HERITAGE STRUCTURAL ASSESSMENT

on

UCL INSTITUTE OF EDUCATION

PHASE 2

(PLANNING APPLICATION WS5)

TAK STRUCTURES

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1.0 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 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 those related to application WS5 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 proposed alterations relate to Zone C at level 5. These are outlined in the information from Architon LLP in the 3147-WS5 series of drawings. The extent of the structural works is captured in demolition drawing 3147-WS5-0502.

4.0 STRUCTURAL INTERVENTIONS

4.1 The structural interventions in this application relate to the accommodation of new services routes along corridors and into existing risers. They are generally penetrations at high level through the reinforced concrete walls.

4.2 With reference to drawing 3147-WS5-0502:

- Small penetrations for containment will be 75mm diameter in size.
- An access door is required off the main corridor.
- Penetrations for ductwork are the largest interventions in the riser wall. These routes will use existing openings as far as possible to limit new openings in walls. Where not feasible, existing openings will be widened, or new openings set at sufficient distance away to maintain robust sections of wall.

4.3 The key structural interventions are expanded on in Appendix 1.

5.0 DISCUSSION

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 The existing walls provided both an element of stability to the building and support adjacent floor slabs and both purposes will be maintained. There are many walls within the core areas and the larger penetrations are in longer sections of wall. In comparison to this length, the opening size is such that there is little impact on the overall stability and the slabs will be able to arch over the width to retain support.

5.3 In all cases the start point will be to reuse existing openings as this will minimise demolition works and minimise any impact on the existing walls. The smaller penetrations will be clustered and located to avoid reinforcement bars which are generally at greater centres than the proposed diameters.

5.4 Should layouts in relation to existing openings not allow re-use then coordination of locations may result in the use of trimming steels to frame out – an established engineering technique used to maintain structural integrity.

6.0 CONCLUSIONS

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

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

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Appendix 1: List of Structural Alterations

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01. Level 5

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Structural Alteration 01

Level 5
Revision 00 Dec 22

1. Current Arrangement

1.1 Riser R599E currently houses services that distribute to Level 5. The risers feature openings at various locations to allow ducts or pipe runs to enter the corridor.

2. Proposed Arrangement

2.1 The existing services runs will be validated and either removed or re-used. Where removed the redundant openings will be used to accommodate the new proposals. Smaller diameter pipework will be run through shared existing openings where possible. New openings will be created where required.

3. Alterations and Challenges

3.1 Any new openings will need to be coordinated with existing openings and maintain sufficient spacing such that the integrity of the wall is maintained in terms of overall stability.

3.2 Trimming steels will need to be installed for local slab support should dimensions dictate as a requirement. The challenge will be in spacial terms to fit everything within the ceiling/services zone.

4. Solution

4.1 The intended re-use of openings means demolition should be limited. A careful approach to the formation of any new holes will utilise diamond drilling and the necessary temporary works to support any slabs prior to installation of trimming steels.

4.2 The use of these established engineering solutions will maintain structural integrity.