



Our Ref: DJM/LB/ 213329

7 April 2014

18 BEDFORD SQUARE: SUMMARY OF PROPOSED STRUCTURAL WORKS

Background Information

1. The property is a traditionally constructed Georgian Townhouse with external load bearing brick walls and suspended timber floors. The roof structure and internal walls are generally of timber construction (at basement level the internal walls are generally constructed with brick). The timber floors comprise main timber beams supporting independent floors and ceiling joists.
2. The building was significantly refurbished circa 2001 and we provided structural engineering services to the Bedford Estate for this project. Structural repairs at that time included sweetening of deflected upper floors, and strengthening of some primary timber beams. There was evidence of historic movement and cracking, particularly of the internal timber stud spine wall.
3. As part of the works in 2001 the building was fully inspected prior to and following completion circa April 2002.
4. The cantilever stone stair was inspected in April 2004 following the failure of a similar stair in Bedford Square in March 2004. Remedial works were undertaken including crack repairs and support beam strengthening. These works were completed in early January 2005.
5. Some reopening of historic cracks was noted during the stair remedial works.
6. The property was inspected again in December 2005; there was no evidence of significant deterioration of cracking and I believe that redecoration works were subsequently undertaken.

Current Condition

1. The main building was inspected on Tuesday 25th March after the building had been vacated by the current tenant. Reference should be made to the attached survey photographs and drawings.
2. There was evidence of minor cracking between some of the treads on the cantilever stone stair (see photographs 3 & 4).

3. The spine wall appears to have settled slightly causing cracking of the plaster string, and there is evidence of minor differential movement between the spine wall and party walls (see photograph 5).
4. There was evidence of movement and cracking in the internal partition walls towards the middle of the building (see photographs 1 & 2).
5. At second floor level the dividing wall between the front rooms had clearly settled and the plaster had cracked at each end and over the doorway. The plaster was locally investigated and was clearly a hard, sand cement mortar applied over metal lath.
6. At first floor level there was further evidence of minor differential movement between the spine partition and party walls. There was also evidence of cracking to the sides and over the double door opening into the front room indicating minor settlement (see photographs 6, 7 & 8).
7. At ground floor level there was evidence of minor differential movement and cracking between the hall wall and the front wall of the property (see photograph 11).
8. At basement level there was no evidence of significant structural movement and cracking of the masonry walls.
9. The movement and cracking noted appears to be directly related to shrinkage/movement of the timber stud walls and supporting floors.

In order to repair the cracking and movement, and reduce the risk of future movement we recommend the following work:-

2nd Floor Level (see floor plan)

1. Check all stair treads. Rake out defective joints and resin bond (say 5 No).
2. Strengthen the main floor beams in the front rooms with steel plates (2 No). Strengthen the joists between the main beams (4 No).
3. Remove the sand cement plaster from the dividing wall; leave the plaster cornice in place and screw fix 12mm timber ply to both sides of the wall. Plaster board and skim.

1st Floor Level (see floor plan)

1. Check the supporting joists below the spine partition and make good as necessary.



Ground Floor Level (see floor plan)

1. Strengthen the support to the hall wall.
2. Add steel plate strengthening to adjacent the main beam.
3. Strengthen joists below partition wall (accessed from basement below).
4. Make good ceiling in basement below.
5. Leaving the plaster cornice in place, locally remove the plaster from the ceiling and investigate the beam/floor construction below the spine wall at 1st floor level. Strengthen and make good.

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Ref: 213329

Project: 18 Bedford Square

Title: Survey Photographs



1. Movement and cracking of timber stud wall at 2nd floor level.



2. Movement and cracking of timber stud walls at 2nd floor level.



3. Hairline cracking of stone stair.



4. Hairline cracking of stone stair treads.

Ref: 213329

Project: 18 Bedford Square

Title: Survey Photographs



5. Cracking and differential movement between internal spine wall and party wall.



6. Differential movement between spine wall and party wall at first floor level.



7. Differential movement between spine wall and party wall.



8. Movement of timber stud walls/floor.

Ref: 213329

Project: 18 Bedford Square

Title: Survey Photographs



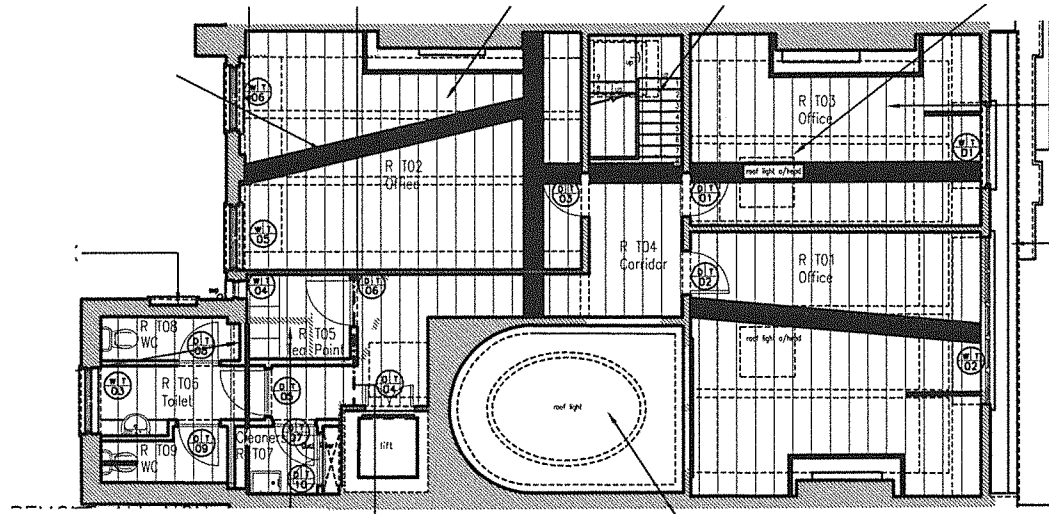
9. Differential movement and cracking between stair and timber stud wall.



10. Hairline cracking to underside of stair.



11. Differential movement between hall wall and front wall at ground floor level.



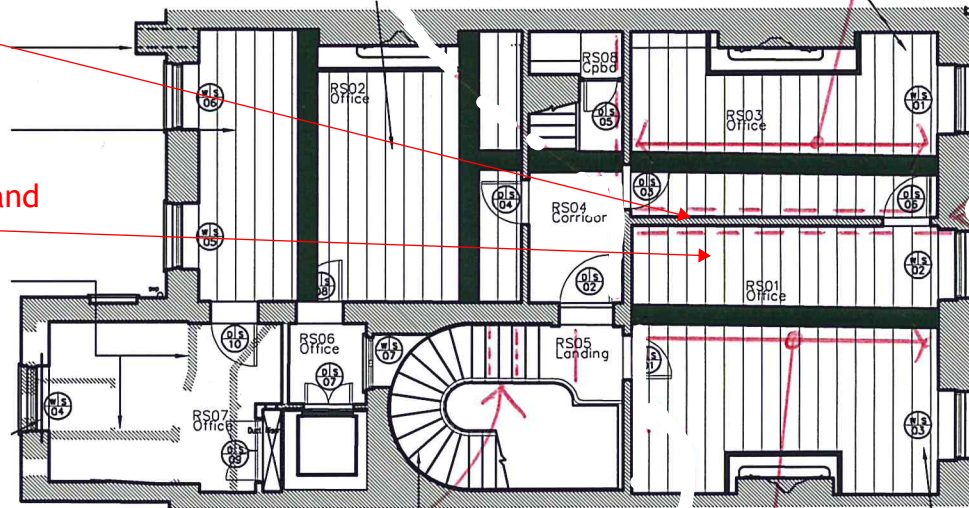
No significant structural works envisaged

REV	COMMENTS	DATE	CHK
PRELIMINARY			
mnp			
mason navarro pledge Consulting Civil and Structural Engineers Bancroft Court, Hitchin, Hertfordshire SG5 1LH Telephone: 01462 632012 Fax: 01462 632333 Email: office@mnp.co.uk www.mnp.co.uk			
CLIENT:			
The Bedford Estate			
PROJECT:			
18 Bedford Sq			
DRAWING TITLE:			
3rd Floor			
SCALE: 1:100		DATE: 04.14	
DRAWN BY: DJM		CHECKED BY:	
JOB NO:	DISCIPLINE:	REV:	
213329	SK1		

Remove existing sand cement plaster on steel rib lath from both sides of stud partition retaining plaster cornice.
 Fix 12mm timber ply to both sides of wall screwed at 150mm crs, plus 12mm plaster board and skim.
 Ply boards to be staggered

Allow for steel plate strengthening to top of primary timber beam adjacent to dividing wall.

Inspect floor joists under partition and strengthen as necessary

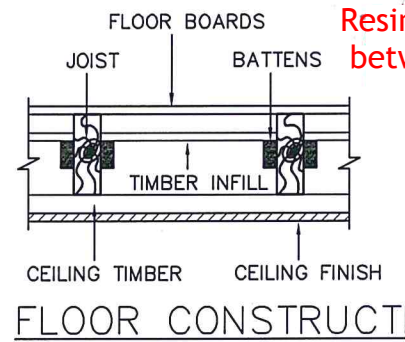
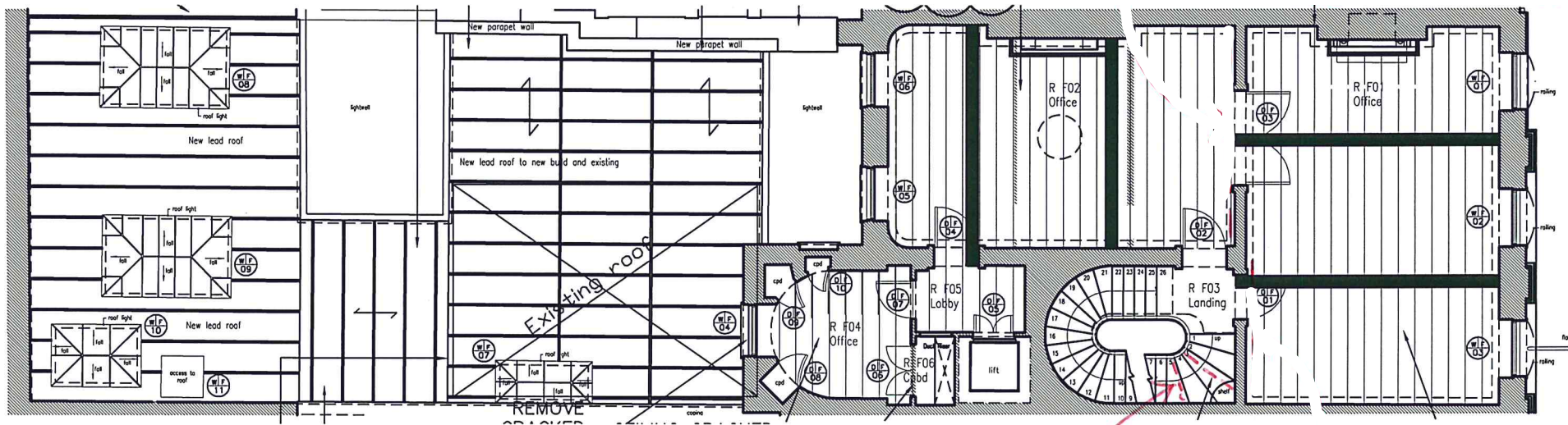


Resin Bond cracks between treads

Allow for steel plate strengthening to top of primary timber beam adjacent to dividing wall.

REV	COMMENTS	DATE	CHK
PRELIMINARY			
mnp			
mason navarro pledge Consulting Civil and Structural Engineers Bancroft Court, Hitchin, Hertfordshire SG5 1LH Telephone: 01462 632012 Fax: 01462 632233 Email: office@mnp.co.uk www.mnp.co.uk			
CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
2nd Floor			
SCALE		DATE	
1:100		04.14	
DRAWN BY			
DJM			
CHECKED BY			
DESIGN	REVISIONS	REV	
213329	SKZ		

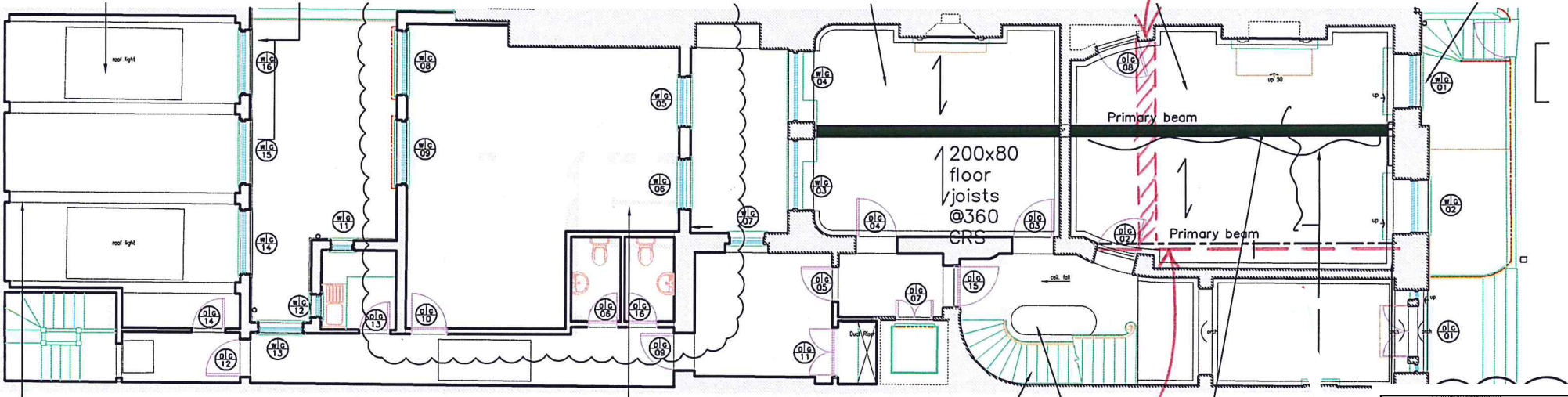
No significant structural works envisaged




Resin Bond cracks between treads

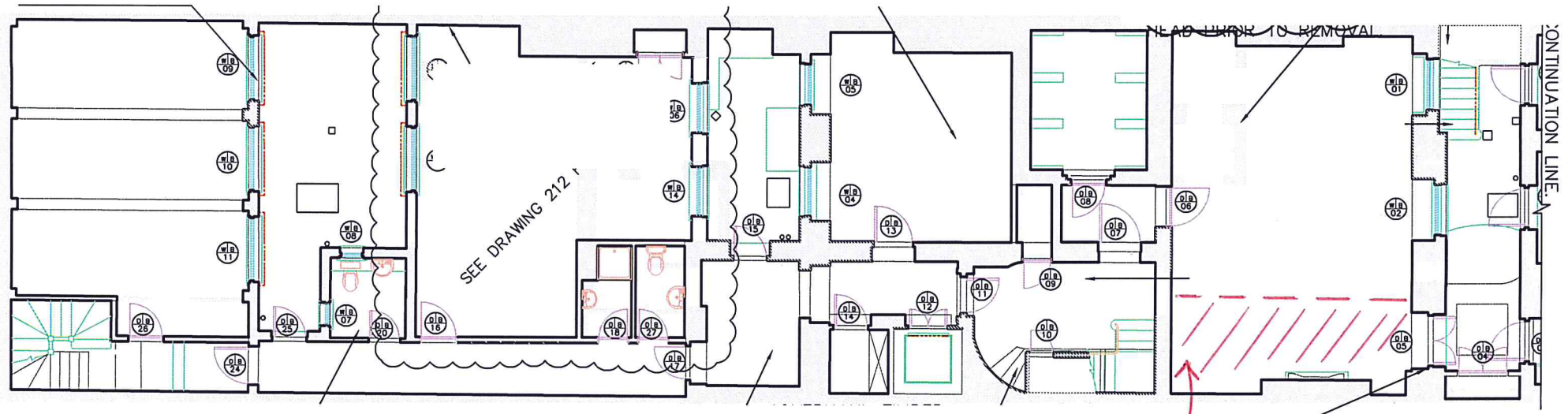
REV	COMMENTS	DATE	CHK
STATUS			
PRELIMINARY			
mnp			
mason navarro pledge			
Consulting Civil and Structural Engineers			
Bancroft Court, Hitchin, Hertfordshire SG5 1 LH			
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Email: office@mnp.co.uk www.mnp.co.uk			
CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
1st Floor			
SCALE 1:100		DATE 04.14	
DRAWN BY DJM		CHECKED BY	
JOB NO. 213329		DRAWN BY SK3	REV

Locally remove cracked plaster and inspect floor joists under partition at 1st floor level and strengthen as necessary




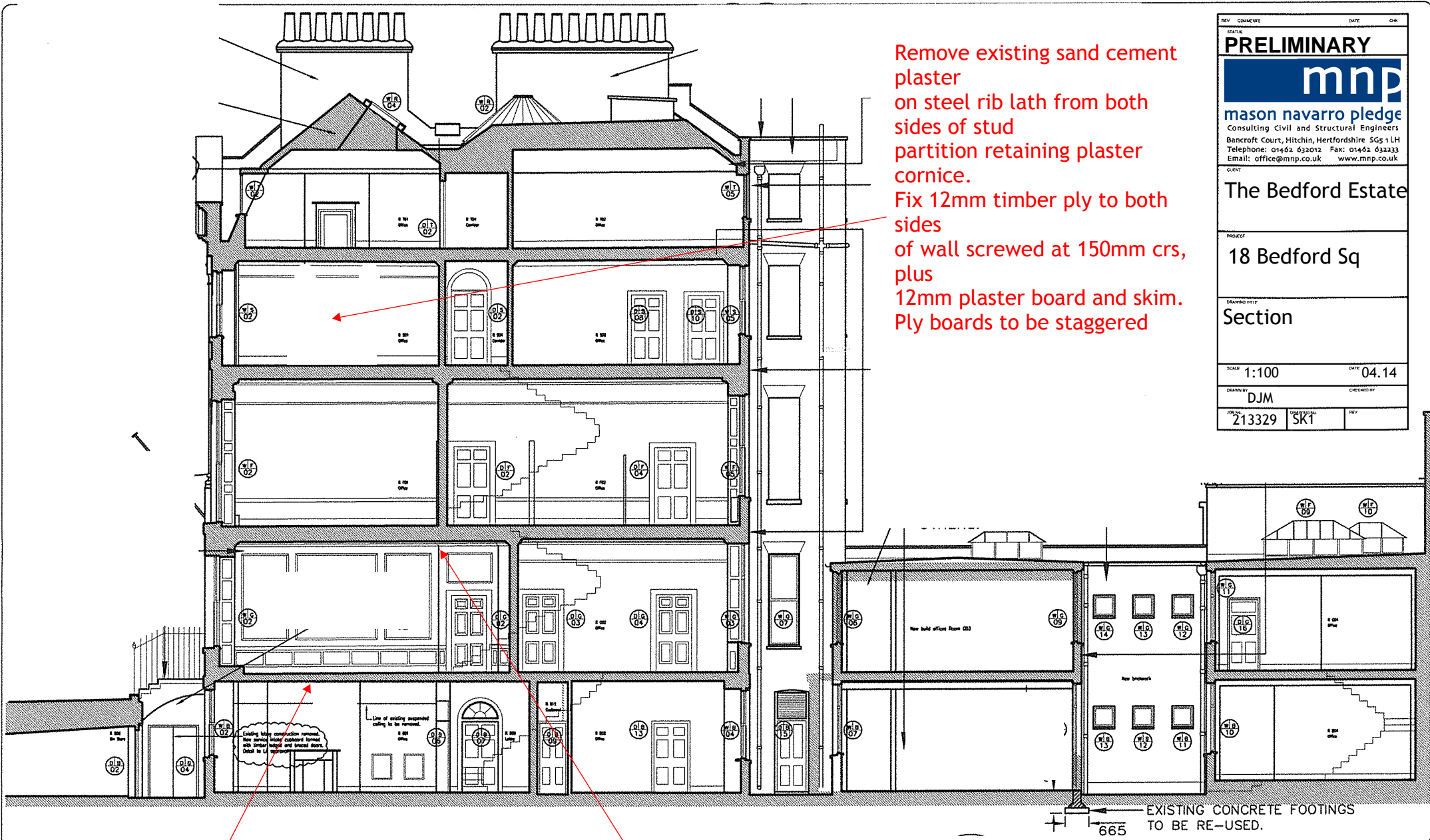
Allow for steel plate strengthening to top of primary timber beam adjacent to hall wall.

REV	COMMENTS	DATE	CHK
STATUS			
PRELIMINARY			
			
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CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
Ground Floor			
SCALE		DATE	
1:100		04.14	
DRAWN BY		CHECKED BY	
DJM			
JOB No.	DRAWING No.	REV	
213329	SK4		



Inspect floor joists under hall partition and strengthen as necessary

REV	COMMENTS	DATE	CHK
PRELIMINARY			
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CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
Lower Ground Flr			
SCALE		DATE	
1:100		04.14	
DRAWN BY		CHECKED BY	
DJM			
NO	DATE	REV	
213329	SK5		



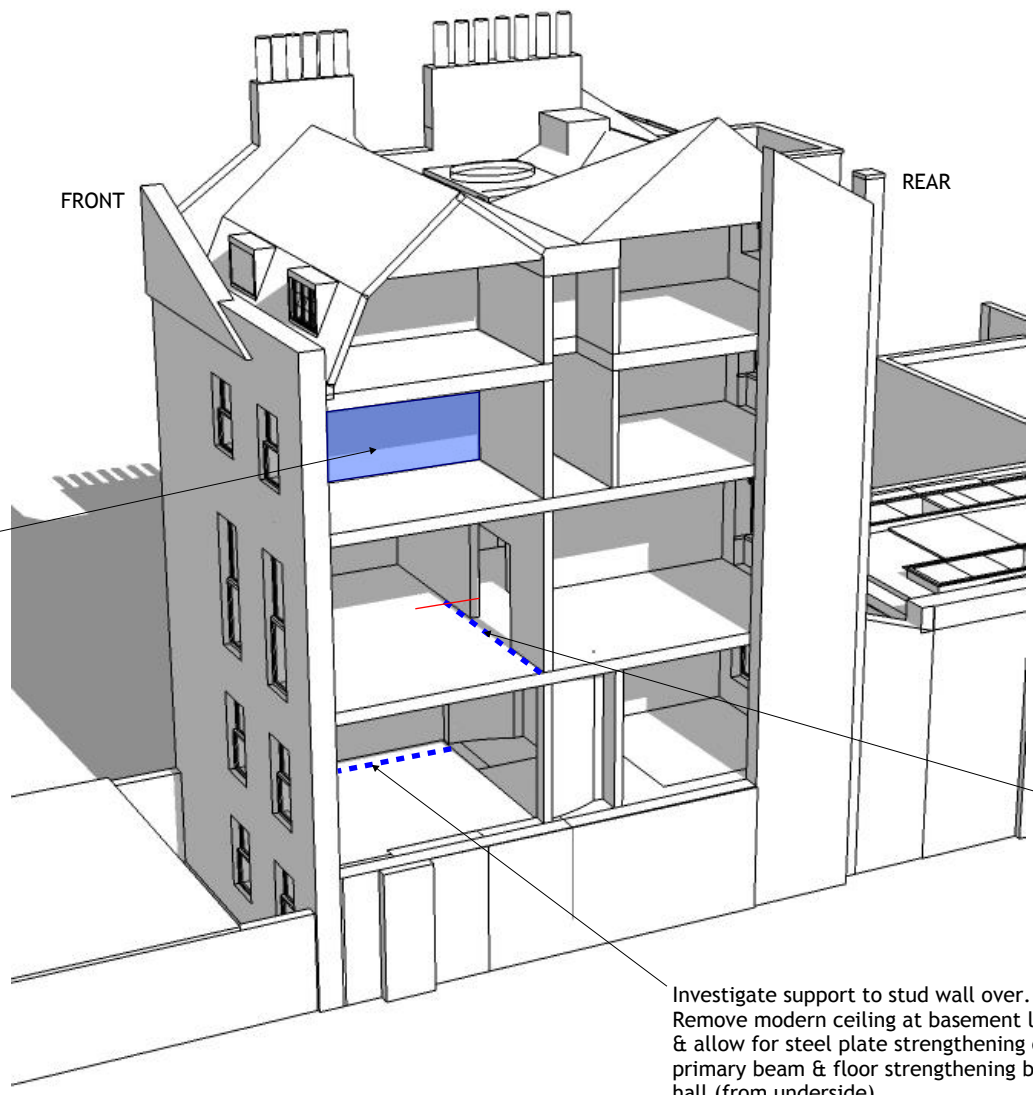
Remove existing sand cement plaster on steel rib lath from both sides of stud partition retaining plaster cornice.
 Fix 12mm timber ply to both sides of wall screwed at 150mm crs, plus 12mm plaster board and skim. Ply boards to be staggered

Inspect floor joists under hall partition and strengthen as necessary

Locally remove cracked plaster and inspect floor joists under partition at 1st floor level and strengthen as necessary

REV	COMMENTS	DATE	OWN
STATUS			
PRELIMINARY			
mason navarro pledge Consulting Civil and Structural Engineers Bancroft Court, Hitchin, Hertfordshire SG5 1LH Telephone: 01462 632012 Fax: 01462 632333 Email: office@mnp.co.uk www.mnp.co.uk			
CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
Section			
SCALE		DATE	
1:100		04.14	
DRAWN BY		CHECKED BY	
DJM			
PROJ	DESIGN	REV	
Z13329	SKT		

EXISTING CONCRETE FOOTINGS TO BE RE-USED.
 665



Remove sand cement render & metal rib lath to timber stud partition. Line both sides of wall with 12mm timber ply screwed at 150 CRS. Existing cornice to remain in place.

Investigate support to stud wall over. Remove modern ceiling at basement level & allow for steel plate strengthening of primary beam & floor strengthening below hall (from underside)

Investigate support of wall over & allow for strengthening of floor between hall and party wall.

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PRELIMINARY			
mnp			
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CLIENT			
The Bedford Estate			
PROJECT			
18 Bedford Sq			
DRAWING TITLE			
Isometric showing proposed structural repairs			
SCALE		DATE	
NTS		04.14	
DRAWN BY		CHECKED BY	
DJM			
NO. IN SET	DRAWING NO.	REV	
213329	SK7		