



11112 / 2 New Square, Lincoln's Inn, WC2A

April 2012 / Structural Note to Accompany Planning Submission

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-	05.04.2012	Issued for comment

Introduction

This note should be read in conjunction with all Michael Hadi Associates Ltd (MHA) drawings and reports submitted as part of the planning application for 2 New Square, Lincoln's Inn, WC2A. This note addresses the main items of structural works proposed to be undertaken at 2 New Square and considers a safe methodology for the works. Upon appointment, it is the responsibility of the contractor to provide detailed method statements and risk assessments for all items of work.

Underpinning to Lift Pit

As part of the works it is proposed to install a new lift serving all levels within the building. Investigation works undertaken on site have shown that the formation level of the existing party wall footing is shallower than the required depth of the lift pit. It is therefore proposed to underpin the party wall adjacent to the lift pit to extend the depth of the footings below the level of the new lift pit.

Floorboards and existing floor joists will be lifted to gain access to the foot of the party and spine walls. Underpinning would be undertaken in short lengths of no more than 1m to ensure that the existing masonry is able to arch over the excavation. A mass concrete footing would be cast beneath the existing wall, the width of the base of the underpin is to match the existing width of the footing to ensure that the bearing pressures on the underlying soil remain as existing. When the underpinning is completed the existing masonry corbel to the footing will be removed to provide a uniform profile to the walls of the lift shaft, as required by the lift manufacturer.

MHA document reference – SK-07 and SK-08.

Ground Floor Jack Arch Floor

It is proposed to remove part of a jack arch floor to open up the rear of the main stair void at ground floor level. A portion of the jack arch floor beneath the ground floor stair landing is to be retained. In the existing arrangement the jack arches thrust against and stabilise each other and the thrust of the end bays are resisted by the masonry spine and rear façade walls. By removing the adjacent arches the horizontal thrust of the remaining arch needs to be resisted by new structure. It is proposed to install new high tensile steel ties between the thrust lines of the arch and so preventing the arch from spreading. The ties would be installed by drilling through the base of the retained arch and fixing against the existing beams at the base of the arch. Temporary props will be installed to stabilise the arch during all construction work.

MHA document reference – SK-01.

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Floor Loading

The existing cast iron and timber beam floors have been justified to support an imposed loading of 2.5kN/m². More detail can be found in MHA's report Structural Report on Existing Floor Capacity, which forms part of this submission.

Cintec Ties to Front and Rear Facades

During the investigation works it was found that the front and rear façade walls are not tied into the perpendicular party walls. Tying would usually be provided by the masonry of both walls interlocking around the corner. A straight vertical joint was found on site with no connectivity between the adjacent walls. To improve the robustness of the masonry construction, it is proposed to install Cintec anchors from the outside of the building to stitch the walls together. The anchors would be installed at approximately 1800mm vertical centres to coincide with primary floor levels and at mid-height of each storey. This will occur at each end of the front and rear facades on the line of the party walls.

Cintec anchors are installed from a scaffold erected on the outside of the building. A plug of the external facing masonry is carefully drilled from the façade at the location of the anchor and set aside. A hole is carefully drilled through the façade wall and into the party wall. The Cintec anchor, consisting of a steel section within a textile sock is installed into the hole. Grout is pumped into the sock, which causes it to expand and fill the profile of the pre-drilled hole ensuring a tight bond between the anchor and the adjacent masonry. The end of the anchor is recessed within the depth of the façade wall, allowing the masonry plug to be reinstated with matching mortar to conceal the head of the anchor.

MHA document reference – SK-02 and SK-09.

Service Penetrations Through Cast Iron Beams

In some locations it may be necessary to pass pipes for the new heating and cooling system across the lines of the existing cast iron beams. To minimise the disturbance to the existing building structure, this will occur only as a last resort if all alternative service routes are not achievable. Holes can be drilled through the webs of the cast iron beams, in accordance with the positional limitations outlined in MHA drawing SK-10, without significantly reducing the structural strength. The contractor will be required to ensure that during drilling no additional loading will be applied to the cast iron beam in order to minimise the stresses in the material.

MHA document reference – SK-06, SK-10 and Appendix C of Structural Report on Existing Floor Capacity for justifying calculations.