



# KEYSTONE

CONSULTING ENGINEERS



## **No47 HAYS MEWS & GLAZED TERRACE**

### **STRUCTURAL DESIGN STRATEGY**

2022105 rev -

March 2024

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# No47 Hays Mews

## 1.0 Brief and Scope of Report

J Safra Sarasin Bank have appointed a technical team to develop proposals to support a planning application for the redevelopment of 47 Hays Mews. The works will broadly encompass partial demolition of 47 Hays Mews and terrace with the construction of a lowered basement, mews building and covered external terrace forming high quality office and residential spaces to support the ongoing operations of the bank.

Keystone Engineering have been appointed to develop structural proposals and investigations to establish works required to the existing mews building to support this use. Our chartered engineers have experience in the design of complex schemes and basement structures in Berkeley Square and other central London locations.

To support detailed design further studies and investigations will be undertaken, however the following report will set out proposals the design philosophy which has been developed to control risks and allow the safe construction of the scheme.

## 2.0 Summary of works



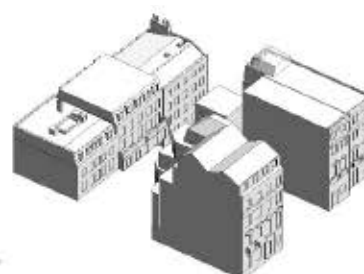
The site is located on Hays Mews to the west side of Berkeley Square and is formed of a grand townhouse facing onto Berkeley Square that is not affected by the proposed works.

To the rear and fronting onto Hays Mews, the Mews building is an existing early 1900's 3 storey building with basement, this is connected to the townhouse with an external terrace over a connecting basement.

The existing mews building is constructed of loadbearing masonry walls and suspended beam and pot concrete floors, foundations have been formed of shallow spread footings into the made ground and London clays prevalent in this area. This structural arrangement forms small cellular rooms and spaces that are not conducive to the client's operational requirements.



No47 Hays mews will be partially demolished along with the terrace structure, the existing basement will be increased in depth by circa 2.5m and the building reconstructed to form new office spaces and apartments with a new terrace structure with retractable glazed roof to create year-round amenity space.





# No47 Hays Mews



Hay's Mews Elevation



Internal Courtyard Elevation

The following report outlines how the works will be designed and implemented to deliver the scheme.

### 3.0 Existing No 47 Hays Mews

The Mews building is arranged over 3 storeys with basement and a central lightwell. It is formed of loadbearing masonry walls, with suspended beam and pot floors and flat roof with partial mansard finished in slate.

The Mews building is entered from Hay's Mews through two stair cores, these enter and split level to serve staggered floor levels, this arrangement limits accessibility and is not space efficient. This form leads to one basement and one partial basement level with steps to manage levels and connect to the terrace basement.



An external terrace connects the Mews to the Townhouse, which also forms the cover slab to the existing basement below. A trial pit to the rear has shown that the foundations are formed with a combination of mass concrete and brickwork layers. These extend approximately 1.1m below ground level onto a made ground.

Further investigations will be required to complete detailed design, however geotechnical investigations have been undertaken to allow assessment of construction forms, this information is covered in section 7.0.

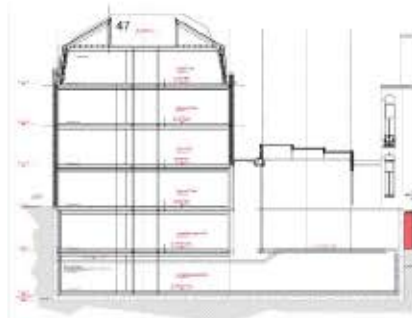
A visual inspection has shown the property to be in poor condition with areas of damp and failing finishes, although the main structure is in a serviceable condition. There are some areas of limited cracking to finishes but no obvious signs of movement or distress evidencing underlying structural issues.

# No47 Hays Mews

Works of a significant nature were undertaken to the adjacent No46 Hay's Mews to form the Annabel's Club; these do not appear to have adversely affected the building. The works proposed to No47 are not as extensive but are of a similar nature and indicate that the work proposed can be undertaken without detriment to the surrounding buildings.

## 4.0 Existing Terrace

An external terrace links No47 Berkeley Square with No47 Hay's Mews, this has set back light wells facing onto both buildings, which give natural light to the basement level which connects the buildings at lower level.



A level difference at terrace and basement level is controlled through the use of steps restricting accessibility between the spaces.

The terrace is laid to tile and provides the primary weathering barrier between the terrace and office space within the basement below, this is evidently starting to fail, and water/damp has started to penetrate the offices below.

When the mews was re-constructed the basement structure was formed with a new slab across the external courtyard. Properties to both sides have courtyards and basements (-1) level.

## 5.0 London Underground

Enquiries have been made to LUL to establish the public transport assets and tunnels in the proximity of the site.

The Jubilee & Victoria line are known to be in the vicinity with the closest tube station being Green Park.

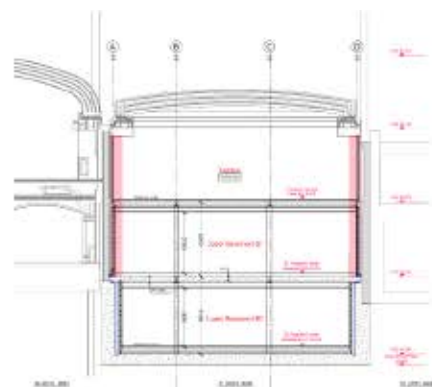
The adjacent plan shows that the site is not located over main tube lines, as such the proposals will not impact these services.



## 6.0 Investigations and Ground Conditions

The Existing mews has a one and half storey basement level, the lower basement is to be increased in depth to allow the construction of a level continuous B1 & B2 basement level under the mews and extending into the terrace.

The works as proposed will have minimal impact on the existing load paths for the building and hence will not affect the adjacent properties.





# No47 Hays Mews

STRATA		
Level (m OD)	Legend	Strata Description
13.0	01721	Reinforced CONCRETE
13.0	01722	Red-brown medium to dark grey silty clay with occasional black staining, (level to ground) to 1.0m below level to ground. This is an alluvial deposit of recent origin.
14.0	01723	MADE GROUND
		with some slightly sandy silty CLAY about 1.0m below level to ground.
		ALLOUVIUM
		Thin to thick, brown to grey silty CLAY with some medium to coarse sand (1.0m to 1.5m) and shales of beds. Gravel is present in some places. This is an alluvial deposit of recent origin.
		STRAKES (GROUP) LONDON CLAY
		Successive green to brown massive grey mud silty with some silty sand and shales. (Found and described at 1.7m)
		Successive brown massive blue-grey silty shales with some sandstone, shales and mudstone. (Found at 2.0m)
		with occasional patches of fine sand and shales.
		01724
		with some patches of light grey fine sand (1.0m to 1.2m)
		with some patches of dark grey fine sand (1.0m to 1.2m)
		Successive very closely bedded and occasional faulted shales below 1.2m.
		with some sandstone and shales (1.0m to 1.2m)
		with dark grey shales at 10.5m

However, we do hold detailed geotechnical information for the site and building to allow any proposals to be considered fully.

Geotechnical Consulting Group (GCG) are internationally renowned consultants and have been appointed to complete the site investigation. GCG are working on the Crossrail scheme advising on geotechnical aspects and implications upon buildings affected across London.

Boreholes have confirmed that the underlying strata is a thin layer of alluvium, underlain by London clay which increases in stiffness with depth. The borehole was advanced to 30m, later monitoring of the borehole has established a stable water level of 13.0m OD which is below the existing basement level. Trial pits at shallow depth indicate that the mews building is founded onto shallow spread foundations. The report also indicates that one of the lost rivers of London, the Tyburn is located close to the site, but is thought to be located towards Charles Street and would not affect this proposal.

## 7.0 Proposed Mews Building

The existing Mews building will be partially demolished, retaining the front façade and, where possible, foundations. The mews will then be restructured using efficient modern methods of construction to provide usable spaces suited to client's requirements for office and residential accommodation. The design has been developed to provide;

- Clear internal spaces suited to office and residential accommodation
- Improved thermal performance of building envelope
- Improved air tightness of building envelope
- Improved acoustic performance to walls and floors
- Enhanced fire protection to meet current standards
- Waterproofing to basement and facade
- Façade elements will be modified to compliment the local architecture.

Working in central London and constricted sites requires the careful selection of materials and design strategies to minimise materials required and consider access constraints.

The structural form proposed is set out in the attached drawings but can be summarised as follows;

- Foundations – Raft slab formed in reinforced concrete with screeded finish, drained cavity and integral concrete waterproofing additive.
- Basement B1 & B2 – Reinforced concrete basement shell, forming walls and floors in rigid box form. Side walls formed in staged underpins to allow the retention and support of flank/party walls. Concrete walls with integral waterproof additive, drained cavity and blockwork wall liner.
- Structure above ground – formed in braced steel frame with profiled metal decking slabs supported on steel beam and column frame supported at ground floor reinforced

## No47 Hays Mews

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concrete basement shell. The steel frame will be connected to the retained façade and flank walls to provide permanent support/restraint.

- Roof – The roof will be formed in steel frame supporting timber and slate roof, with an internal roof well, designed to support plant and blue roof construction.

The design approach has been discussed with GCG and included within their geotechnical assessment (report - 2393/10001) of the proposals. The use of the raft foundation dissipates loads across the building footprint and GCG's assessment has shown this will not affect adjacent properties.

The intended design sequence of works and construction will be agreed with the contractor to ensure suitable temporary works and processes are implemented to support the design philosophy. An outline sequence of works drawing is appended to this report and demonstrate the likely approach in the construction of the scheme. These are proven strategies used successfully for other schemes on Berkeley Square and utilise methods of work that contractors are familiar with.

The basement waterproofing strategy will be specified to meet the requirements of BS8102 Grade 3 – suitable for residential and working areas.

### 8.0 Proposed Glazed Terrace

A new terrace concept has been developed which uses a glazed arch spanning the width of the courtyard. The arch will be designed by specialists who we have worked with previously on similar schemes.



The terrace level (ground) and basement level (B1) will be formed in steel frame and concrete deck, with Basement level 2 (B2) formed in reinforced concrete with integral waterproof additive. The basement slab will be formed with a reinforced concrete raft cast level and contiguously with the Mews raft, the flank walls will be formed with staged underpins to maintain support to existing walls during construction.

The supporting structure will be designed as a steel frame with columns extending from basement level (B1) up to the boundary wall height. The columns will in turn support a beam and rail system to support the glazed roof. The whole system will be designed to be structurally independent of the existing boundary walls.

### 9.0 The Surrounding Buildings

The design has been developed to respect the constraints of the site, There will still need to be careful consideration of construction methodology and access for works to the roof and rear elevations. In this case there is a close proximity to the grade 1 listed No46 Berkeley Sq and Grade 2 listed No47 & No48 Hays mews.

Guidance on the classification of buildings and their resistance to vibration is given in BS ISO 4866:2010, reference to this document indicates the surrounding buildings are considered class 1a ie “ancient, historical and old buildings of architectural, archaeological and historical value”, the foundations are classed as type B with soil type C. Table B.1 indicates these would be category 5 units and reference to table B.2 indicates that the buildings would be class 5 structures, which have a medium resistance to vibration. The forms of construction detailed in the following methodology accord with this criteria.

### 10.0 Party wall

A party wall surveyor has been appointed to act upon the behalf of our client and agree proposed construction and the condition of both adjoining properties prior to the commencement of work. A full schedule of condition will be undertaken as part of the agreement.

### 11.0 Conclusions

The construction & refurbishment of buildings in a city centre location presents challenges to the design team and contractors. Through detailed investigations and consultation with key stakeholders we have identified the risks and opportunities this site offers.

The design proposals have been developed and amended to accommodate feedback from pre application advice and the Mews façade has been retained which also addresses comments received through consultation. This has simplified construction and will reduce construction period.

The assessment of the existing and surrounding buildings has been considered and identified key issues to be managed, but critically the development can be completed without adversely affecting neighbouring properties.

Development of the detailed design will address these issues, through the use of appropriate forms of construction, monitoring and careful management there are no technical issues identified that have not been managed successfully on other similar schemes.



APPENDIX A  
ARCHITECTS DRAWINGS

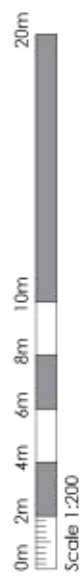
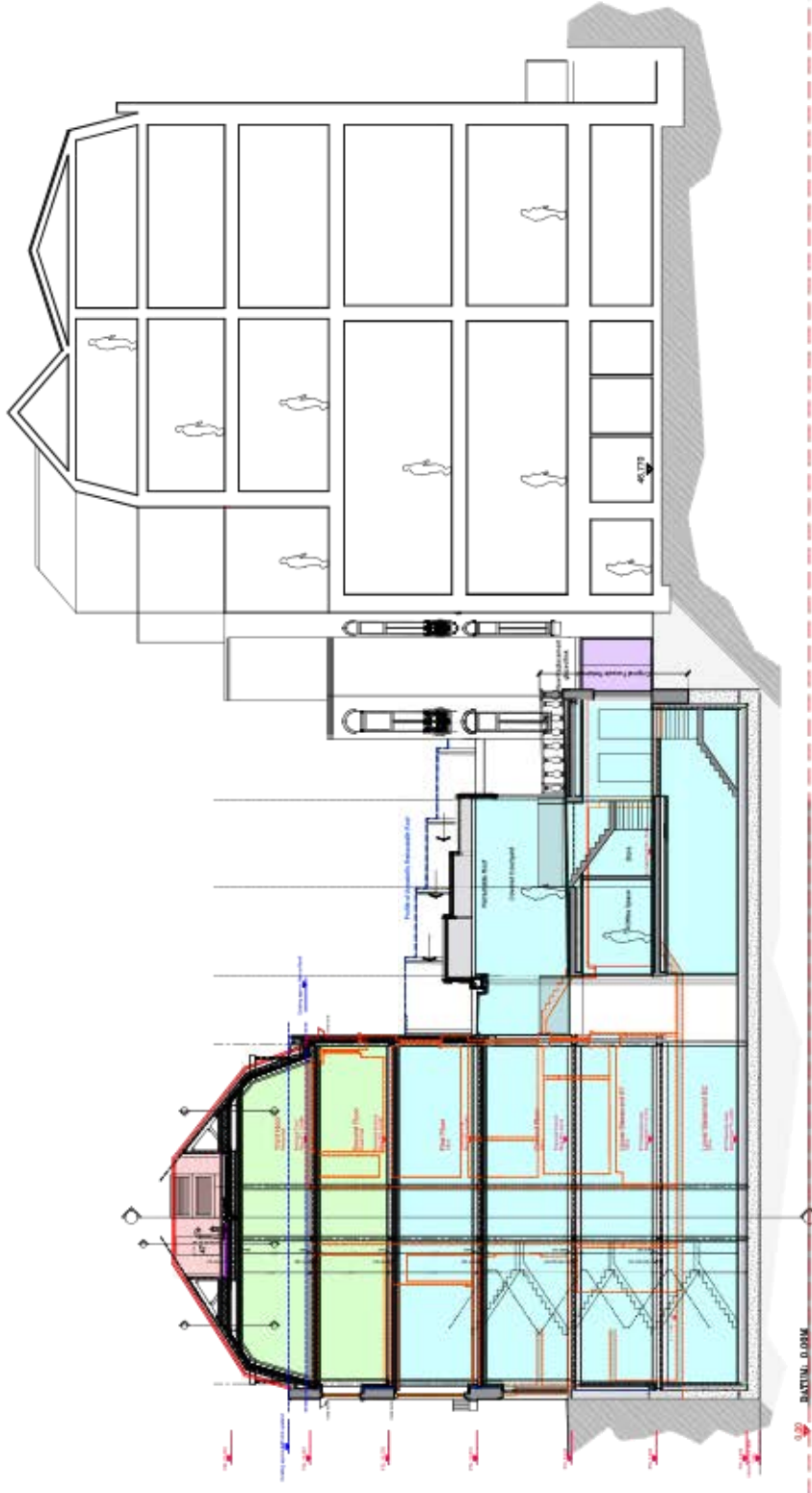






Key

- Commercial: Office Space
- Residential: Apartments
- Replacement Glazed Link
- Screened Rooftop Plant Area



The Saffra Bank 47 Berkeley Square, London W1J 5AU	Job No: 23_061
AL[0]112	Eng: AL[0]112
Proposed Longitudinal Section	Scale: 1:200 @ A3
Date: September 2023	Drawn: J. J. SAUNDERS

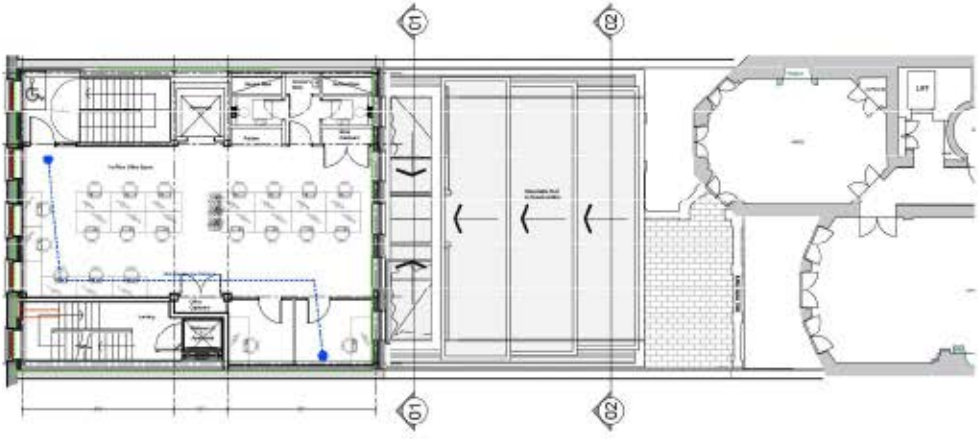
**CG2** Architects  
Town planners  
Environmental & Urban design  
100 St. James Street, London, W1 1JF  
Tel: 020 7493 8100



Proposed Section Through Courtyard 01

0m 1m 2m 3m 4m 5m 10m

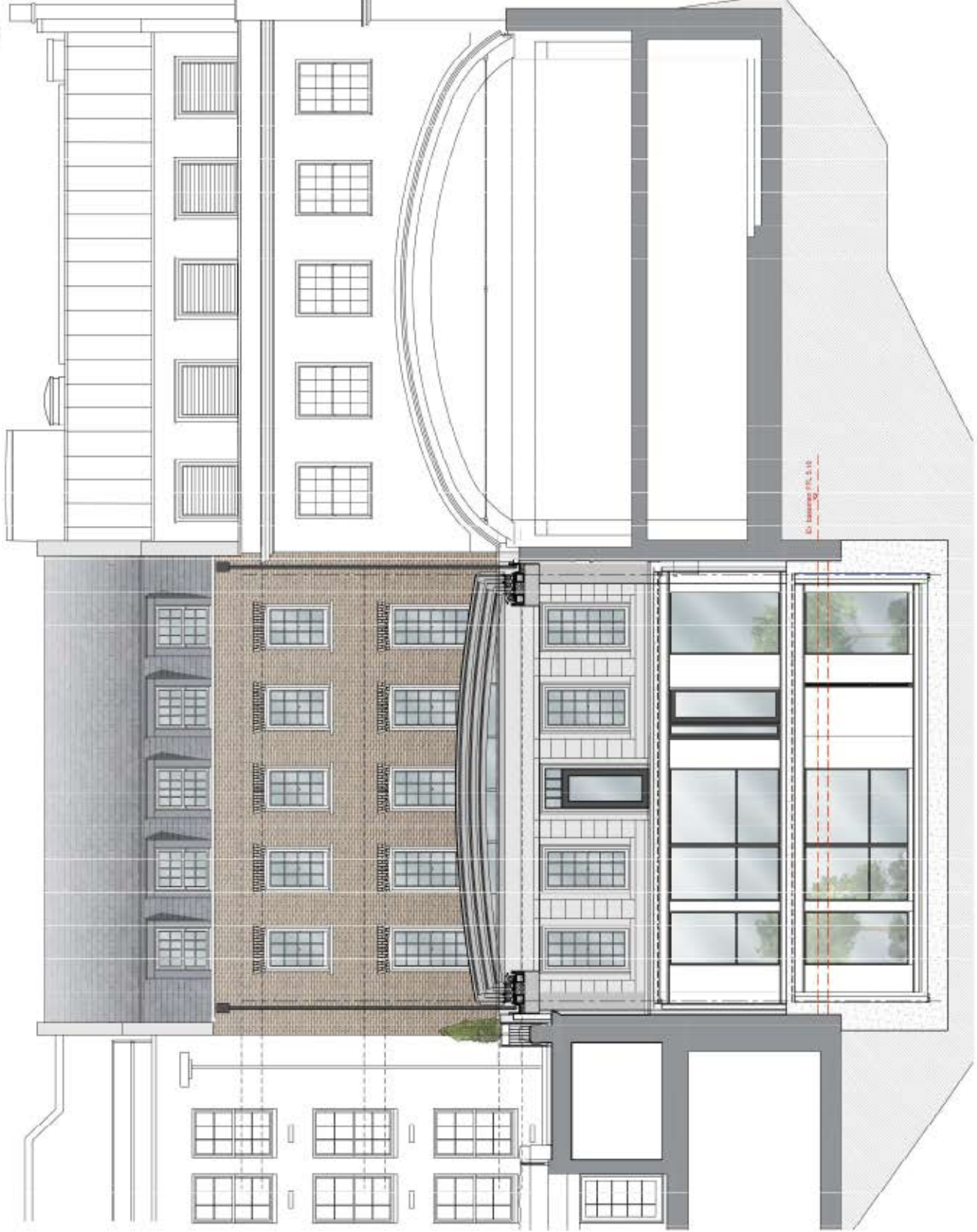
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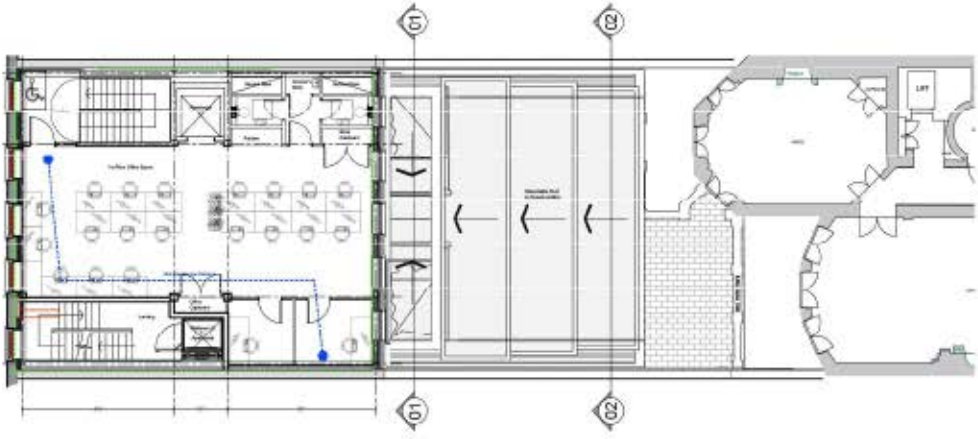
Section Reference Plan 'NTS'

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	Client: The Sofic Bank 47 Berkeley Square, London W1J 5AU	Design: ALJ(01)14
	Title: Proposed Section Through Courtyard 01	Scale: 1:100 @ A3
Architects - Town planners Environmental & Urban Design Ltd & Company Limited 100, Brook Street, London W1D 2RS		






Proposed Section Through Courtyard 02

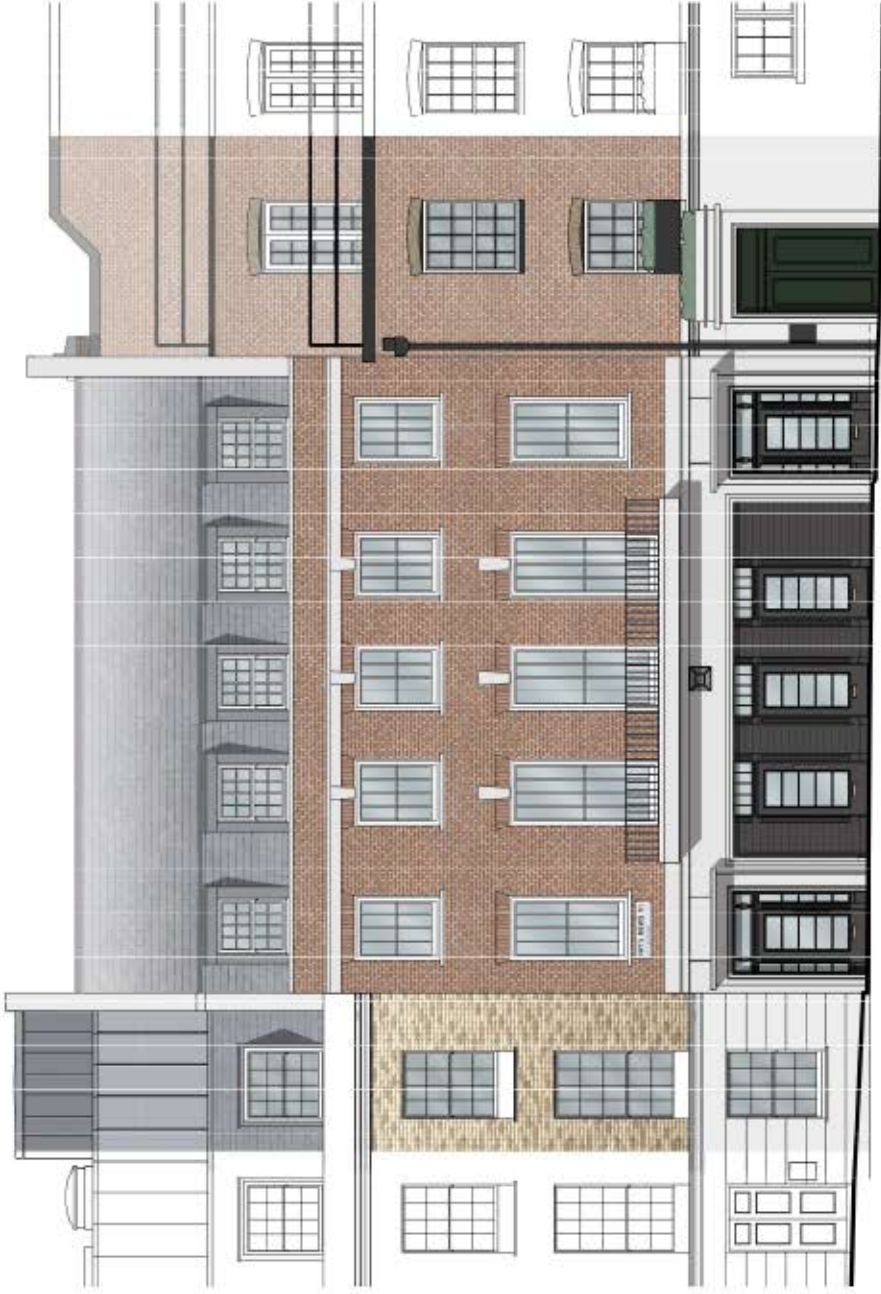


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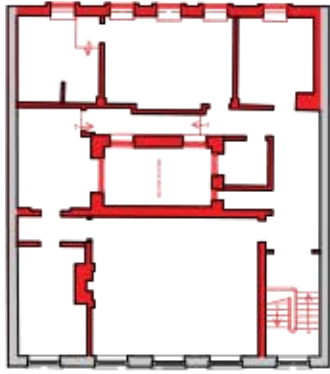
Architects: Town planners  
 Environmental & Urban Design  
 47 Berkeley Square, London W1J 5AU  
 www.gibsonjones.co.uk



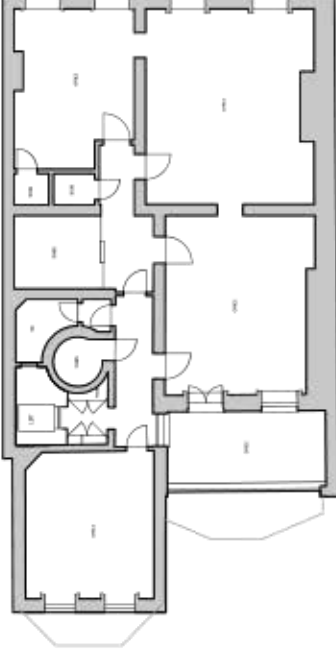


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To: Proposed Hay's Mews Elevation		Design: AJL(0116)
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		1st Fl. Central St. 0207 244 4444 www.c2architects.com

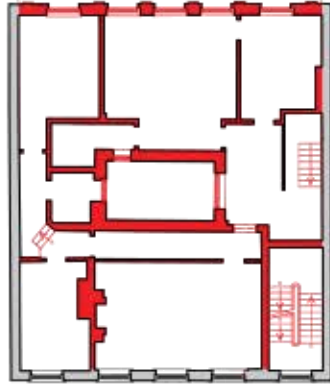




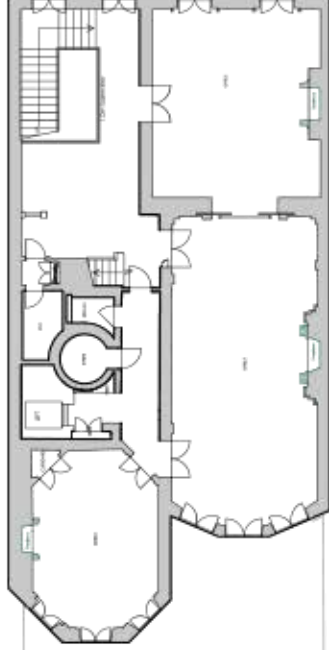
Second Floor Plan 47 Mews Demolition Strategy



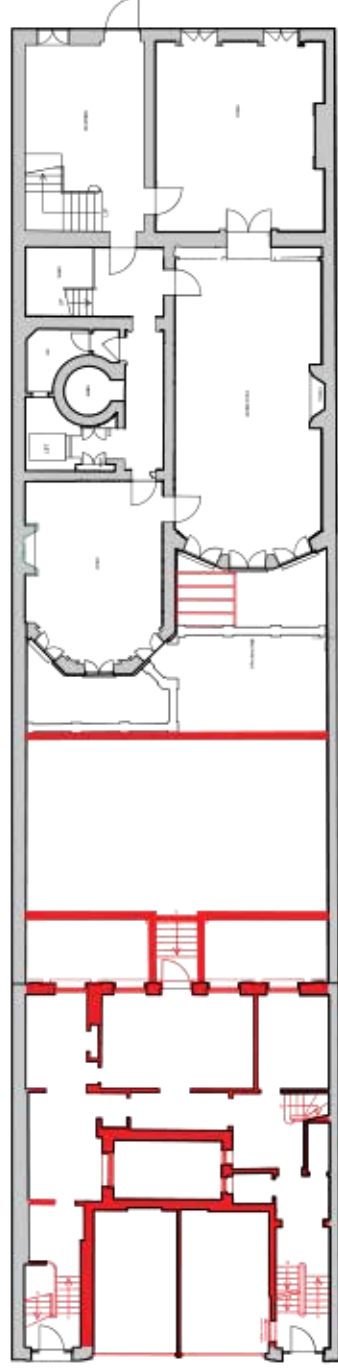
Second Floor 47 Berkeley Square Demolition Strategy



First Floor Plan 47 Mews Demolition Strategy

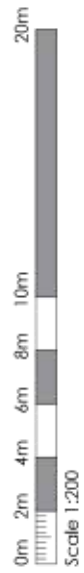


First Floor 47 Berkeley Square Demolition Strategy



Ground Floor 47 Mews Demolition Strategy

Ground Floor 47 Berkeley Square Demolition Strategy



Areas to be demolished



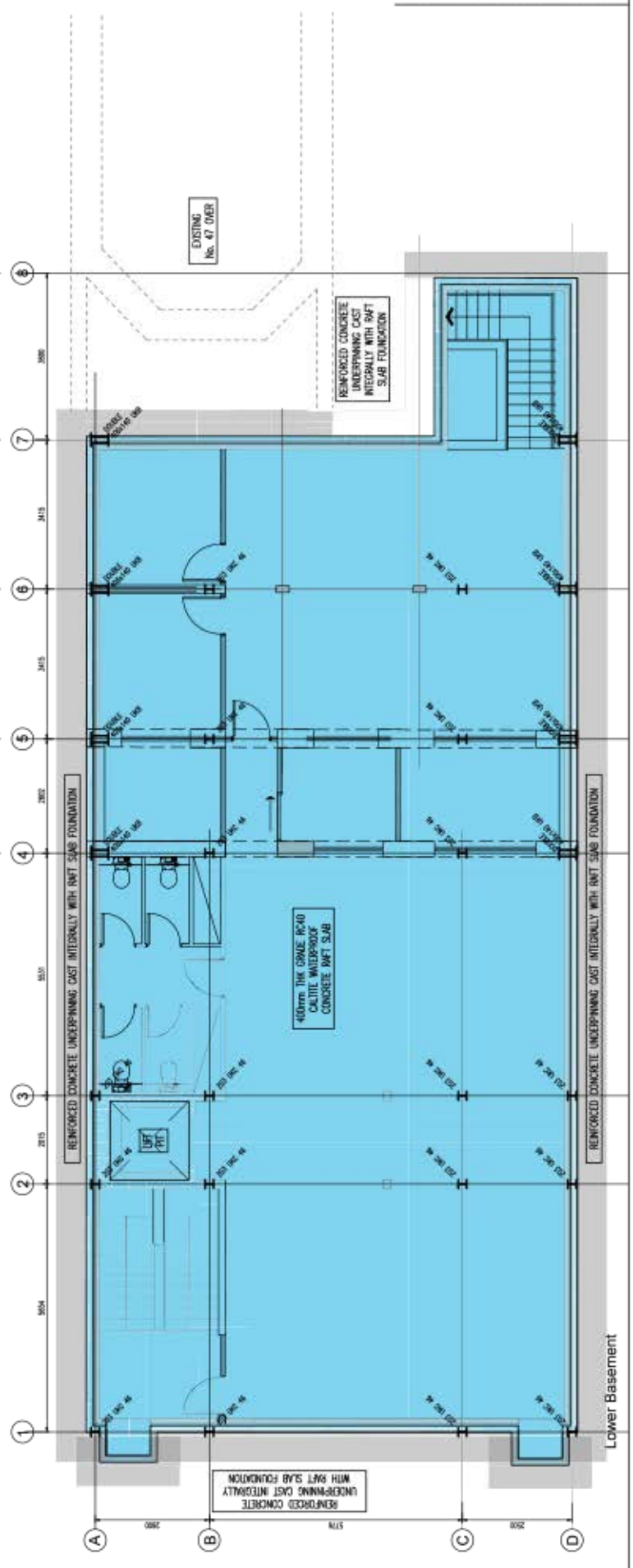
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Title: Demolition Strategy Sheet 2/2		
Date: September 2023	Drawn: J. J. SAU	Scale: 1:200 @ A3
 <b>G2 Architects</b> · Town planners Environmental & Urban design 4th Fl, Cornhill Business Park, 100-102, Cornhill, London EC3A 3DF		



APPENDIX B  
SCHEMATIC STRUCTURAL DRAWINGS



Upper Basement



Lower Basement

C1	20.03.24	BP	AM	SEARCHED TO COORDINATE
B	21.11.23	BP	AM	SCHEMATIC DEVELOPED
A	21.11.23	BP	AM	PRELIMINARY - FIRST ISSUE
Rev	Desc	Drawn	Eng	Checked

**KEYSTONE**
  
 CONSULTANTS & ENGINEERS

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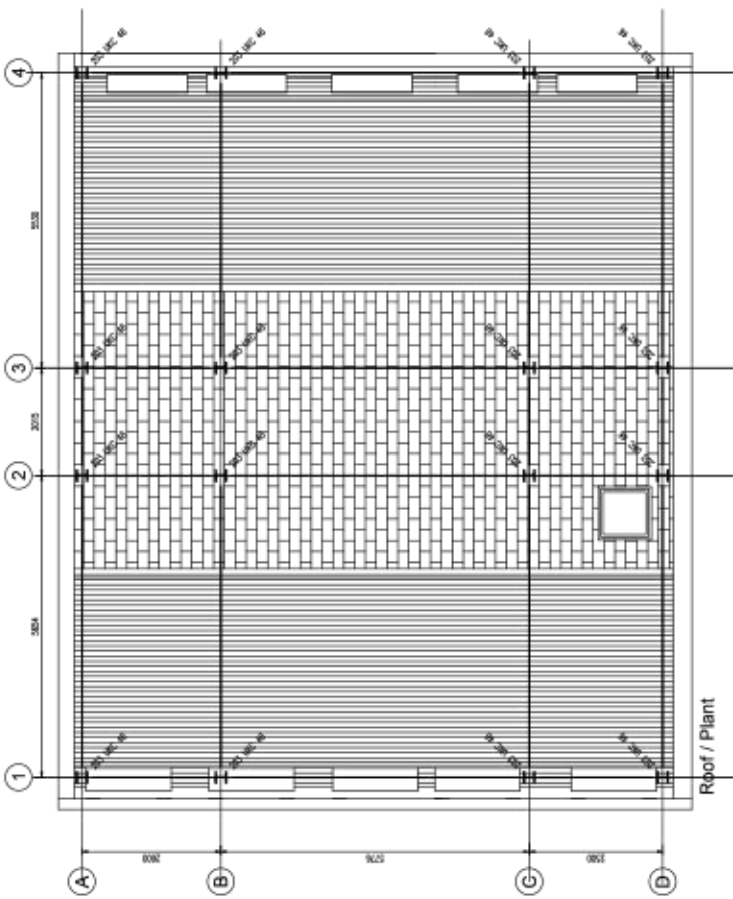
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Page No: 100

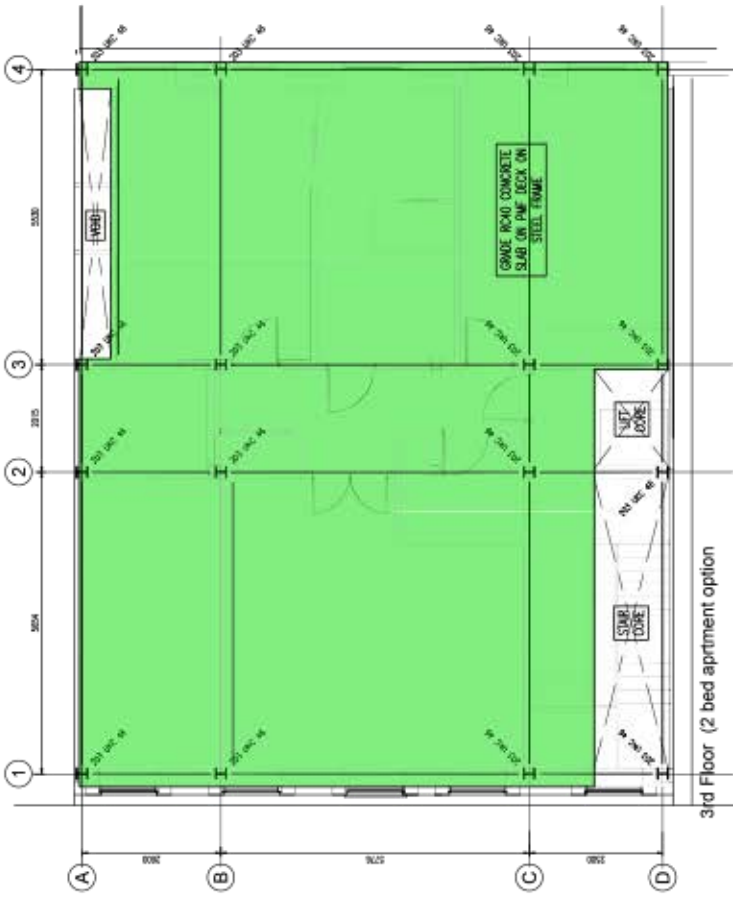
Rev: C



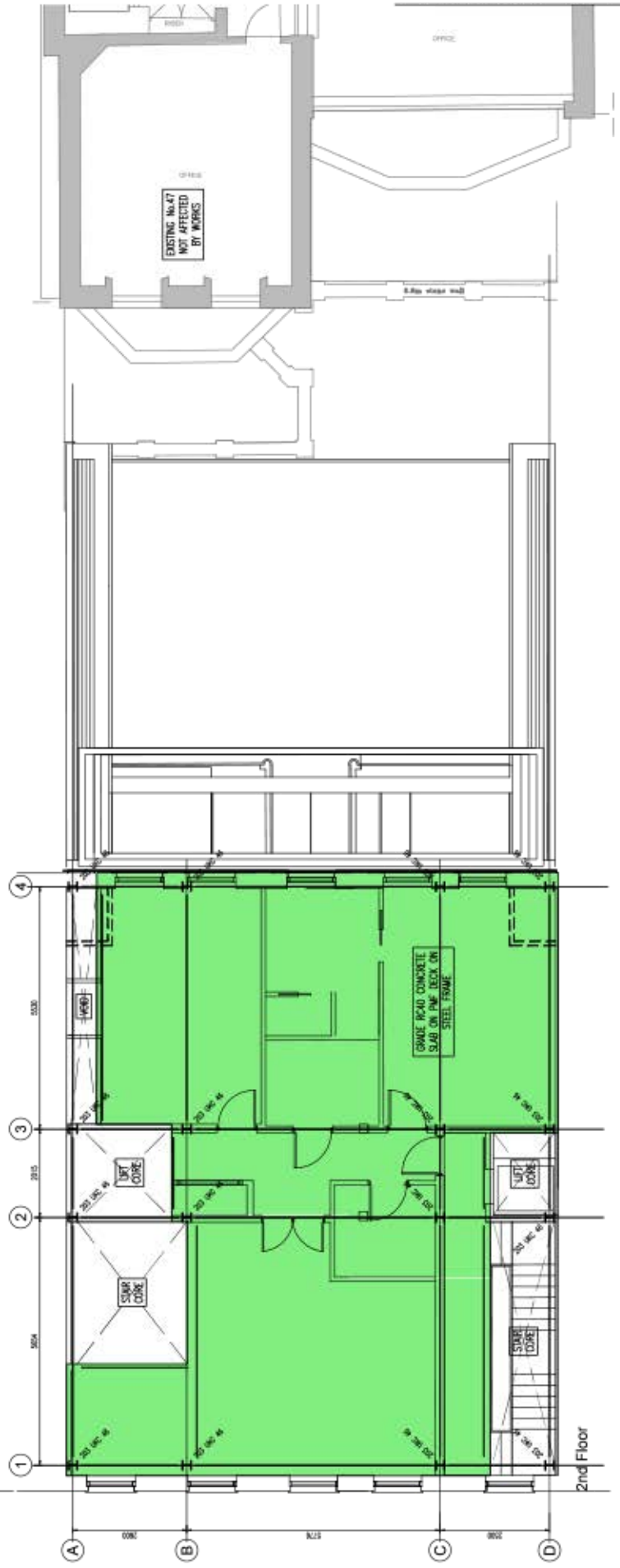




Roof / Plant



3rd Floor (2 bed apt) option



2nd Floor

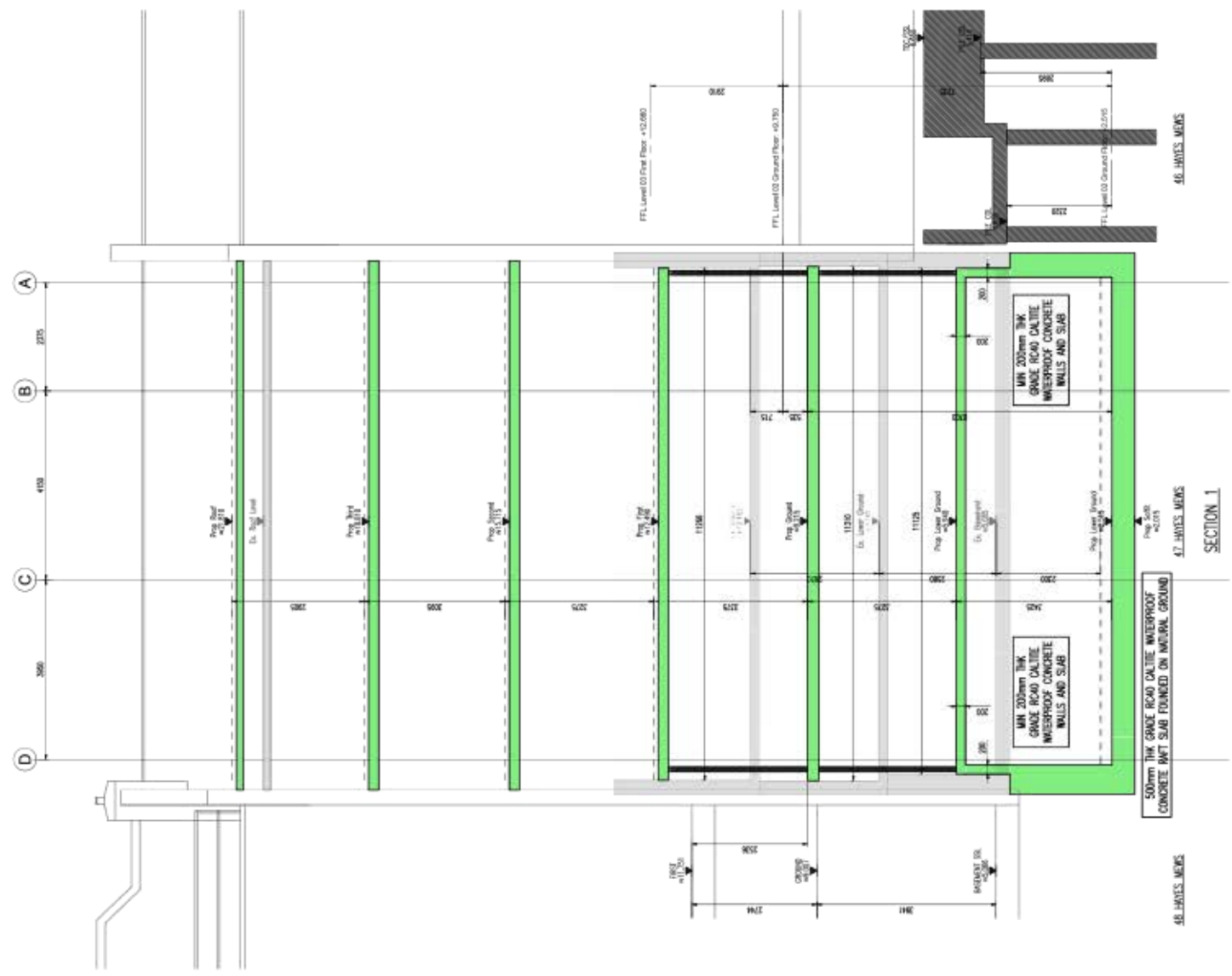
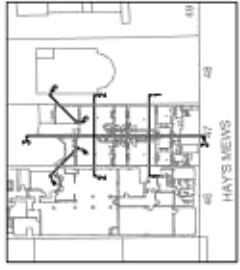
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3	15.03.24	PRELIMINARY - FIRST ISSUE	JM	JM
4	15.03.24	PRELIMINARY - FIRST ISSUE	JM	JM

**KEYSTONE**  
 CONSULTING ENGINEERS  
 No. 44 BAYVIEW ROAD  
 #04-001118891

**47 BERKELEY SQUARE**  
 Drawing Title  
**GENERAL ARRANGEMENT**  
**SHEET 3**

Scale: 1:50 @ A1  
 Issue Status: Preliminary  
 Project No.: 2022105  
 Page No.: 102  
 Rev.: C





Key	Scale	Client	City	Architect
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Drawing Title:	MEWS SCHEMATIC SECTIONS			
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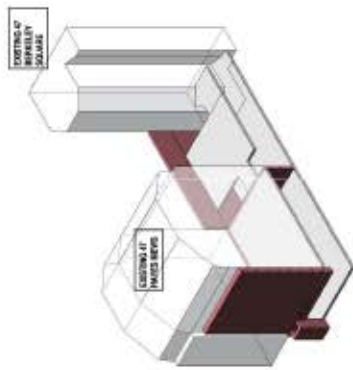




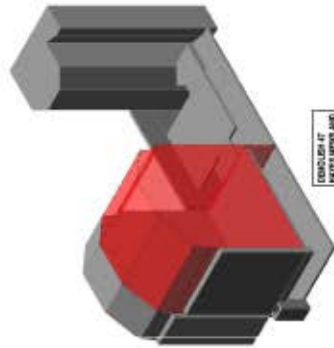
APPENDIX C  
OUTLINE SEQUENCE DRAWINGS



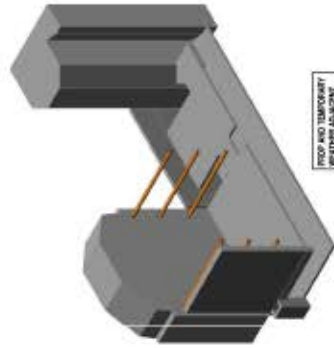




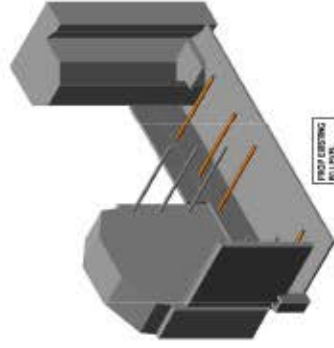
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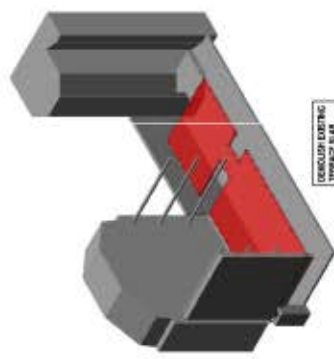
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3 AVX03



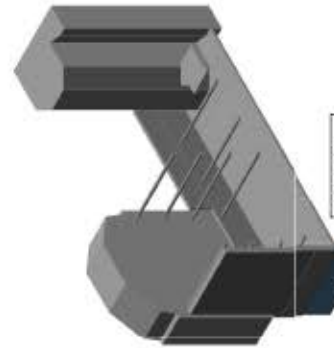
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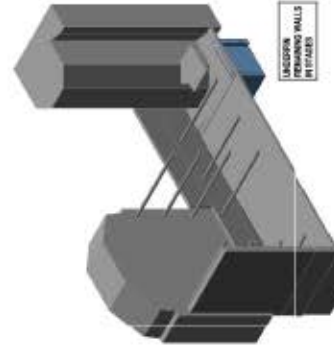
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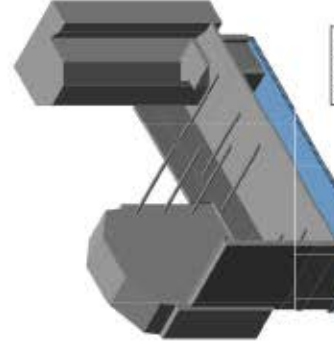
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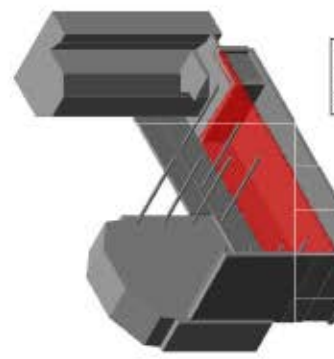
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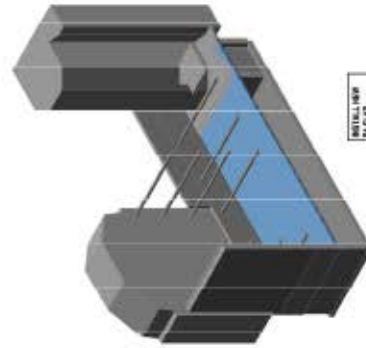
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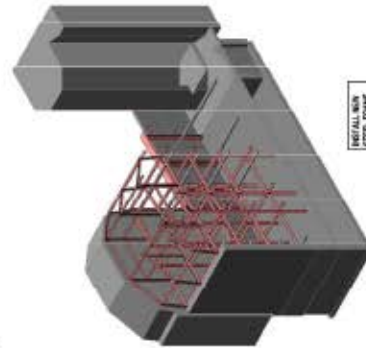
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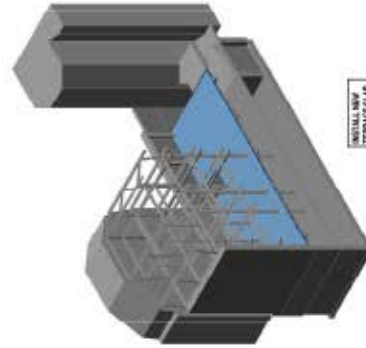
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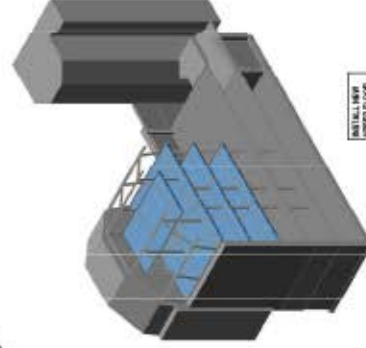
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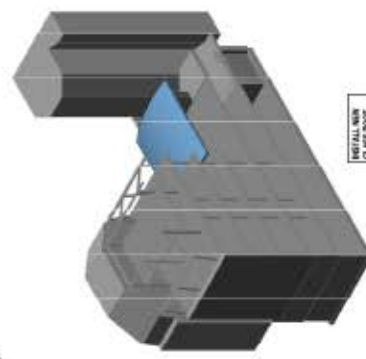
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13 AVX13



14 AVX14



15 AVX15

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