PICK EVERARD

SOAS Schedule of structural investigations for Proposed works to the Philips Building and Link Bridge SOAS, University of London

SOAS University of London

Issue Number 03
05 December 2016

Document History

Issue	Date	Comment	Author	Chk'd
03	05 Dec 2016	Minor edit and re-issue	JIS	IG
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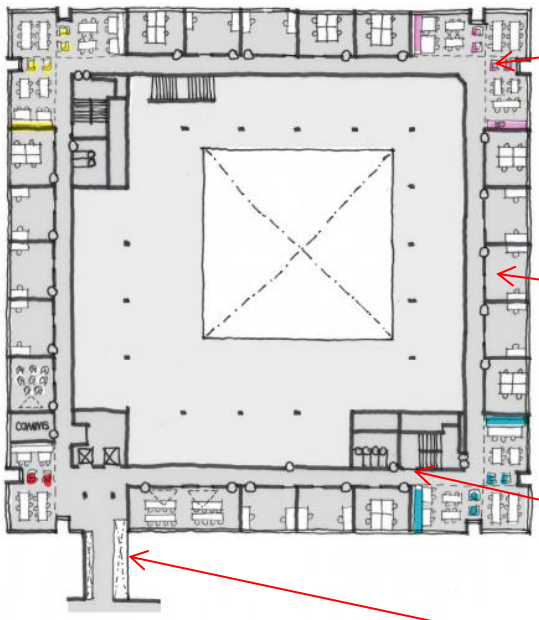
Contents

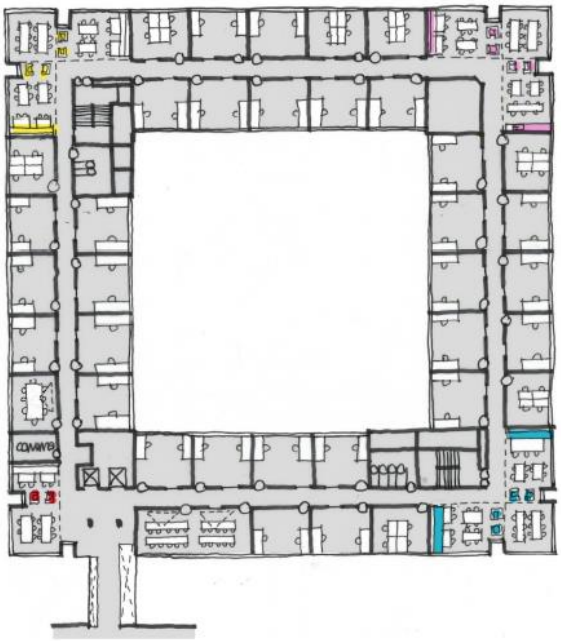
1.0 Introduction

1.1 Brief

Pick Everard have been commissioned by Faithful & Gould to provide structural engineering design and advisory services to support the development of developed design proposals for the internal refurbishment of elements of the grade 2* listed Philips Building at SOAS, University of London. The general extent of the proposed works is illustrated below;



Proposed plan at levels 2 & 3



Proposed plan at levels 4 & 5

Intrusive opening up works are now required to confirm assumptions made at RIBA Stage 2.

2.0 General description of the proposed intrusive investigation works

At this stage, intrusive investigation works are proposed in two areas;

- internal office spaces (levels 4 & 5 only)
- the link bridge (several levels)

2.1 Internal office spaces

Structural considerations include removal of existing partition walls, and possible re-ordering of building services.

Intrusive investigations are required;

1. To determine the form of construction used for internal partitions
2. To determine connection details between partitions and the RC structure above.
3. To determine the nature and condition of RC structure above existing ceiling finishes

2.2 The link bridge

Significant works are proposed for this six storey primary circulation feature. RIBA Stage 2 intentions include the recladding of significant sections of the link to improve views out, and the creation of voids within the existing bridge deck to create visual connections to floors above and below.

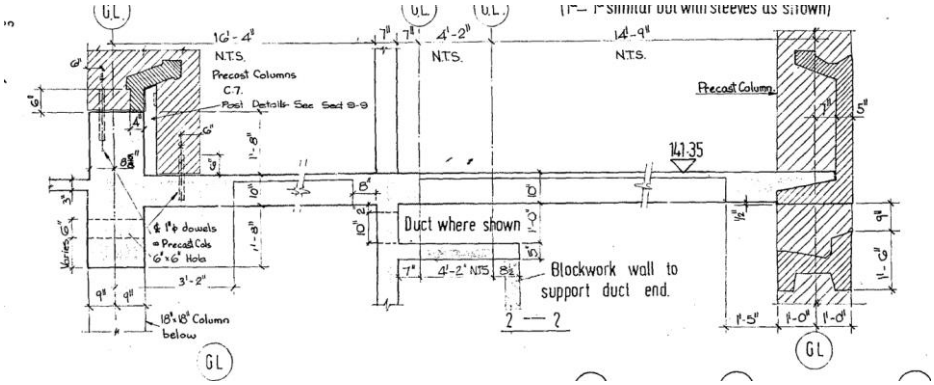
Intrusive investigation works are required to;

1. To confirm dimensions of existing RC elements
2. To confirm details of masonry cladding and fixing details to the RC framing of the Link Bridge
3. To determine support systems to the masonry cladding (including the locations of any soft joints)

3.0 Specification details for the intrusive investigation works

3.1 Internal office spaces

Reference to archive structural drawings prepared by Ove Arup & Partners dated 1971 indicate that partitions to office spaces at levels 2, 3, 4 & 5 are formed from reinforced concrete only on (Arup) grids 3, 10 C & K. Elsewhere, at these levels, partitions are not noted as forming part of the primary load bearing structure, except corridor walls at level 3 (Arup 4th floor) where required to support an RC slab forming the base of a service duct immediately below level 4 (Arup 5th floor);



Extract from Arup drawing 2551/1/1A

This information suggests that at levels 2, 3, 4 & 5, partition walls located orthogonally to the main corridor walls are non-loadbearing. The structural slabs supporting these partitions are of ribbed form, which suggests that partitions can be removed and relocated on lines of ribs (at 15" (381mm) centres).

3.1.1 Investigations to confirm forms of construction used for internal partitions

- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Locally remove finishes revealing the structure to the partition.
- Locally determine dimensions of the structure to the partition
- Make good investigation locations to match existing conditions
- Record findings and report these

3.1.2 Investigations to determine connection details between partitions and the RC structure above

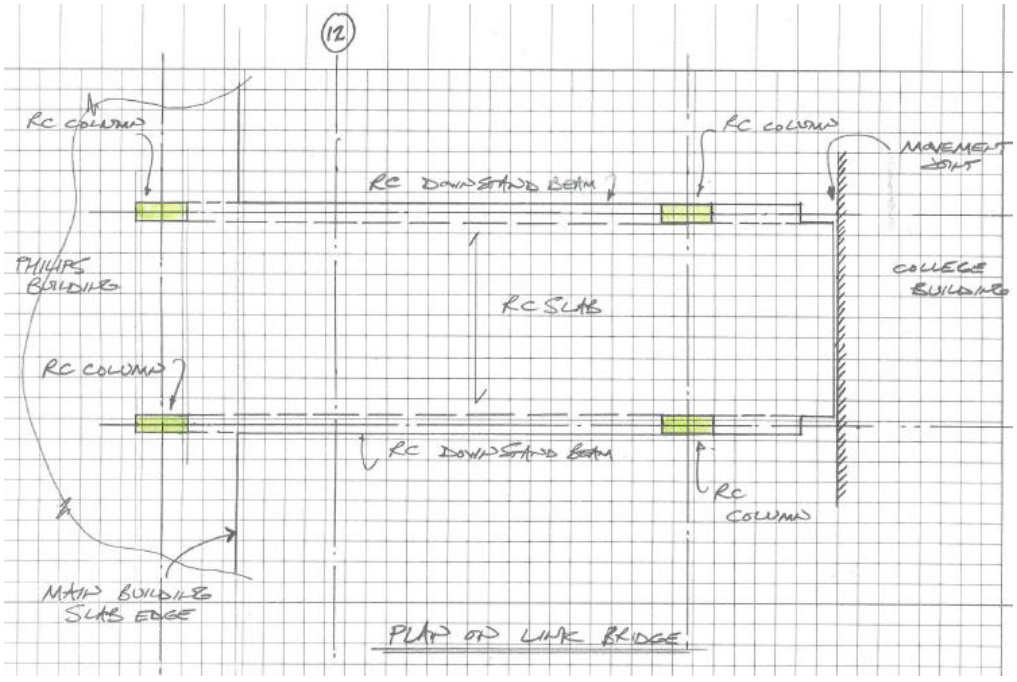
- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Locally remove finishes revealing the head of the partition.
- Locally determine details of connections between internal partitions and the RC structure above
- Make good investigation locations to match existing conditions
- Record findings and report these

3.1.3 Investigations to determine the nature and condition of RC structure above existing ceiling finishes

- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Investigate void above fixed ceiling using a borescope, with access through small drilled pilot holes or via an existing service fixing point
- Make good investigation locations to match existing conditions
- Record findings and report these

3.2 The link bridge

Based on currently available archive information, the link bridge is a six storey in-situ poured reinforced concrete framed structure, clad in facing brickwork both internally and externally. At the northern end, the link bridge takes support from the main Philips building via a pair of columns which extend through to foundation level, with downstand beams at roof and each deck level extruded from the Philips floor structure. At the southern end of the link bridge the extruded downstand beams at roof and each deck level span from the Philips building, and then cantilever off, a second pair of reinforced concrete columns, towards the College Building, with a movement joint between these structures.



Sketched details of the assumed link bridge structure

The architectural design intentions at this stage are;

- to partially remove masonry cladding
- to re-clad the link bridge with an offset curtain walling system

3.2.1 Investigations to confirm dimensions of existing RC elements – all from within the Link Bridge

- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Locally remove previously disturbed or displaced bricks to enable access to the anticipated cavity for investigations using a borescope.
- If necessary, crate additional drilled holes through masonry bed joints to enable access to the anticipated cavity via a borescope
- Locally determine dimensions of the RC structure contained with the masonry cladding where achievable
- Make good investigation locations to match existing conditions
- Record findings and report these

3.2.2 Investigations to confirm details of masonry cladding and fixing details to the RC framing of the Link Bridge – all from within the Link Bridge

- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Locally remove previously disturbed or displaced bricks to enable access to the anticipated cavity for investigations using a borescope.
- If necessary, crate additional drilled holes through masonry bed joints to enable access to the anticipated cavity via a borescope
- Locally determine details of masonry cladding
- Locally determine fixing details between masonry cladding and RC structure contained within the anticipate cavity
- Make good investigation locations to match existing conditions
- Record findings and report these

3.2.3 Investigations to determine support systems to the masonry cladding (including the locations of any soft joints) – from outside the Link Bridge at lower ground and ground level

- Review all available archive information and asbestos registers
- Prepare further RAMS for the works
- Provide suitable safe scaffold platform access and protection to the works sites
- Scan proposed investigation locations for the presence of concealed services
- Create drilled holes to enable access to the anticipated cavity via a borescope
- Locally determine details of support systems to external masonry cladding
- Make good investigation locations to match existing conditions
- Record findings and report these

4.0 Designer Risk Assessment

Refer to Appendix B

Appendix A

Photographs of proposed investigation locations

Typical internal view on Link Bridge – level 1- locations for works refs 3.2.1 & 3.2.2

Internal face of cladding to the Link Bridge – proposed investigation through previously removed bricks – Level 1 – location for works refs 3.2.1 & 3.2.2

Internal face of cladding to the Link Bridge – proposed investigation through previously removed brick – Level 2 – location for works refs 3.2.1 & 3.2.2

Elevation on Link Bridge – locations for works ref 3.2.3

Appendix B

Designer Risk Assessment for Investigation Works

PICK EVERARD

Design Risk Assessment

Business Management System Form

Job No: 160950	Client: F&G/SOAS		Discipline: Structural Engineering		Issue No: 01
Job Title: SOAS Philips Building and Link Bridge refurbishment		Stage of the job: Intrusive Investigations	Completed by: JIS	Checked by:	Date: 18/11/2016

Hazard/Hazardous Activity (Focus on hazards presenting unusual significant or unacceptable risks)	*Hazard effect* (State specific risk and when/where it may occur)	*Design Review* (Focus on what can be done during design to eliminate or mitigate risk)	*Residual Risk* Possible risk/control measures (Focus on measures that could be taken by others, eg Contractors / End Users, to mitigate residual risks further)	Who is affected	C/F
Encountering materials deleterious to health, including asbestos	Significant health risk due to inhalation of or other exposure to, deleterious materials, especially asbestos	Asbestos specialist to review all available archive drawings, reports and asbestos reports. If risk of exposure to asbestos cannot be determined in advance, assume this will be present and proceed appropriately. In all cases, ensure operatives are aware of risks and wear appropriate PPE.	Commission attendance and initial opening up works by an asbestos specialist – RAMS to be prepared by proposed contractors and reviewed by specialists before works commence. Only proceed with investigations if initial opening up works confirm asbestos is not present.	CO/ GP	Y
Encountering live services during investigation works	Electrocution, or water/gas leaks	Investigation contractor to review all available archive drawings & reports.	Scan all investigation areas for presence of existing live services before works commence.	CO/ GP	Y
Interaction with students, staff and the general public during the works due to client requirements to retain occupancy in parts of the existing building and surrounding site area.	Students, staff and the general public encountering waste, materials and plant during the works – risk of accidents is high	Ensure site management, set up and phasing of the investigation works prevents unauthorised access to the works areas by staff students and the general public during the works.	Site access arrangements and requirements to protect staff students and the general public to be confirmed prior to the investigation works. Early engagement between those responsible for the works and SOAS to be arranged	CO/ GP	Y

KEYS: **Who is affected:**
CO - Construction operatives
MP - Maintenance personnel
GP - General public/client employees

C/F:
P - Significant risk to be highlighted in Pre Construction information/on drawings
F - Include item in H&S File
E - Hazard Eliminated

DISTRIBUTION: Copy and paste to insert ✓

[x] PRINCIPAL DESIGNER	[ ] CIVIL ENGINEER	[ ] MECHANICAL/ELECTRICAL ENGINEER	[ ] BUILDING SURVEYOR
[x] ARCHITECT	[ ] STRUCTURAL ENGINEER	[ ] QUANTITY SURVEYOR	[X] PROJECT MANAGER

ALL CONSTRUCTION HAZARDS ARE ASSESSED ON THE BASIS OF COMPETENT CONTRACTORS BEING APPOINTED TO CARRY OUT THE WORK INVOLVED, THIS IS NOT TO BE READ AS A METHOD STATEMENT

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STR/JIS/jim/160950/DRA 02

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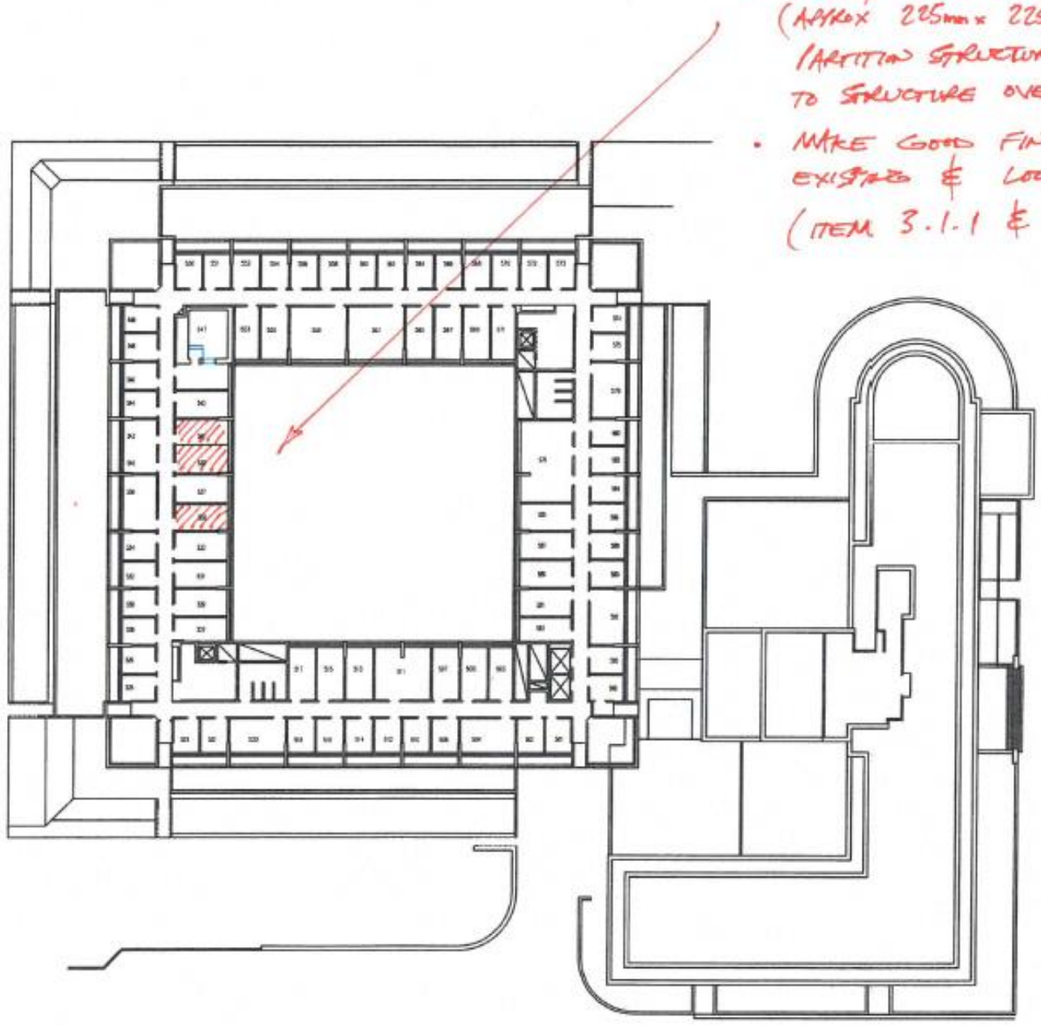
Appendix C

Drawings illustrating locations and details of the proposed investigation works

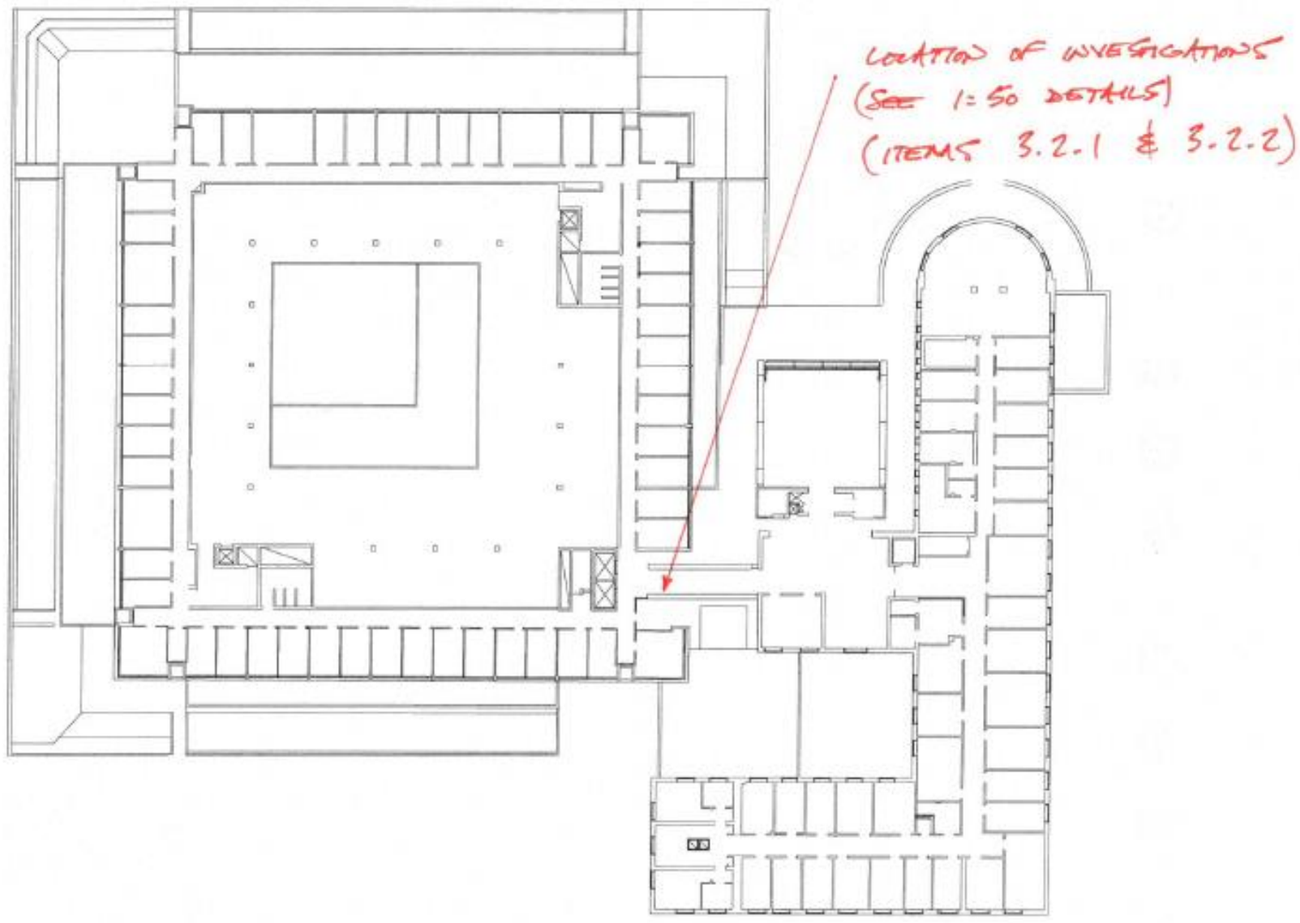


WITHIN 'TEST ROOMS' 535, 539 & 541.

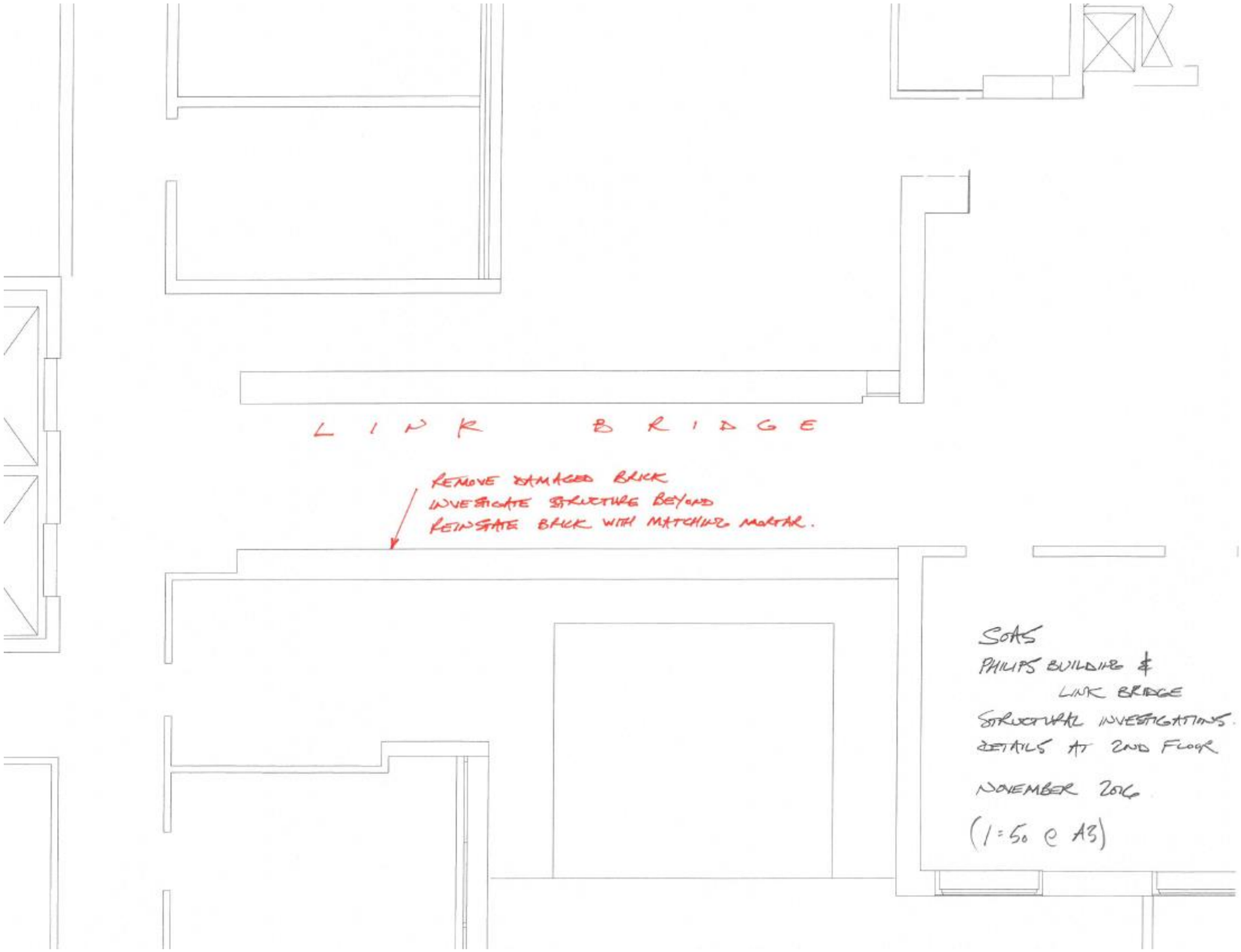
- LOCALLY REMOVE FINISHES TO PARTITION (APPROX 225mm x 225mm PATCH) TO REVEAL PARTITION STRUCTURE & FIXING DETAILS TO STRUCTURE OVER
- MAKE GOOD FINISHES TO MATCH EXISTING & LOCALLY RE DECORATE. (ITEM 3.1.1 & 3.1.2)

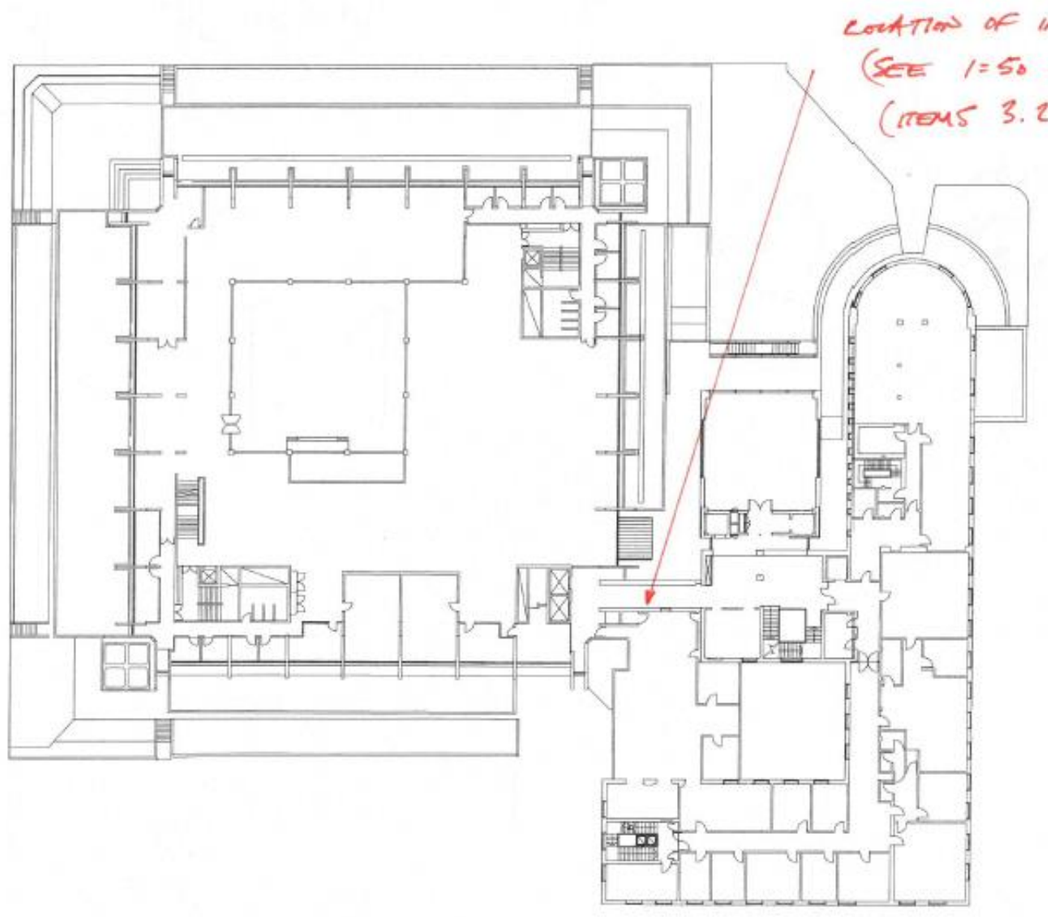
- INVESTIGATE VOID ABOVE FIXED CEILING USING A BORESCOPE THROUGH EITHER A DRILLED PILOT HOLE (SAY 30mm ϕ) OR VIA AN EXISTING SERVICE FITTING.
- MAKE GOOD PILOT HOLE TO MATCH EXISTING & LOCALLY REDECORATE. (ITEM 3.1.3).

SOAS
PHILIPS BUILDING & LINK BRIDGE
STRUCTURAL INVESTIGATIONS
FIFTH FLOOR.
NOVEMBER 2016.
(1:500 @ A3)

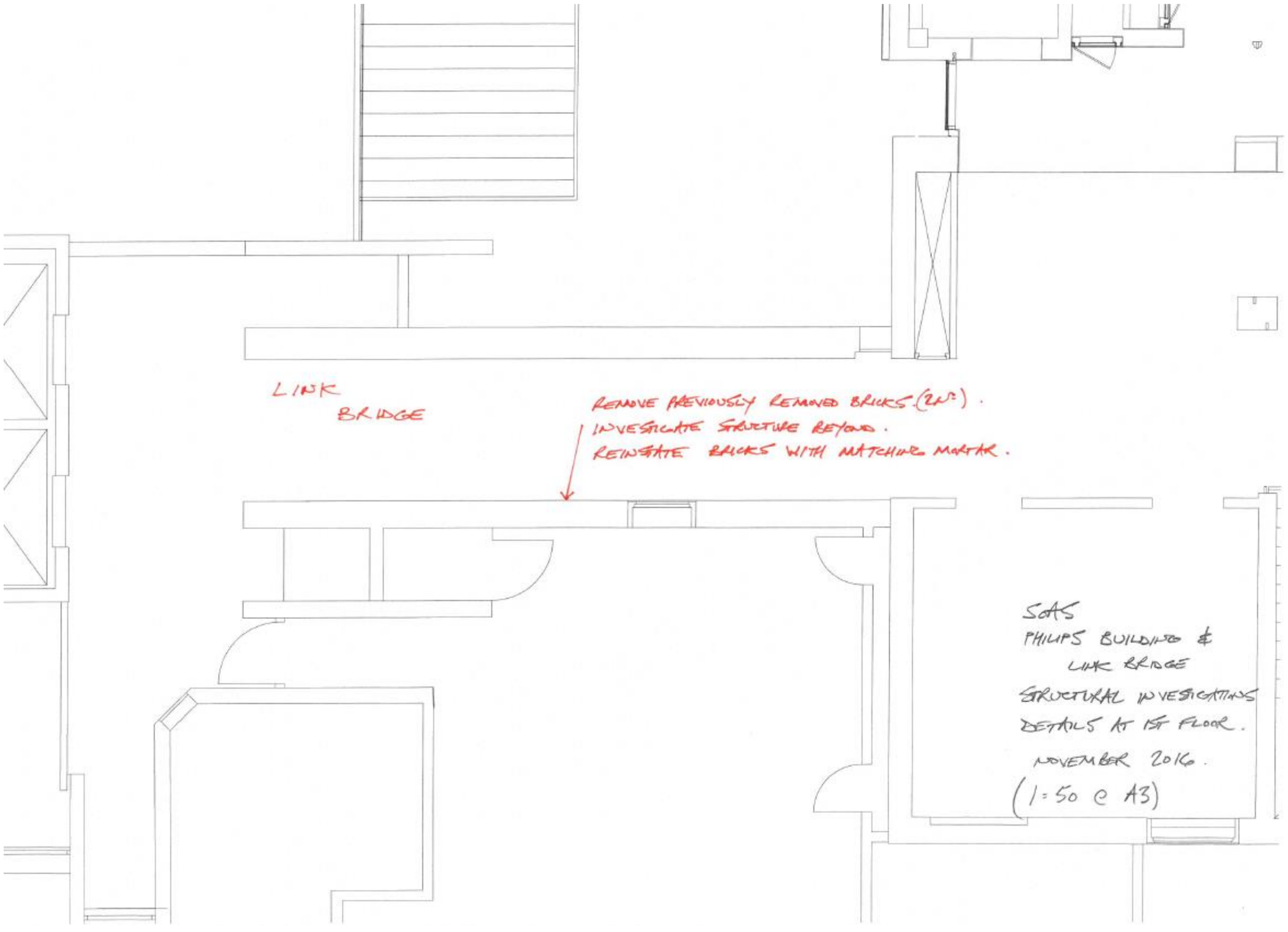


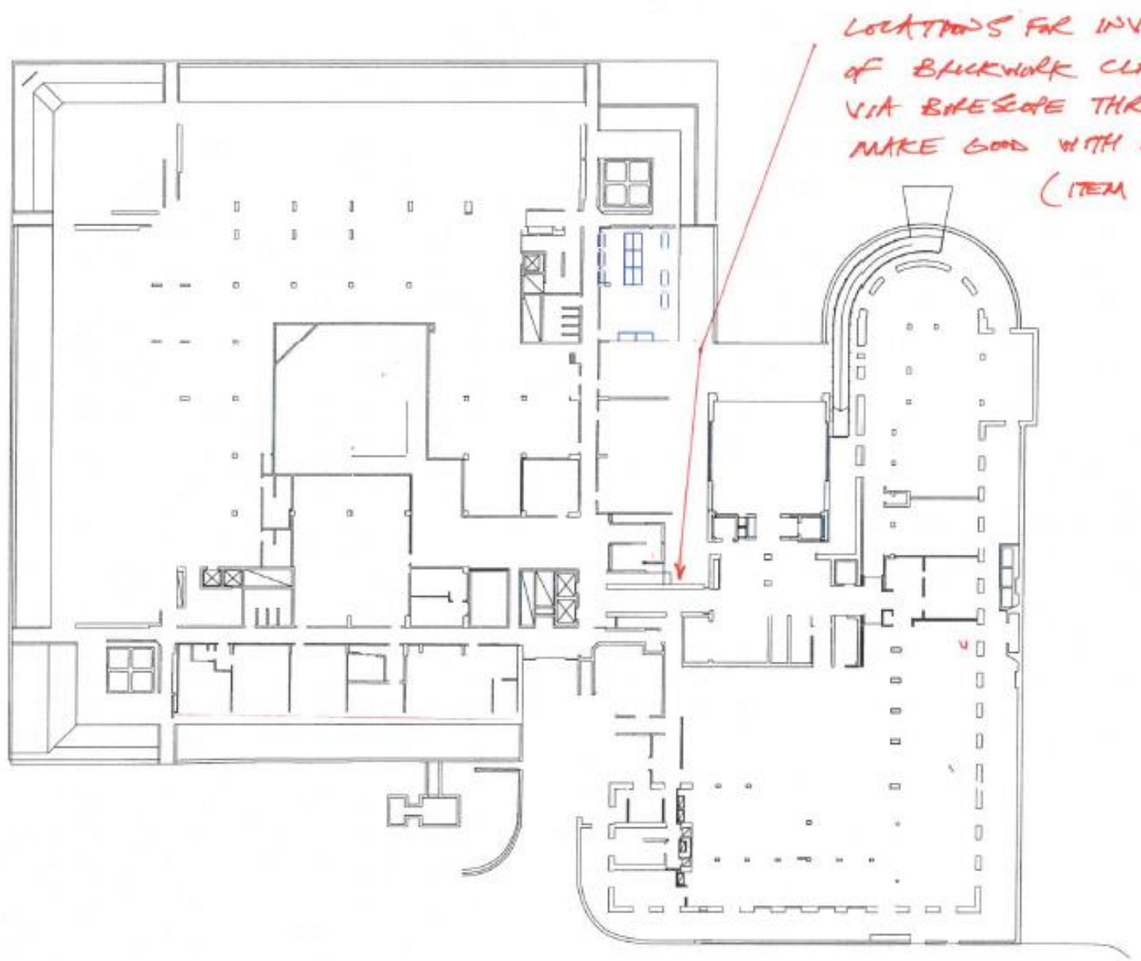
SOAS
PHILIPS BUILDING & LINK BRIDGE
STRUCTURAL INVESTIGATIONS
SECOND FLOOR
NOVEMBER 2016.
(1:500 @ A3)


L I N K B R I D G E
REMOVE DAMAGED BRICK
INVESTIGATE STRUCTURE BEYOND
REINSTATE BRICK WITH MATCHING MORTAR.
SOAS
PHILIPS BUILDING &
LINK BRIDGE
STRUCTURAL INVESTIGATIONS
DETAILS AT 2ND FLOOR
NOVEMBER 2016
(1:50 @ A3)



SOAS
PHILIPS BUILDING & LINK BRIDGE
STRUCTURAL INVESTIGATIONS
FIRST FLOOR
NOVEMBER 2016.
(1:500 @ A3)


LINK
BRIDGE
REMOVE PREVIOUSLY REMOVED BRICKS. (2No.).
INVESTIGATE STRUCTURE BEYOND.
REINSTATE BRICKS WITH MATCHING MORTAR.
SOAS
PHILIPS BUILDING &
LINK BRIDGE
STRUCTURAL INVESTIGATIONS
DETAILS AT 1ST FLOOR.
NOVEMBER 2016.
(1:50 @ A3)



SOAS
PHILIPS BUILDING &
LINK BRIDGE
STRUCTURAL INVESTIGATIONS
LOWER GROUND FLOOR
NOVEMBER 2016
(1:500 @ A3)