

WALLED GARDEN, TOTTENHAM HOUSE, WILTSHIRE

Structural Engineer’s Statement - Spine Wall Reconstruction

RIBA Stage 4

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1.0 INTRODUCTION

This report presents Michael Barclay Projects Ltd.'s proposals, as Structural Engineer, for the reconstruction of the historic spine wall of the Walled Garden within the Tottenham House Estate:

1.1 THE BRIEF

Our proposal is based on the planning drawings prepared by BLDA architects, the Client's brief and design discussions with the project team.

2.0 EXISTING STRUCTURE

The spine wall is of masonry construction and situated within the confines of The Walled Garden within The Tottenham House Estate and runs across the full width in an East-West direction. The wall was originally built in the late 18th Century, laid out by Lancelot 'Capability Brown'. Surviving sections of the wall show that the original construction was generally 380mm thick brickwork, with regular projecting piers that are approximately 440mm thick, all laid with lime mortar. There is evidence that the wall has been adapted over its lifetime observable by construction joints and mismatching brick coursing, with vertical extensions also visible to the north side of Building 16.

The wall was in a poor and unstable condition as a result of water saturation, vegetation growth and possibly ground movement (foundations were shown to have varying depths). During 2022 the structure suffered storm damage and some sections collapsed. In 2024 it was decided by others that the wall was in an unsafe condition and represented a safety hazard to site personnel working on the external boundary wall repairs. The wall was therefore carefully dismantled in stages from January 2025.



Spine Wall – Existing condition

3.0 PROPOSED STRUCTURE

The spine wall is proposed to be rebuilt using new bricks to match the original in a header pattern. The original piers and wall thickenings around the openings will be set out to match the original plan following the survey information.

As a result of the variability of the existing footings and possible historical ground movement, the existing footings are all to be grubbed out and new mass concrete strip footings provided. The new footings are to be at least 800mm wide, taken to a depth of at least 1m below ground level and toed at least 300mm into the underlying Lambeth Group Clay.

Given that the original wall had been increased in height and the wall is being entirely rebuilt, it has not been possible to justify the original unreinforced masonry construction to modern design codes. Therefore, where the spine wall is not restrained by the buttressing walled garden buildings it is deemed to be necessary to introduce discreet embedded structural columns within the masonry piers. These columns are to be founded on reinforced concrete pad footings, designed to limit the bearing pressures from self-weight in combination with overturning moments resulting from wind loading, limited to an allowable stress suitable for the ground conditions as set out in the Ground Investigation report produced by GCC Ltd. The masonry walls are then justified as unreinforced masonry panels supported on 3No sides, such that under horizontal wind loading, they span between adjacent piers and their footings.

A large number of buried services and below ground drainage runs are proposed to run beneath the archway situated between buildings 16/16a and 14/17. Two reinforced concrete pad footings are required to the reinforced piers either side of the archway, these are to be positioned on plan so as to not clash with the buried services and founded at a depth to match the lowest invert level so as to not surcharge them.

The structural proposals are described on the below drawing numbers

- 10443-MBP-WG-XX-DR-S-0301-T03
- 10443-MBP-WG-XX-DR-S-0401-T01

4.0 SUMMARY

In summary, the existing spine wall has already been carefully dismantled for safety reasons and is to be reconstructed in a like for like manner. In combination with the historic ground movement and increased height of the wall over the original, it is also deemed necessary to grub out and remove the existing foundations and provide a new mass concrete strip footing to the wall founded directly onto the Lambeth Group clay strata. The historic location of the piers are to be repeated in the reconstruction, with structural reinforcement embedded within them and founded onto reinforced concrete pads in order to provide sufficient resistance to the environmental design actions and meet modern design standards.

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