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Ref: 21605/4/MM

Dear Alan,

The Elms, Fitzroy Park, N6 6HS

Price & Myers have reviewed the structural design to elements of the existing building with respect to comments received from English Heritage (EH).

To complete our assessment, we have conducted a visual site inspection of the building, reviewed the available design information and met with the original structural engineers (Elliott Wood).

The principle areas of the building that have been queried are;

- Winter Garden Roof
- Ground Floor Structural Renovations

Winter Garden

The original design brief was to make the new glazed roof to this area as structurally minimal as possible, while responding to previous EH comments to minimise the height of new roofs relative to the existing eaves of the original building.

To this end, Elliott Wood prepared several schemes to span the full width of the atrium with the roof frame supported below the existing eaves level and incorporating the minimum roof pitch possible to accommodate rainwater runoff.

Design options considered by the Engineers included ribbed framing arrangements of various structural depths dependent upon the roof pitch and support conditions, with the design being driven by the need to increase structural section sizes as the pitch of the roof became flatter. In an effort to minimise section sizes, most options consisted of horizontal ties across the atrium, to provide the necessary lateral restraint to the roof.

The final Structural scheme consists of a diagrid roof layout of slender 60mm tubes, spanning onto a perimeter "ring beam" of rectangular hollow sections supported on walls and columns, without the use of horizontal ties. In order to provide sufficient headroom for doors at the landing level, the perimeter sections were reduced in size to 250x150 sections and laid flat.

To provide the necessary rainwater collection to the both the existing inner roof pitches and the new atrium roof, it was necessary to install a perimeter gutter below eaves level, adjacent to the perimeter ring beam, thus giving the misleading appearance of a single wide structural section when viewed from below. Neither the gutter nor perimeter beam will be visible when the architectural and decorative finishes are completed.

It is our opinion that the structural solution to the Winter Garden roof complies with the architectural brief, being elegant and of minimal impact with respect to the existing building.

Ground Floor Structure

The original timber ground floor structure to the South East corner of the building has been replaced with a new concrete slab.

Through our meeting with Elliott Wood, we understand that the original timber floor was formed of long span timber joists of small section size, which were under strength and excessively bouncy when walked upon. We also understand that the floor zone has been heavily serviced, which would have further impaired the serviceability of the existing timbers.

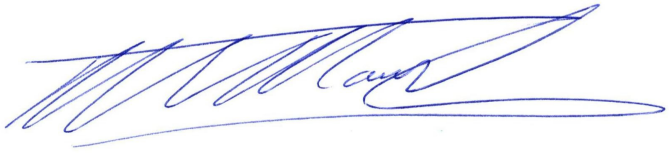
Replacement with a new suspended concrete slab has provided a robust structure to not only support the existing chimney and floor loads, but to also provide stability to the existing perimeter structure, by acting as a stiff horizontal diaphragm. This new concrete slab also extends into the projecting bays to the south and east Facades, where it imparts much needed stability to the exterior masonry walls.

From the available photographic records of the original structure, we can determine that like the timber floors, the projecting bays were in poor structural condition with visible water ingress to the walls of the south bay and settlement cracks to the lower masonry spandrel of the east bay. The cast iron posts were also showing signs of heavy corrosion, which would be expected to be more pronounced in the south bay, where the bases of the posts were buried within the earth of a raised planting bed.

It is our experience that bay structures of this type are often subject to extensive wet rot to timber bressumer beams and soffit members, and the photographs show that timber beams to the east balcony have suffered from such rot at their supports to the main house wall, potentially making the bay dangerously unstable if such timbers were not replaced.

Various structural solutions could have been applied to re-support and stabilise these bays, however most solutions would require either an increase in structural depth to the new RC floor slab (if it were to act as a cantilever) or increase the size of the posts, which would need to be replaced with modern materials complying with both fire and disproportionate collapse design requirements. The final solution of re-supporting the bays on masonry walls provides adequate support while ensuring the long-term stability of the structure.

Yours sincerely,
for Price & Myers



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