TRAIN & KEMP
CONSULTING ENGINEERS

HERITAGE STRUCTURAL ASSESSMENT

on

UCL INSTITUTE OF EDUCATION

PHASE 2

(PLANNING APPLICATION 2)

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INTRODUCTION

1.1 UCL intend to refurbish and upgrade the Institute of Education facilities. This will include rationalisation and upgrading of the services.

1.2 The Institute of Education is a Lasdun 1970's concrete building along Bedford Way which is Grade II* listed. The proposals require planning and listed building consent for internal alterations. The application is supported by a heritage assessment which has been prepared by Alan Baxter Associates.

1.3 The redevelopment will require some structural interventions and adaptions, and the second set of these are presented in Appendix 1

1.4 For the purposes of this report the orientation is taken with Bedford Way to the east and Tavistock and Russell Squares to the north and south respectively.

2.0 BRIEF DESCRIPTON OF INSTITUTE OF EDUCATION BLOCK

2.1 The block was built in the 1970's to a design by Denys Lasdun with Arup as the structural engineer. It is a massive block over 200m long with 3 basement and 6 upper storeys and 3 storey overruns to the 3 cores. Internally there are high quality exposed concrete finishes.

2.2 The building is piled and there are no signs of significant movement. The structural arrangement is sensible, and the detailing is of a high standard. Structurally it is a robust building with substantial concrete cores. In the teaching areas remote from the cores, the ribbed floors span east west across the width of the building.

2.3 Inevitably in the intervening 40 years there have been some structural alterations and adaptions; again, these are sensible. Infills and alterations in an occupied building have inevitably been framed in steel with appropriate fire protection. The maintenance has also been of a high standard.

3.0 PROPOSED SCHEME

3.1 The Phase 2 proposed alterations relate only to work to Cores A, B and C and are outlined in information from Architon LLP.

3.2 The proposals are to improve the quality of the services within the building and to rationalise some of the infill spaces to give a better use of the building. There are no proposed extensions.

3.3 The principles for forming builders works holes for new service penetrations through floor slabs and core walls which were established in Phase 1 will also be used for Phase 2.

4.0 STRUCTURAL INTERVENTIONS

4.1 The alterations in this application relate to service provision and penetrations. These are generally through slabs are localised in scale with the primary aim to re-use existing where feasible.

4.2 The required structural interventions are at specific locations and the structural works have been developed to ensure that the stability and well-being of the structure is maintained.

4.3 Two key structural interventions are given in Appendix 1. These use established engineering and building techniques.

5.0 DISCUSSIONS

5.1 The Institute of Education was well built and has been adequately maintained. The structure has the necessary robustness to accommodate the proposed alterations which are both sensible and achievable and will not compromise the integrity of the building.

5.2 There is asbestos within what is an occupied building and its removal is being completed in a safe and methodical manner. Once this has been undertaken, the details of the steel framing to openings can be fully established. It is not envisaged that these subsequent additions impact on the integrity of the original structure.

6.0 CONCLUSIONS

6.1 The proposed alterations do not comprise the integrity of the structure.

6.2 The alterations are not extensive in magnitude or density. Where framing is required, established engineering techniques are adopted and this will ensure that the integrity of the structure is maintained.

Institute of Education

Appendix 1

List of Structural Alterations

Revision 01 24 March 2020

1. New Riser Penetrations (Core A Wing)
2. Level 1 - Installation of new plant units.

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Structural Alteration 01

New Riser Penetrations

Revision 0 24 March 2020

1. Current Arrangement
   - 1.1 Offices are provided along the extent of both wings to Core A with services distributed from the core risers for levels 5, 6, 7 & 8. The floor structure is generally formed of RC beam strips supporting either beam and pot floors or solid RC slabs.

2. Alterations and Challenges
   - 2.1 The updates to the office provision to include shared hub spaces requires a new riser to distribute mechanical ductwork up from level 5 to level 8.
   - 2.2 The challenge is to avoid existing primary beam strips and coordinate the floor layouts to provide a riser location within slab areas such that they can be framed using established engineering techniques to ensure that the integrity of the structure is maintained.

3. Solution
   - 3.1 Riser penetration within beam strips to be avoided. Openings to be located in slab areas only and to be in the direction of the ribs, i.e. across the width of the building.
   - 3.2 Trimming can be introduced to any ribs that need to be cut as SK01 Appendix 02.

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Structural Alteration 02

Level 1 – New Plant Installation

Revision 0 24 March 2020

1. Current Arrangement
   - 1.1 Level 1 Plant Room 3/12 - A mid-storey level slab has been installed to support and frame ductwork. It is supported on blockwork masonry walls and not part of the original RC frame structure. It is not recorded on any of the original record drawings.
   - 1.2 Existing concrete plinths are provided as bases for plant units.

2. Alterations and Challenges
   - 2.1 New AHUs are required to be situated in the area currently taken up by the mid-storey level slab and associated ductwork. This necessitates the removal of the slab and supporting blockwork walls. Plinths may need to be reduced in height to accommodate.
   - 2.2 Demolition works to the slab are straightforward and sections of slab near existing RC columns will generally be retained. The removal will be controlled and limited to the open areas required to be clear for the new plant units.

3. Solution
   - 3.1 Saw cutting will provide accuracy in demolition of the mid-level slab and sections of concrete slab within retained block walls (currently supporting cabling) will be retained. Demolition cutting near existing RC frame columns will be limited where possible.
   - 3.2 Existing concrete plinths are not integral to the structure and can be safely reduced in height.

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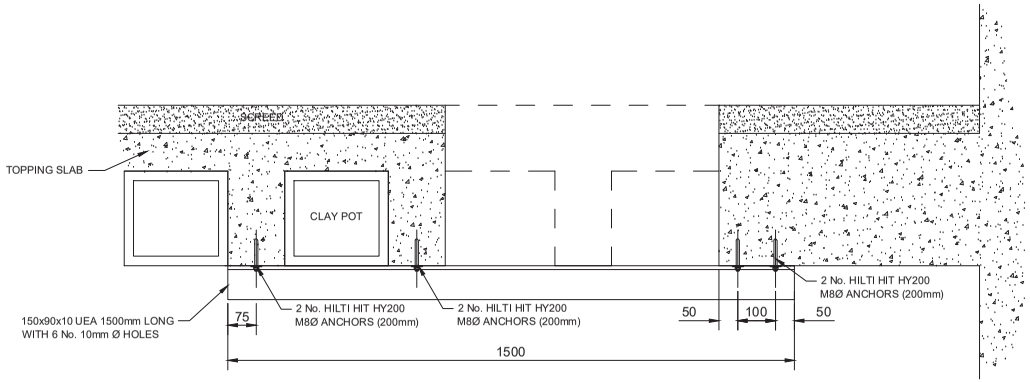
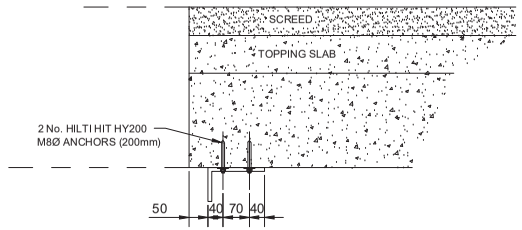
Appendix 2

Rib trimming detail for Structural Alteration 01



TYPICAL DETAIL A TRIMMING
TO NEW SLOT IN SLAB
(SCALE 1:10)



ANCHORS TO RIB
(SCALE 1:10)

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