

Alan Power
Alan Power Architects Ltd
13 Needham Road
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Dear Alan,

The Elms, Fitzroy Park, N6 6HS

Price & Myers have reviewed the as-built structural design of the existing building with to determine the implications of removing the in-situ reinforced concrete ground floor in favour of a replacement timber joisted floor structure.

We have conducted a site inspection of the building in tandem with a review of the structural design drawings, to understand the structural arrangement of the ground floor, how it is supported and what structure is in turn supported by it.

Existing structural arrangement

The current ground floor construction generally consists of a 225mm thick suspended concrete slab to the stair landings, the eastern side of the building and over the basement extension to the western side, with retained timber joists to the central portion.

The slab to the eastern side has been cast directly onto the loadbearing masonry walls from the basement and has been pocketed into the sides of the primary loadbearing masonry walls to that continue above ground level. This slab in turn supports internal partition walls to the underside of the first floor and also the masonry chimney breast of the original building. This slab also stabilises the bay projections to the east and south facades, which have supporting steel beams cast into the new slab.

The slab passing over the basement to the western side extends beyond the outside line of the exterior walls and acts as a transfer slab to support the original masonry walls to the western façade. As the presence of this slab is not in question, it will not be discussed further in this report.



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Consequences of slab removal

As the eastern concrete slab now supports the chimney breast, its removal will not be possible without providing a system of both temporary and permanent vertical support to the existing masonry walls above. The internal partition walls that bear on to this slab will also have to be demolished and re-built.

The steelwork supporting the bays that has been cast into the slab will require re-supporting by a similarly robust structure to basement level, likely requiring new foundations that may be liable to settlement and possibly cause movement damage to the existing building above.

Replacement of the eastern slab will require a new system of lateral restraint to be provided to the existing perimeter walls of the east and south facades, as the concrete behaves as a stiff horizontal diaphragm.

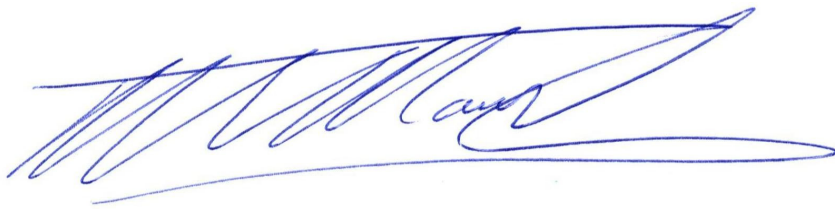
Although creation of a new diaphragm may be achieved in the permanent case by a new floor structure, there is a significant risk of instability during demolition and in the temporary construction case and so the slab could not be removed without an alternate system of horizontal support to prevent movement of the exterior walls.

Conclusion

As the physical properties of timber compared to concrete are so different, a timber diaphragm floor will achieve approximately 1/3 of the stiffness of an equivalent concrete floor, even if it were constructed of solid timber joists laid side-by-side.

Therefore, to ensure both the short and long term stability of the building and prevent unnecessary structural damage, we recommend that the existing concrete ground floor construction remains in place.

Yours sincerely,
for Price & Myers

A handwritten signature in blue ink, appearing to read 'Mark T. Mawby', with a long horizontal flourish extending to the right.

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