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UCL 36-38 Gordon Square

Structural statement for the formation of the new principle opening within the party wall at the Lower Ground floor level

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1.0 INTRODUCTION

1.1 The existing buildings are of traditional construction and are listed as Grade II. The buildings consist of load bearing masonry walls and timber floors which span from the front elevation to the rear elevation, the floors have intermediate support from a central spine wall. The buildings have historically been refurbished and laterally converted to allow lateral access between buildings at each floor level.

1.2 The proposal is to refurbish the existing properties with a major intervention at the Lower Ground floor level by the formation a new opening in the Party Wall between No 36 & 37 within the front section of the property.

2.0 FEASIBILITY

2.1 An inspection of the existing construction has been undertaken, this has confirmed that there are five storeys of masonry over the new proposed opening, there is nominal floor load being applied to the Party Wall as the upper floors span parallel to the Party Wall. Roof loads are applied to the Part Wall as purlins are built into the wall.

2.2 Having reviewed the existing construction and undertaking calculations to determine the the magnitude of the load a framed solution is the most appropriate method of supporting the retained structure over. The proposed frame is to be a pair of four sided boxes where the base beams are utilised to spread the load evenly along the line of a new mass concrete strip foundation.

2.3 To permit the safe installation of the box frame temporary works are to be installed to support the self weight of the structure above the new proposed opening. The temporary works in the form of needle beams and props will remain in position until after the new frames have been installed. Prior to the temporary works being removed and the load transferred on to the new frames the majority of the dead load (90%) is to be jacked into the frames so that the frames take their deflective form.

3.0 RECOMMENDATIONS

3.1 The formation of the new opening and the installation of the box frames are to be undertaken by a competent Contractor who has completed similar work previously on a listed building. The Contractor is to develop the suggested sequence and issue proposals for review prior to the works being undertaken. The works are to be monitored to ensure that the Contractor follows the correct sequence and the works are undertaken in accordance with the specification and good building practice.

4.0 CONCLUSION

4.1 The installation of a box frame is a recognised and much used method employed in the formation of a new opening in an existing load bearing masonry wall. This method minimising the risk of accidental damage to the retained structure as the dead load is jacked into the frame prior to the removal of the temporary propping. The installation of the box frame will not compromise the structural stability of the existing structure as the frame and its connections will be designed to support all vertical loads and to resist the horizontal load due to wind. Deflection within the frame will be limited to ensure that the retained masonry will not crack when the load of the retained structure is applied to the box frame following the removal of the temporary works.

5.0 SUGGESTED SEQUENCE

5.1 Prior to the works commencing the Contractor is to review the sequence of works proposals and the temporary works design ensuring all operatives fully understand the works. The Contractor is to ensure all existing services adjacent to the works are terminated and made safe and that all hazardous materials have been removed.

5.2 The area of the works is to be a restricted area with only access allowed for those forming the opening and installing the box frame.

5.3 Locally break out the existing Lowe Ground floor slab in the area of the new strip foundation. Excavate either side of the existing foundation ensuring the existing base is not undermined. Install dowel bars between the two excavations and cast the new foundation.

5.4 Locally cut pockets above the level of the existing Ground floor for the installation of steel needle beams, the needles are to be spaced at a maximum of 1.0m c/c. The end of the needle beams are to be propped with the props founding on the new strip foundation.

5.5 Once the needles have been lined and levelled dry pack is to be installed between the beam and masonry over to transfer the load onto the temporary works.

5.6 Once the dry pack has gained sufficient strength the carefully deconstruction of the masonry may commence to form the new opening. Small hand tools are to be used and the debris bagged and removed.

5.7 The existing foundation is to be removed and the middle strip of the new foundation is to be cast.

5.8 Install the base beams of the box frame shim to level.

5.9 Install the columns and head beams, line and level and ensure all fixings have been installed and tightened to the required setting.

5.10 Install jacks between the new head beams of the box frame and the needle beams. Jack in the predetermine load, 90% of the existing dead load, to induce the required deflective form in the frame to minimise deflection of the frame once the permanent load is applied to the frame. Monitor the existing masonry to ensure that there is no upward movement.

5.11 Once the jacking operation has been completed the void between the box frame head beams and the retained masonry over is to be bricked up and dry packed. Install the restraint fixings between the columns and the existing masonry. Form pockets around the temporary works props prior to reinstating the Lower Ground floor slab and encasing the box frame base beams in concrete.

5.12 Once the dry pack has gained sufficient strength remove the diagonal bracing, release the load from the needle beams and remove the temporary works. Reinstate the masonry to the needle pockets and dry pack. Infill pockets to the Lower Ground floor slab.