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ROBUST: Over-cladding Visualisation Studies

Client

Steel Construction Institute

Oxford

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1.0 Introduction

This report presents the results of visualisation studies carried out by OISD Technology for the Steel Construction Institute as part of the 'ROBUST' project. The studies are based on a 'live' project (the redevelopment of buildings on the Gipsy Lane Campus of the University) and specifically on the refurbishment of the Sinclair building which currently accommodates a mixture of laboratory, teaching and administrative spaces.

The project brief has usefully informed the solutions, notably:

- Cladding support arrangements span from floor edge to floor edge with connections at the column floor junctions.
- Recladding module accords with the grid of the existing building with vertical joints on the column faces.
- Glazing areas are appropriate to the floor plate depth.
- Solar control to the southern glazing is possible. This could be based on horizontal louvre or light shelf features.
- Window sizes, heights and distribution patterns could facilitate good natural ventilation.

2.0 Description of Visualisations

2.1 Elevations of Existing Building (2 drawings)

These drawings, developed as a basis for constructing the 3D visualisations, describe the existing 5 storey buildings and their cladding. The buildings are concrete framed with floor edge close centre columns on the long facades. Unitised steel framed window cladding units are located between adjacent columns and between floor slabs. A light sheet overcladding (material undetermined but possibly GRP) covers both the outer column faces and the floor edges. Stairwells have steel framed glazing supported at the perimeter and by the reinforced concrete stair cases/landings.

2.2 Typical Plan of Building (1 drawing)

This drawing shows a typical arrangement of non-loadbearing walls and structural walls around staircases. The proposal is to remove most non-loadbearing walls.

2.3 Visualisations of the Building in its Existing State (3 drawings)

These drawings show the building in its present state. The architectural appearance is typical of a 1950's built block and is no longer commensurate with the University identity. Environmental performance of the facades is poor with:

- Little differentiation between north and south facades
- Excess window area on the south facade leading to glare and solar overheating
- Excess heat loss through glazed areas, cladding frames, floor edges and perimeter columns.

2.4 Visualisations of the Building in its Proposed State (3 drawings)

These drawings show the building with a combination of recladding on the major facades and overcladding on the gable facades. Horizontal (spandrel) panels span 2 modules of the perimeter grid with segmented fenestration to reduce window sizes and improve ventilation (opening panes are of a manageable size). Panels would be mounted to a sub-frame that would support both the cladding and window sections.

The use of white panelling lightens the architectural appearance and the aesthetic accords with modern norms. Cladding is anticipated to be erected from the outside on a zone by zone basis with connections at the floor edge column junctions.













