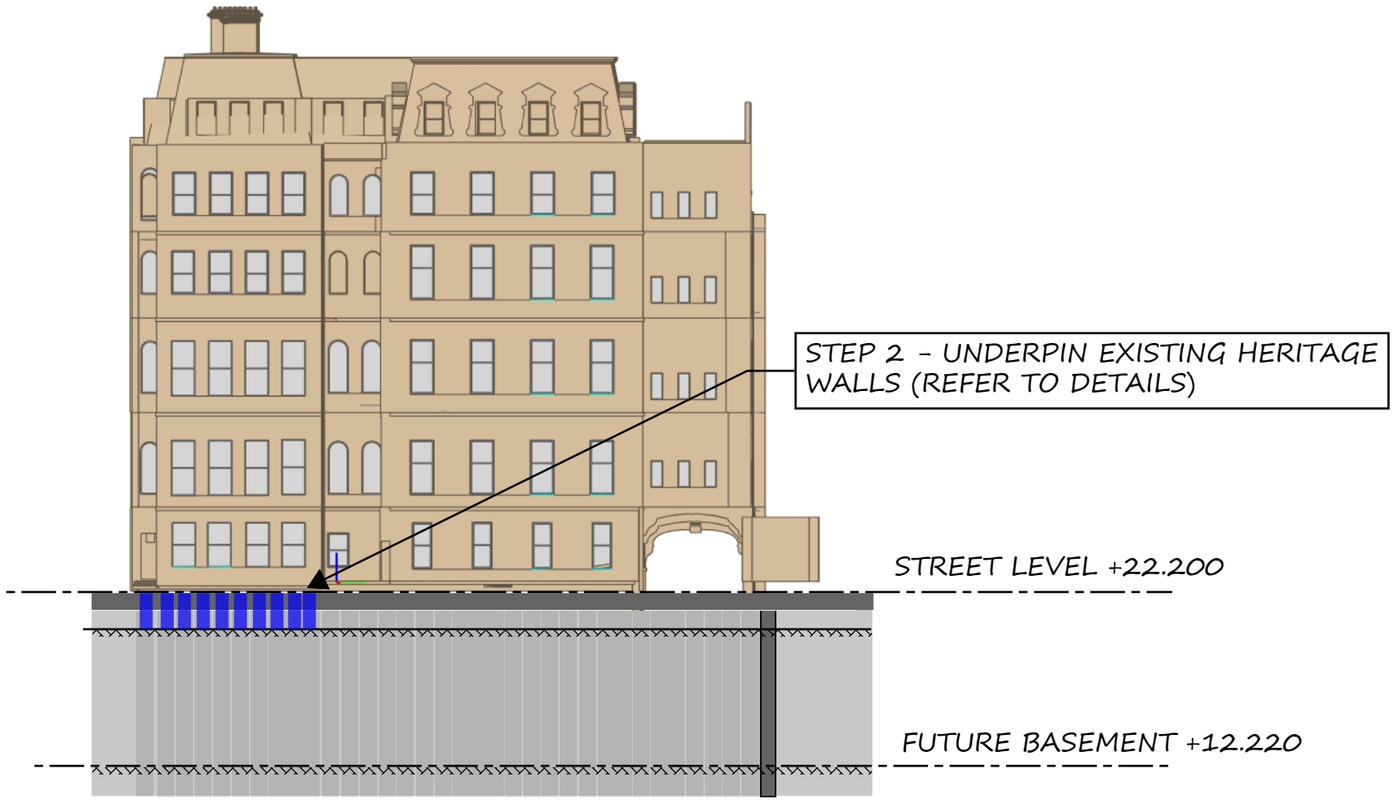
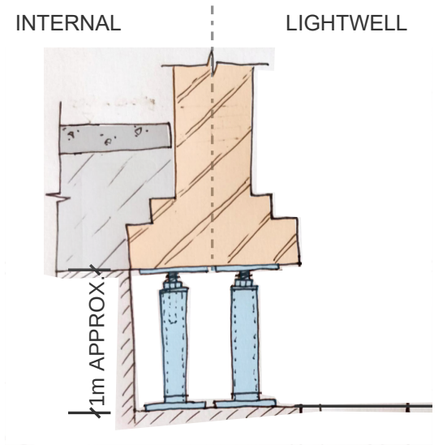


PLAN OF WORKS



PLAN VIEW HIT AND MISS UNDERPINNING TO BE COMPLETED IN SEQUENCE





PROPOSED PROPPING DETAIL FOR BEAM REO PLACEMENT

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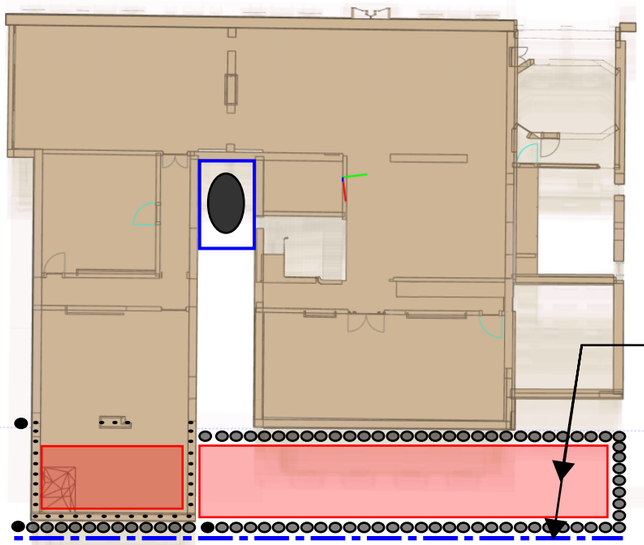
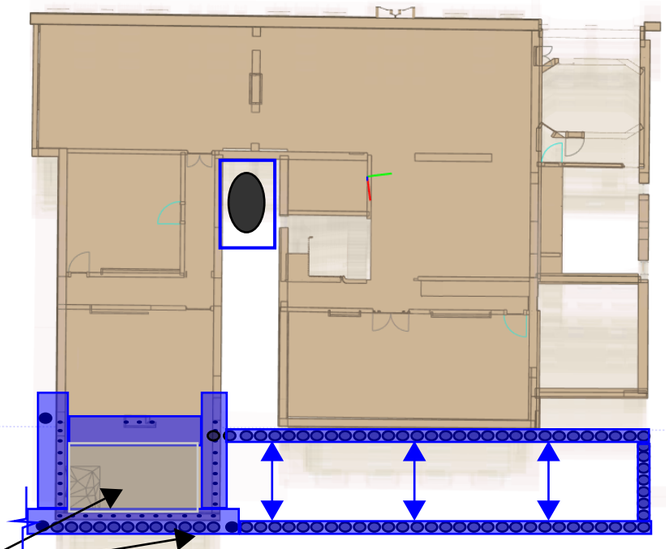


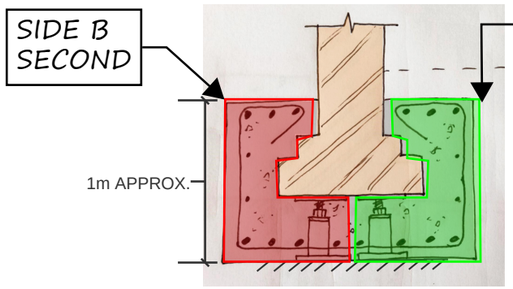
PLAN OF WORKS

STEP 3 - INSTALL TEMP SHORING (I.E. SHEET PILE) ON PHILLIP LANE SIDE AND EXCAVATE TO U/S OF CAPPING BEAM

STEP 4 - INSTALL CAPPING BEAM AND TRANSFER BEAMS AT EX. WALLS INSTALL HORZ STRUTS ALSO



PLAN OF WORKS



PROPOSED TRANSFER BEAM

STREET LEVEL +22.200

FUTURE BASEMENT +12.220

			CLIENT BUILT	TTW Taylor Thomson Whitting	PROJECT 50 PHILLIP STREET	DRAWN A.B / DESIGNED A.B / CHECKED M.F	
			ARCHITECT FJMT			DATE 09-10-20 / APPROVED M.F / SCALE NTS	
01	FOR INFORMATION	09-10-20	THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF TAYLOR THOMSON WHITTING (NSW) AND MAY NOT BE COPIED IN WHOLE OR PARY WITHOUT THE PRIOR WRITTEN APPROVAL OF TAYLOR THOMSON WHITTING	Taylor Thomson Whitting (NSW) Pty Ltd, Consulting Engineers | ABN 81 113 578 377 48 Chandos Street, St Leonards NSW 2065 | +612 9439 7288 | ttw.com.au	TITLE PHILLIP LANE WALL SUPPORTING SEQUENCE	DRAWING NUMBER 171566-TTW-CE-SK-002-R01	REVISION 01
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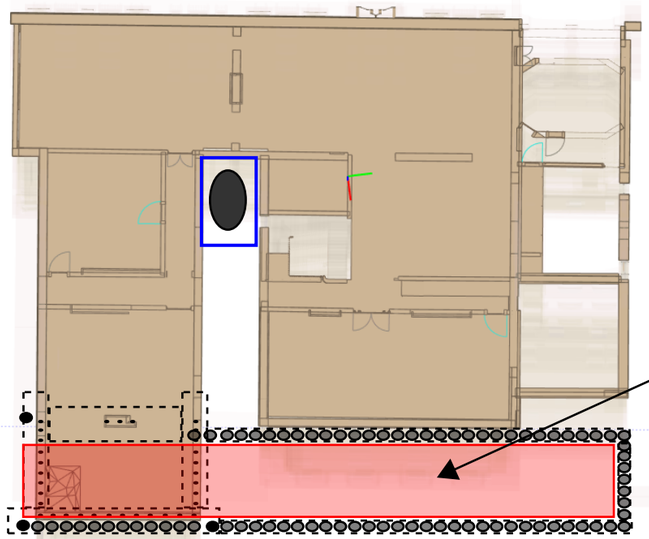
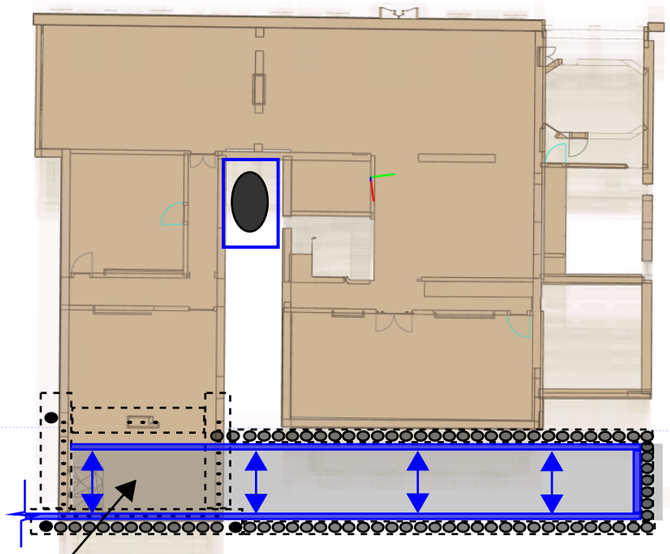


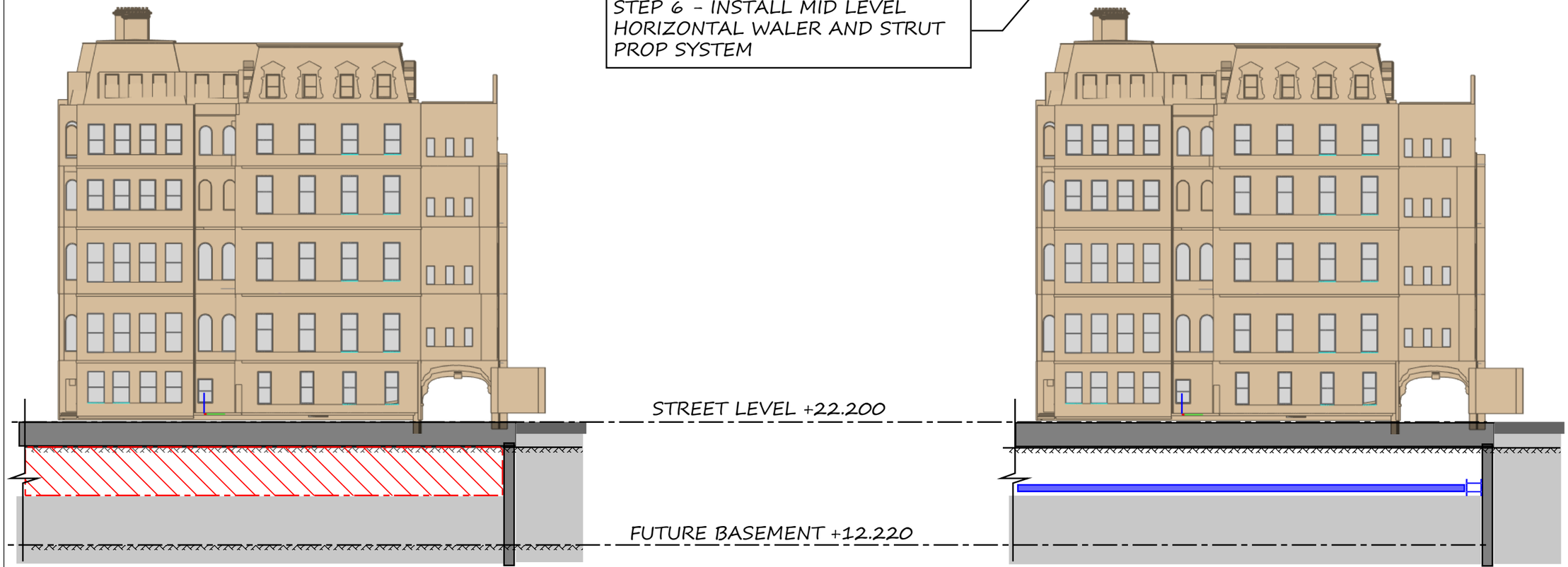
PLAN OF WORKS

STEP 5 - EXCAVATE TO MID LEVEL PROP LOCATION



PLAN OF WORKS

STEP 6 - INSTALL MID LEVEL HORIZONTAL WALER AND STRUT PROP SYSTEM



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PROJECT
50 PHILLIP STREET

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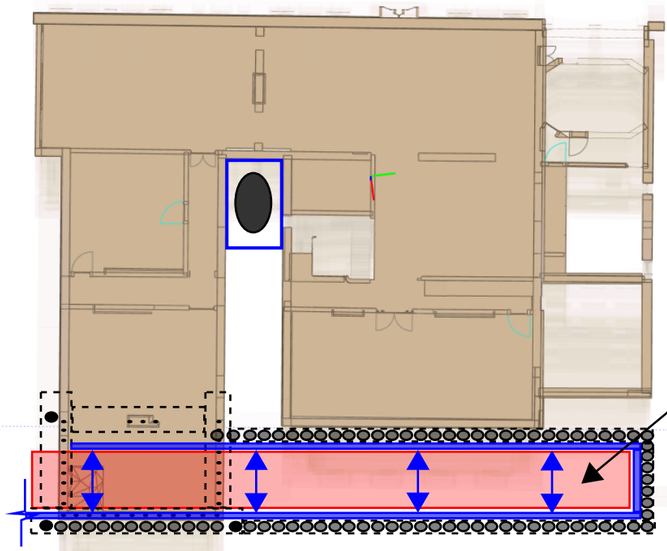
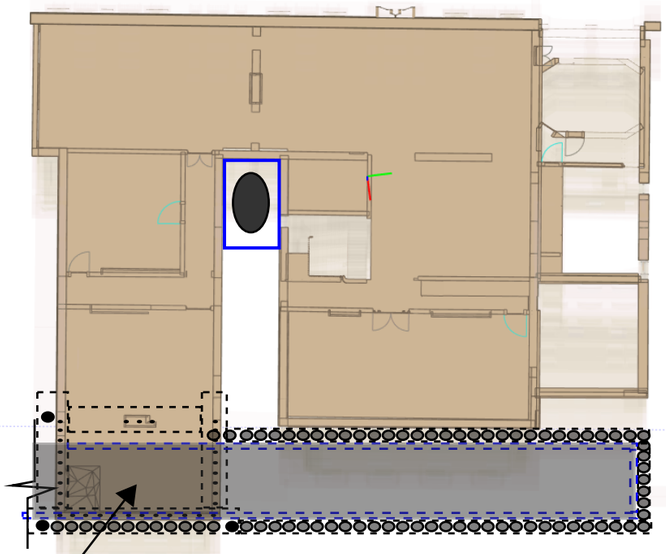
REVISION
01



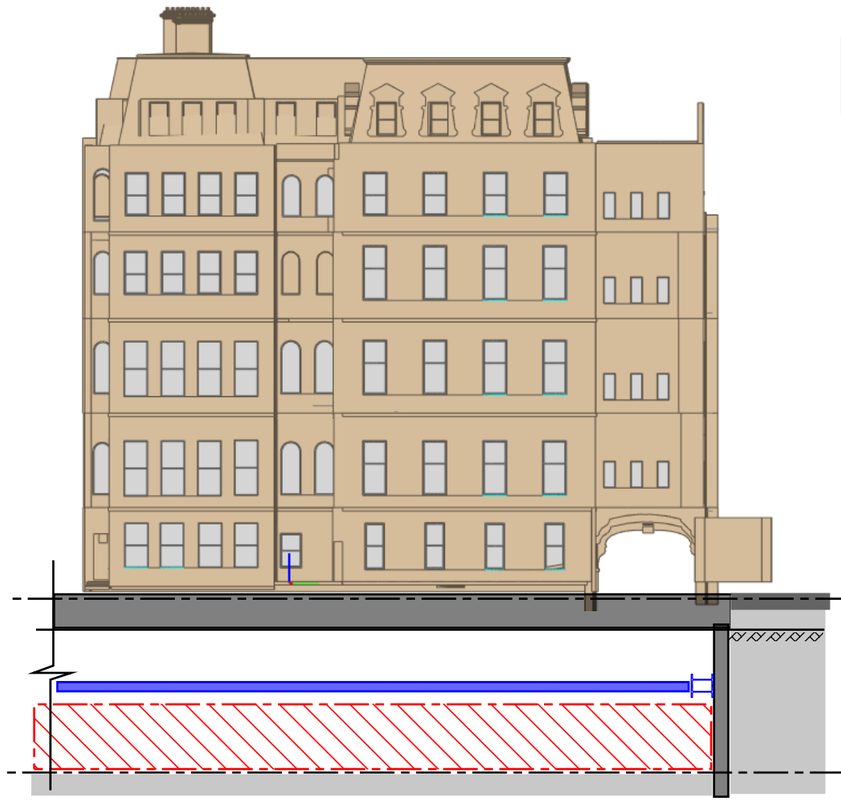
PLAN OF WORKS

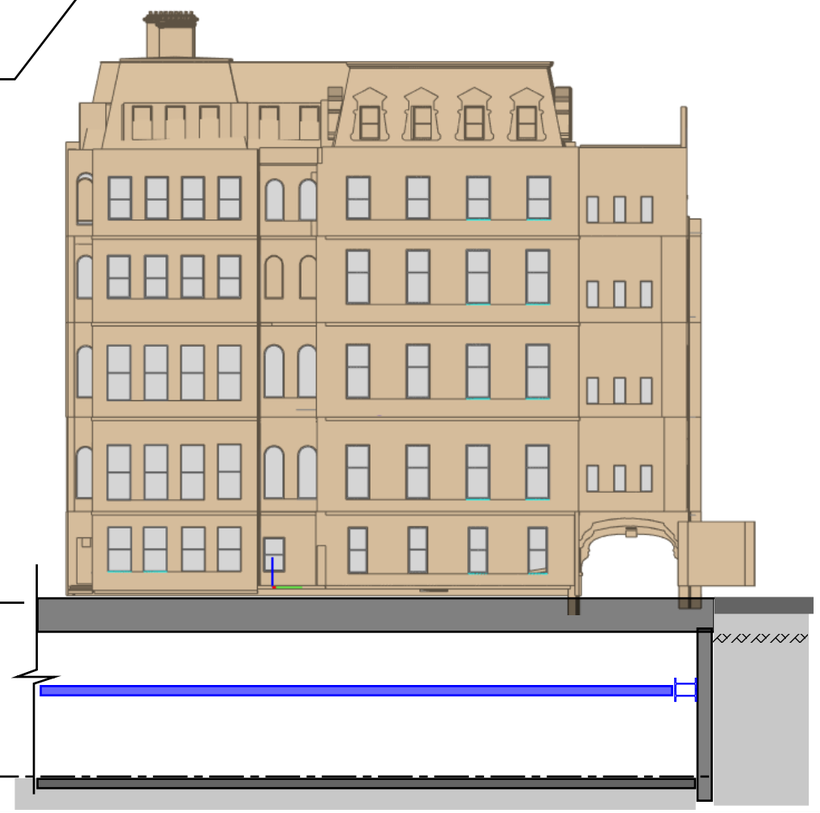
STEP 7 - EXCAVATE TO FINAL BASEMENT BULK EARTHWORKS LEVEL



PLAN OF WORKS

STEP 7 - INSTALL PERMANENT BASEMENT SLAB





01	FOR INFORMATION	09-10-20	
REVISION	AMENDMENT	DATE	

CLIENT: BUILT

ARCHITECT: FJMT

Taylor Thomson Whitting

Taylor Thomson Whitting (NSW) Pty Ltd, Consulting Engineers | ABN 81 113 578 377
48 Chandos Street, St Leonards NSW 2065 | +612 9439 7288 | ttw.com.au

PROJECT: 50 PHILLIP STREET

TITLE: PHILLIP LANE WALL SUPPORTING SEQUENCE

DRAWN	DESIGNED	CHECKED
A.B	A.B	M.F
DATE	APPROVED	SCALE
09-10-20	M.F	NTS

DRAWING NUMBER: 171566-TTW-CE-SK-002-R01

REVISION: 01