

**61-65 CHARLOTTE STREET, LONDON W1**

**SECTION 106 CHECKING REVIEW FOR A BASEMENT DESIGN**

Issue 1 - August 2016

Report Prepared by:

Report Approved by:



Name Phil Tyler MEng CEng MICE Engineer  
For Michael Barclay Partnership LLP

Name: Malcolm Brady BEng CEng MStructE, Principal  
Date: 31 August 2016

## PREAMBLE

This report presents the determination of Philip Tyler M.Eng C.Eng MICE in the role of the Certifying Engineer required by Clause 2.7.3 of the Section 106 issued by London Borough of Camden in relation to the proposed works below ground level at the site of 61-65 Charlotte Street W11 4PF. It has been prepared by Michael Barclay Partnership LLP (MBP) on the instructions of, and for the sole use and benefit of, the Client.

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## INTRODUCTION

N<sup>os</sup>. 61-65 Charlotte Street is a terrace of three, five-storey townhouses located in central London. The development will mix residential and commercial units with new offices built in the rear courtyard which will provide accommodation at a level below ground and a single storey above ground.

The new-build works include full demolition of the office structure currently occupying the rear courtyard and the refurbishment of the townhouses, retaining the majority of the existing fabric but will replace the existing floor plates at each level with new construction.

The existing basement within the townhouses is to be reduced by 0.5-1.5m to create a flat floor for an office at this level which will require underpinning perimeter party walls and internal walls, all of which are loadbearing. This underpinning is extended to the rear courtyard and intended on two sides plus all walls of the rear extension. Masonry corbels to the existing brick footings are intended to trimmed back.

A piled raft is intended across the entire site, internally & externally which new structure will be supported off

## SUMMARY OF DOCUMENTS

This review is based on the following documents provided by the Basement Design Engineer:

- MBP Drawings: 6118/099-105, 6118/110-150, 6118/170-190 & RC Detail Sheets R100-R108
- MBP Calculation Package Issue 1 – reference made to following sections:
  1. Office Block – Lower Ground Floor Slab / Foundations
  2. Calculations for Areas 4 (9-11 Goodge Place) and 5 (Front Vaults)
- **A Site Investigation & Report** by CET Infrastructure
- **A Basement Impact Assessment** by BWM Structural and Civil Engineers
- **A Movement Monitoring Proposal** by MBP, to British Standards and includes weekly monitoring throughout underpinning works.

## SUMMARY OF DESIGN PARAMETERS

I have determined from the information provided that the Basement Design Engineer has based his analysis and design calculations to the following standards, guides and reference documents:

- BS648
- BS6399: Pt 1-3
- BS5268: Pt 2
- BS5628: Pt1-2
- BS5950: Pt 1
- BS8004: Pt 1
- BS8110: Pt 1
- BS5228: Pt 1&2 Noise & Vibration Control on Open Construction Sites
- BS7385: Pt 1&2 Evaluation and Measurement of for Vibration in Buildings

The Building Regulations 1991: Approved Documents A, B, C, E, H, K & N

I have determined from the information provided that the Basement Design Engineer has adopted the following design parameters for his design:

<b>Category A Occupancy Load:</b>	1.5 kN/m <sup>2</sup>
<b>Category B Occupancy Load:</b>	2.5kN/m <sup>2</sup>
<b>Finishes Loads:</b>	0.9-2.5kN/m <sup>2</sup>
<b>Surcharge:</b>	10kN/m <sup>2</sup>
<b>Vehicle Loadings:</b>	100kN line load around front vault
<b>Earth Pressures:</b>	16kN/m <sup>3</sup> (Made Ground to 6m from SI report)
<b>Accidental Water Pressure:</b>	Taken at ground level to proposed formation level

I have determined from the Site Investigation Report that there is no active groundwater near the proposed formation and that water pressure on the basement slab is not a design parameter.

## SUMMARY OF DESIGN ACTIONS

I have determined from the information provided that the Basement Design Engineer has taken loads downs to establish line loads which will be adopted for the design of the raft slab and supporting piles (MBP sheet 6118-190). Both slab and piles will be designed and installed by a specialist sub-contractor.

Where existing walls are to be underpinned with mass concrete the Basement Design Engineer has designed these based on the capability of the existing ground assessed and advised in the site investigation and although the recommended permissible bearing pressures are low the increase in load has been accommodated by the Basement Design Engineer with increased width footings to match existing pressures.

The Basement Design Engineer has designed only short sections of underpinning to perform as retaining walls and no sliding or increase in bearing pressures as a result of overturning forces have been determined.

The Basement Design Engineer has determined that heave on the underside of the proposed basement slab is not a design consideration, on the grounds of the excavation being slight and underlying soils that can swell due to unloading is beneath retained layers of made ground and gravels.

## SUMMARY OF NEW STRUCTURE BELOW GROUND

The lower ground floor structure comprises of a reinforced concrete raft supported by an array of CFA piles, both of which are to be designed by others based on actions (line loads and pressures) determined and prescribed by the Basement Design Engineer. A further and separate consideration of these designs will be needed.

The Basement Design Engineer has designed and specified new underpinning to existing walls to achieve the reduced level required for the proposed accommodation existing corbels will be removed.

The Basement Design Engineer has designed and specified reinforced concrete retaining walls to underpin the front walls, i.e. beneath vaults, to support lateral and vertical actions.

## SUMMARY AND CONCLUSIONS

I have checked the proposals for the works below ground level proposed at 61-65 Charlotte Street and the information submitted by The Basement Design Engineer Rob Manning of MBP and consider:

- That the structural scheme is appropriate in its intent and for the existing buildings it supports and interfaces with
- That the analysis & design of the works is based on appropriate parameters
- The the design considers the effects of loading from the intended building, retained materials and external actions.
- That the proposed construction is appropriate in intent and in specification
- That the monitoring regime specified for recording any movement of the adjacent buildings during the works is appropriate