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**STRUCTURAL FEASIBILITY ASSESSMENT OF
PROPOSED INTERNAL ALTERATIONS,
TO 46, 47/47A BEDFORD ROW
LONDON WC1**

Client: MPG Holborn LP
Cavendish House,
18 Cavendish Square,
London
W1G 0PJ

Prepared By: The Morton Partnership Ltd
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CONTENTS:

1.0 Introduction

2.0 Brief Description

3.0 Structural Proposals and Comments

4.0 Conclusions and Recommendations

5.0 Limitations

APPENDIX A: Report Photographs

APPENDIX B: Drawings with Report References

1.0 Introduction

- 1.1 The Morton Partnership Ltd were appointed by exchange of emails with Mr Henry Busiakiewicz of BB Partnership Ltd., and Mr Danny Egan on behalf of the client MPG Holborn LP in November 2013 to carry out a feasibility study of the proposed alterations to the properties at 46, 47, and 47A Bedford Row. The purpose of the study is to comment upon any detrimental effects the proposals may have on this and adjoining properties as well as highlighting any difficulties in forming the proposals.
- 1.2 We received indicative demolition drawings from the BB Partnership on which we marked up areas for opening up.
- 1.3 We visited the property on the 25th of November 2013 to inspect minor opening up in the floors and ceilings which revealed the structure below.
- 1.4 This report describes, in outline form, the proposed alterations, the likely implications, their structural feasibility and any possible difficulties which will need to be overcome.
- 1.5 As works progress, we advise further investigation and inspection by ourselves. We have highlighted these specific areas for further investigation within this report.

2.0 Brief Description

- 2.1 Properties 46, 47 and 47A Bedford Row are 5 storey (including a basement) mid terrace buildings. The external walls are loadbearing brickwork approximately 330mm thick, increasing in thickness at basement level to 630mm.
- 2.2 The timber suspended floors appear to span between the party walls. In some areas a thin screed of concrete has been added over the boards of the floors, possibly for improved fire or sound proofing.
- 2.3 The building is listed Grade II and was built circa late 18th century according to the listing description.
- 2.4 The main elevations of yellow stock brick feature symmetrical openings with the main entrances raised slightly above ground level.
- 2.5 To the rear of the property there are several single storey additions. To the rear of 46 a flat roofed walkway links to a hipped lean-to roof addition. To the rear of 47 and 47A there are several flat roofed single storey additions.
- 2.6 No significant structural movement was noted during the visit. Suspended timber floors appeared to be resilient and not prone to excessive deflection and or movement.
- 2.7 One area of concern we would like to highlight is a corroded steel beam to the rear of 47A which requires replacement. This will be discussed below.
- 2.8 We have marked up BB Partnership's proposal drawings with numbering to distinguish the different areas of alterations, these are discussed in detail below.

3.0 Structural Proposals and Comments

3.1 Basement

- 3.1.1 Removal of the suspended ceiling in this area to No. 46 does not present any structural implications. It is also proposed to remove the door jamb in this area; it is assumed the lintel over is supported on the adjacent load bearing wall and this will not be an issue.

- 3.1.2 For the new opening above the existing masonry wall, a new timber member, 2No. 50x200dp within the floor void will support the non-loadbearing stud walls to the upper stories.
- 3.1.3 In this area of the basement of No. 46 an existing light-well is to be renewed, this requires chamfering the top of the existing masonry wall. There are no implications to the structure with this proposal.
- 3.1.4 Within No.47, an existing steel beam supports a stud wall and the ground floor. The proposal is to raise the floor within 47A to match the original floor level in 47. This will involve raising the steel beam, which is a later addition, to within the floor void. The existing steel beam appears to be a UB 305x127x37. As no downstand is preferred a new 152UC23 will be sufficient and will be hidden within the floor void. New 50x 150dp floor joists will form the new raised first floor.
- 3.1.5 The spiral stair is to be removed and the floor infilled with 47x150mm C24 softwood joists at 450mm spacing. This will improve the existing arrangement as the joists in this area are not directly supported back to the wall.
- 3.1.6 Within an existing covered lightwell to the rear of the basement an existing steel is severely corroded at the end embedded in the external masonry wall. This beam requires replacement, a new steel, 152UC23 will support the ground floor single story masonry wall above. The new beam is to be galvanised and painted for additional corrosion protection.
- 3.1.7 This vaulted area of the basement to the rear of No. 47 was not inspected in full but from the visual inspection the vault appears to span over the partition. Floor loading over the masonry arch is not a concern as the masonry arches are more effective when in compression and loaded from above.
- 3.1.8 A new opening within the vaults to the front of the property will require 2No. 152UC23 steel beams and new concrete padstones at the end bearing of the beams within the masonry. The new beams will form downstands over the proposed opening.
- 3.2 Ground Floor
- 3.2.1 This wall is timber studwork with masonry infill; this varies from the other forms of construction in the house which are generally timber partitions with masonry load bearing walls. The masonry may have been added to this timber framed wall for fire resistance or sound proofing when the building was converted to flats. The wall appears to be non-loadbearing, prior to removal of the wall we will require further opening up at first floor to confirm the first floor is not supported on this wall.
- 3.2.2 The wall to be removed at this location supports a brick vault over the adjacent room. A new steel section 152UC30 will have sufficient capacity to withstand both the vertical and horizontal loading from the vault. This new steel will form a downstand below the ceiling. New padstones will be required within the existing masonry walls.
- 3.2.3 We propose prestressed concrete lintels 100x140dp to support the single story masonry wall over this area; these lintels will form a downstand below the ceiling.
- 3.2.4 A new non- loadbearing partition is proposed in this area.
- 3.2.5 Removal of these partitions will require 2No. C24 50x225 joists to support the roof of the courtyard building.
- 3.2.6 A new partition in this area will require doubled up joists within the floor void.
- 3.2.7 To trim out the floor for the new stair opening, provide 2No 47x150 C24 joists.
- 3.2.8 The rear courtyard building is to be reconstructed, keeping many of the perimeter walls. As the new arrangement will lose many of the internal partitions, we propose 2No principal steel members to support the roof. These beams can be installed within the roof void with the

ceiling joists supported on the web of the beam. The principal beam will be a 152UC30, this may require a splice detail as access to the courtyard is limited and the steel may have to be brought through the ground floor of the property. The footings below the existing walls require further inspection.

- 3.2.9 A new steel beam within the roof void will support the ceiling joists in this area, 1No UB152x89x16. The footing under the supporting wall requires inspection; if insufficient breadth is recorded a new pad footing may be required.
- 3.2.10 If alterations to the ground floor of No 46 are planned, for example new insulation added within the floor void or any other alterations that would involve opening up of the floor, we would recommend fixing 18mm ply to the existing floor joists. The joists in this area are undersized for deflection across this span, and strengthening is recommended.

3.3 First Floor

- 3.3.1 It is assumed this is a non-loadbearing stud wall; no additional support is required prior to its removal.
- 3.3.2 This is a non-loadbearing stud wall. The new opening proposed will require non-structural timber framing.
- 3.3.3 This is a non-loadbearing stud wall in this area; no additional support is required prior to its removal.
- 3.3.4 It is proposed to remove this stair and infill the floor with 50x150mm C24 Softwood Joists at 450mm spacing. These joists will be supported on the end masonry walls and the intermediate spine wall.

3.4 Second Floor

- 3.4.1 The second floor of No. 46, was not inspected. It is most likely that this wall is a non-loadbearing stud wall and no additional support will be required. We will require further inspection of the floor above prior to removal of this wall.
- 3.4.2 Ensure noggins and doubled up joists are in place below new partitions.
- 3.4.3 As above, this area was not inspected. It is most likely that this wall is a non-loadbearing stud wall and no additional support will be required.
- 3.4.4 Ensure noggins and doubled up joists are in place below new partitions.
- 3.4.5 This is a non-loadbearing stud wall and no additional support is required prior to its removal.
- 3.4.6 Ensure noggins and doubled up joists are in place below new partitions.
- 3.4.7 Ensure noggins and doubled up joists are in place below new partitions.

3.5 Third Floor

- 3.5.1 The third floor of No. 46, was not inspected. It is most likely that this wall is a non-loadbearing stud wall and no additional support will be required. We will require further inspection of the roof void above prior to removal of this wall.
- 3.5.2 Ensure noggins and doubled up joists are in place below new partitions.
- 3.5.3 As above, this area was not inspected. It is most likely that this wall is a non-loadbearing stud wall and no additional support will be required.
- 3.5.4 Ensure noggins and doubled up joists are in place below new partitions.

- 3.5.5 Within No. 47, ensure noggins and doubled up joists are in place below new partitions.
- 3.5.6 This is a non-loadbearing stud wall. The proposed new opening will require non-structural timber framing.
- 3.5.7 It is proposed to remove this non-loadbearing partition; this raises no structural concerns.

3.6 Side Extensions

- 3.6.1 This brick side extension to the rear of No. 46 is independent of the main structure, and was constructed as a later addition. It is supported on steel beams onto the masonry walls of the single story building within the courtyard. Removal of the addition will not affect the stability of the main building.
- 3.6.2 Prior to construction of any temporary works to access the brick extension for demolition, the steel supporting the masonry must be inspected as the steel beams are exposed and vulnerable to corrosion.
- 3.6.3 As with 3.6.1, this rear extension to 47A is a later addition to the rear of the property. Appropriate demolition procedure should be carried out for its removal, but overall its removal does not present any structural implications for the main structure.

4.0 **Conclusions and Recommendations**

- 4.1 It is our opinion that all the proposals are achievable without considerable structural alteration to the fabric of the buildings.
- 4.2 The majority of the alterations relate to relocating partition walls and new openings within the floors, these can be achieved with localised temporary propping and without great loss or addition of structural fabric.
- 4.3 There are only two locations where slightly more substantial support to the existing structure will be required. The first area is to the masonry partition at basement level of No. 46 (see 3.1.2), this wall does not support floor load but other partition walls. The second area relates to raising the existing steel beam to the basement of 47 (see 3.1.4), this will require temporary propping and new floor joists to be supported on the beam.
- 4.4 Further investigation is required of the structure, this mostly relates to removal of partition walls which are likely to be non-loadbearing. Additional opening-up/inspection is required in the following areas
 - 4.4.1 Prior to removal of the timber and masonry wall in the entrance lobby of No. 46, the floor above should be opened up and inspected (see 3.2.1).
 - 4.4.2 Trial pits at several locations is required to inspect the footings to the existing load bearing masonry walls to the single storey extensions to the rear of No. 47 (see 3.2.8 and 3.2.9).
 - 4.4.3 Opening up of the third floor over partitions within rooms PS_01 and PS_08 at second floor to No. 46 (see 3.4.1 and 3.4.5).
 - 4.4.4 Opening up the ceiling above the partition within PT_01 to inspect support of ceiling joists (see 3.5.1).
- 4.5 Generally the removal of the non-load bearing stud walls will not compromise the lateral stability of the properties as in almost all circumstances new partitions are being added in place of the ones removed, and the structure is sufficiently robust.

5.0 Limitations

- 5.1 It should be stated that we have not inspected woodwork or other parts of the structure unless specifically detailed in the report, which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.
- 5.2 This report has been carried out to the Client's requirements and no liability is intended or will be accepted from any third party whatsoever.
- 5.3 The limits of liability are restricted to the contents of this report. No opening up or investigation of foundations etc was carried out, the inspection being visual only.
- 5.4 No checks on final load bearing capabilities have been carried out, the member sizes given in this report are preliminary and subject to further site investigation.

Yours sincerely
FOR THE MORTON PARTNERSHIP LIMITED,



JANE COOK

APPENDIX A:
Report Photographs



Photograph 1: Suspended ceiling near stair to basement of No. 46 (see 3.1.1 within report).



Photograph 2: Masonry infill to timber framed wall, entrance hallway to Ground Floor of No. 46 (see 3.2.1 within report).



Photograph 3: Vaulted ceiling to ground floor of No 46 (see 3.2.2 within report).



Photograph 4: Side extension to rear of property (see 3.6.1 within report).



Photograph 5: Steel beam supporting side extension (see 3.6.1 within report).



Photograph 6: Corroded external steel beam to rear of No. 47 (see 3.1.6 within report).

APPENDIX B:
Drawings with Report References