BUROHAPPOLD ENGINEERING

Design Note 01

Project	The Place
Subject	Structural Design Philosophy
Project no	035230
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Revision	Description	Issued by	Date	Approved (signature)
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1 Introduction

The information contained within this design note has been prepared in support of the listed building application for the existing Grade II listed building known as The Place, located on Ducie Street, Manchester. This design note aims to provide an outline of the principal design philosophy reflecting the proposed structural intervention works affecting the building fabric.

The design has been based upon observations from reviews on site and anecdotal documentary information. Reference should be made to the respective BuroHappold drawings for further information. In summary, the structural design approach has been developed to re-use the existing structural frame where possible. Where new openings are required, these have been located to coordinate within the existing superstructure frame to avoid major structural alterations.

The information reflected in the following sections should be read alongside the following BuroHappold drawings:

- 035230_(SK) S0001 – PROPOSED MEZZANINE FLOOR & TYPICAL UPPER FLOORS GENERAL ARRANGEMENT
- 035230_(SK)S0002 – PROPOSED TYPICAL DETAILS

2 Building History

From reference to anecdotal information the building was originally constructed as a warehouse in 1867, and was known as the London Warehouse. It was later awarded Grade II listed status by English Heritage in 1998, when it was also transformed to an aparthotel. The pertinent structural transformation works involved the removal of localised upper floors to create the atrium space together with the addition of a mezzanine to provide a new office space and localised extension of the upper floors with lightweight materials.

The current building layout retains many of the building's original features spread over seven storeys and accommodates 107 apartments. The superstructure frame comprises predominantly upper floors with masonry vaulted ceilings as part of the original frame and new lightweight floors at higher level floors as noted above. Each floor is supported from wrought iron beams, which in turn span between the internal cast iron columns and perimeter load bearing masonry. Other features include an internal centrally located open atrium space.

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3 Structural alterations

The current architectural proposals aim to adapt the existing building and are seen as a continuation of the same principles of the previous transformation works undertaken in 1998. All of the existing primary structural elements are to be retained, and any new floor voids will be minimal working around the primary structural frame. The majority of the structural intervention works will be focussed around the additional office floor introduced within the previous refurbishment.

The following section outlines the proposed philosophy for the structural repair works associated with this refurbishment project. As suggested previously, the design assumptions are based on historical information, best knowledge and limited site inspection. Final design methodology is subject to soft strip of the internal fabric on a progressive basis and development to suit site conditions.

3.1 Riser Penetrations

The current proposals allow for two new service risers to be formed within the existing floor plate through various levels of existing vaulted masonry construction. The risers will assist with vertical distribution of services to serve the building at all upper floor levels. The original refurbishment works in 1998 undertook a strategy that adopted localised 100/150mm Diameter diamond core drilling, or an angle box frame for larger openings. It is proposed that a similar strategy be adopted within our scheme. Localised core drilling allows the integrity of the vaulted arch structures to be maintained with no additional trimming works required. This approach also alleviates the requirement for additional trimming steelwork and ensures additional interventions to the existing building fabric are also avoided.

3.2 Mezzanine Modifications/Extension

The current proposals require the mezzanine structure which was added during the 1998 refurbishment, to be modified to suit a new office layout. The mezzanine structure comprises a modern steel framed floor plate with timber joist infill floor and is not part of the original structure. In terms of the existing fabric we are reusing the existing frame and the existing connections into the original building fabric. The proposal includes infilling to stair voids serving the current mezzanine floor plate. The internal staircase will be infilled using the existing surround steelwork. The stair that abuts the external wall will require a new edge beam which will be supported by a padstone built into the existing wall.

3.3 Raised Floor modifications

A condition survey of the building highlighted an issue with the raised floor which is believed to be present at floors 1-5. A raised access floor containing services and formed from 75x75mm softwood battens at 900mm centres and a marine plywood top is deflecting to unacceptable levels and is causing cracking to the tiled finishes. We propose to rectify this by adding intermediate battens and replacing the plywood topping. The battens will be sized to suit the existing floor depth and fixed directly to the existing fabric with a small diameter proprietary fixing.