Structural Underpinning Methodology

Project	Beechwood House
Date	07 October 2010
Job No.	8061
Subject	Planning Application

Overview

As part of the works to the Listed Beechwood House it is proposed to lower sections of the existing basement to provide a new access and changing facilities for the proposed swimming pool; this will necessitate underpinning the existing load bearing walls.

Underpinning Proposals

The extent of the proposed underpinning is shown on Techniker drawings 8061-1001 and 2001. Trial pits have confirmed the depth of the existing foundations in these areas. The existing basement walls are semi-retaining at present with an undercroft floor void of approximately 1m on the retaining side of the wall. The new mass concrete underpinning is designed as a gravity retaining wall to resist the earth and hydrostatic forces. Existing projecting footings will be removed on the internal face to maintain the line of the wall above and vertical loads transferred through the underpinning to an enlarged base to avoid any increase in bearing pressure on the soil. The new underpinning will be founded in the same silty sandy clay strata as the existing walls. A drained cavity waterproofing system is proposed.

Methodology

The underpinning works will be undertaken by a suitably experienced contractor who shall prepare their own detailed sequence of construction and method statement for which they will be responsible for. The methodology outlined below describes the sequence envisaged in formulating the structural proposals.

1. The existing basement floor slab will be broken out to allow access for the underpinning works.

2. Working in sequence sections of existing foundations will be exposed, the projecting footings broken out and the pins excavated to the required depth.

3. Following inspection of the bearing strata, individual pins will then be concrete to within 50mm of the underside of the existing foundation.

4. The gap between the underside of the foundation and the pin will be filled with dry pack a minimum of 24 hours after the concrete was cast.

5. The process is then repeated working on a 5 bay sequence with no adjacent bays being unsupported at any time.

6. Following completion of the underpinning to the walls the remaining spoil will be excavated from the basement area.

7. A minimum of 150mm of Type 1 compacted material will be laid down as a sub-base for the new basement slab and blinded with concrete.

8. The new basement slab will be constructed from Caltite concrete.

9. In the area of the new lift shaft, the pit will be constructed in reinforced Caltite concrete and will form an integral part of the pin, the remaining section of which will be constructed in mass concrete, as the other areas.

D. Pow CEng MIStructE

For continuation see drawing No. 8016/2001

New 200mm thick RC slab

New 215mm thick loadbearing masonry wall infill

New 215mm thick masonry wall to lift shaft

Existing load bearing masonry wall removed

Existing wall removed. Structure above TBC

Underpinning to Basement Walls

Mass concrete underpinning to existing walls, see detail 11 for details

No. 1 to 6 denotes assumed underpinning. Contractor to submit detailed method statement and sequencing proposals for which he shall be entirely responsible

200mm thick RC slab SSL +111.780

Arrangement of existing walls above

Arrangement of existing walls above

Allow for 500x500x450mm deep sump pit (size and location TBC by Services Engineers details)

Extent of Ground Floor above

Extent of Ground Floor above

Allow for structural openings to new basement wall and existing boiler room external wall for services route. Requirements TBC by Pool Specialist details to follow

Allow for retaining wall along service route and concrete encased void

WALL 'A' | WALL 'B1' | Wall 'J' | Wall 'B2' | Wall 'E'

WALL 'C2'

Existing Basement (new boiler room)

FFL +112.410 (TBC)

2 x 1000mm underpinning

Service Route TBC

Beam and block floor SSL +110.230

300mm thick RC slab under SSL +109.680

Wall 'G1'

Beam and block floor SSL +110.230

Wall 'G2'

200mm thick RC slab SSL +110.330

2 x 1000mm underpinning

1000 | 1500 Typ | 1500 Typ

P1 | P2 | P3 | P4 | P5 | P6

WALL 'F'

300mm thick RC slab SSL +110.230

Wall 'E'

Swimming Pool

(Pool structure including surround walls to Pool Specialists details)

Wall 'C1'

Layout and performance specification requirements for galvanised steel open grid floor decking to pool plant room space TBC by Pool Specialist

WALL 'E' | WALL 'D'

400mm dia anti-heave piles @ 1500mm c/c spacing, typical U.N.O

Pool surround walls, Typical

Notes:

1. This drawing is to be read in conjunction with all relevant architects and engineers drawings and specifications
2. Do not scale this drawing
3. For General Notes see drawing No. 8061/600
4. Drainage requirements TBA further to appointment of Drainage Consultant. Allow for co-ordination

Tender

STATUS

REV	COMMENTS	DATE	CHK
03	Underpinning to existing bay clarified. Underpinning to Boiler House added	30/09/10	AK
02	Issued for Tender	31/08/10	AK
01	Issued for Co-ordination	17/08/10	DP

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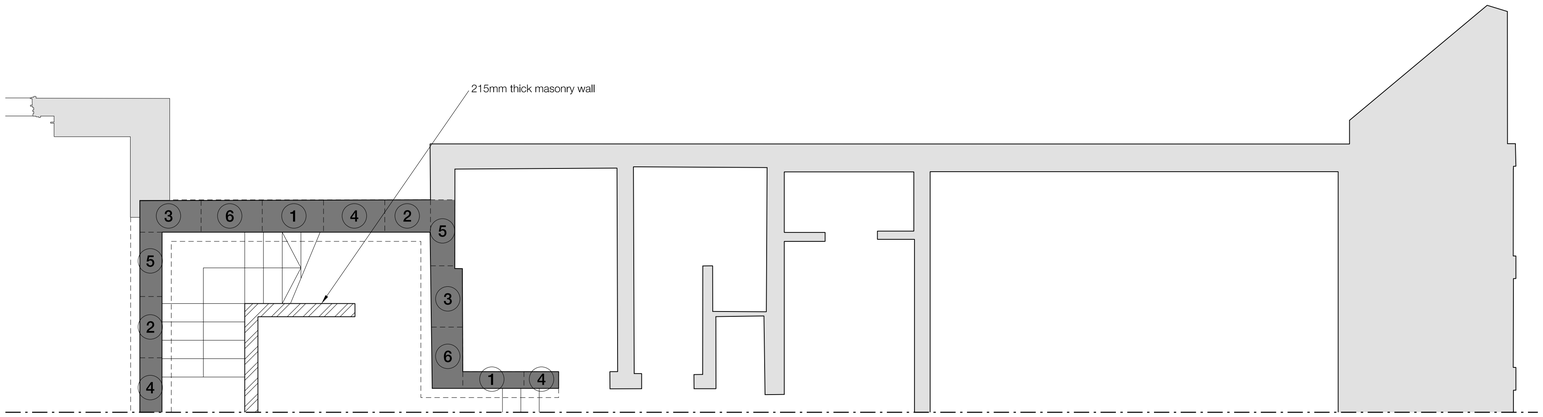
PROJECT: **Beechwood House**

SUBJECT: **Pool Level Plan**

SCALE @ A1	BY	DATE	CHECKED
1:50	AM	July 2010	DP

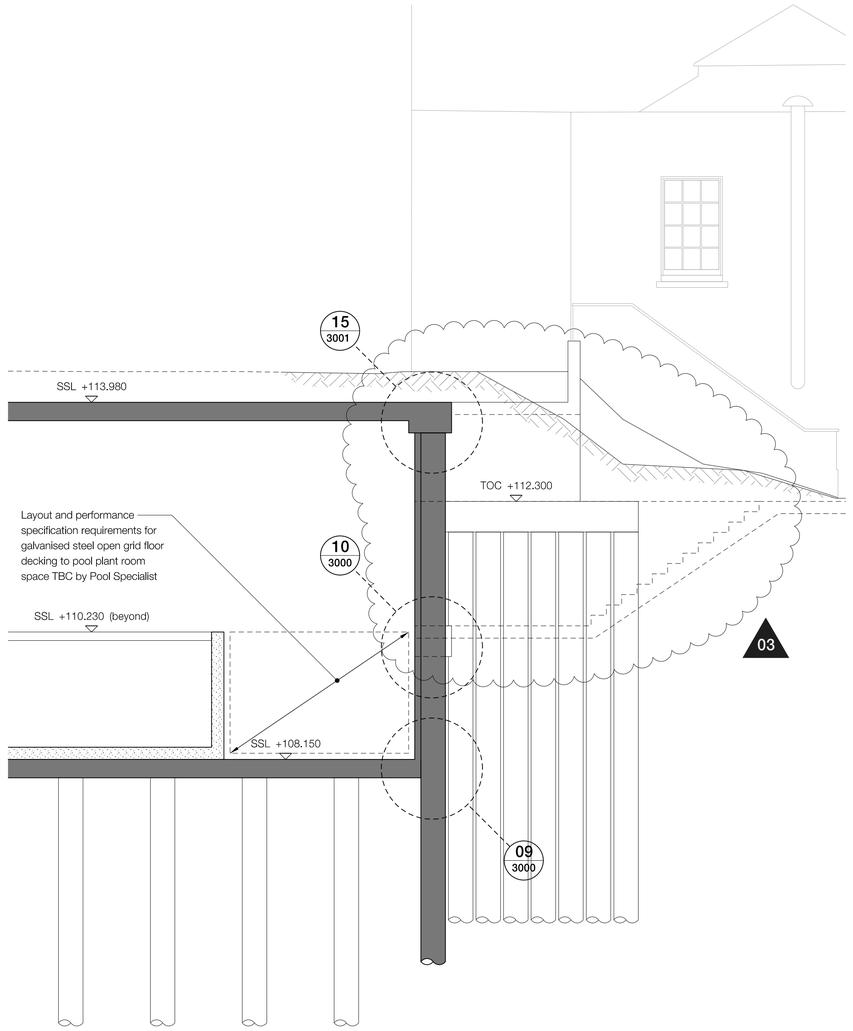
DRAWING No. 8061/1001 | REV 03

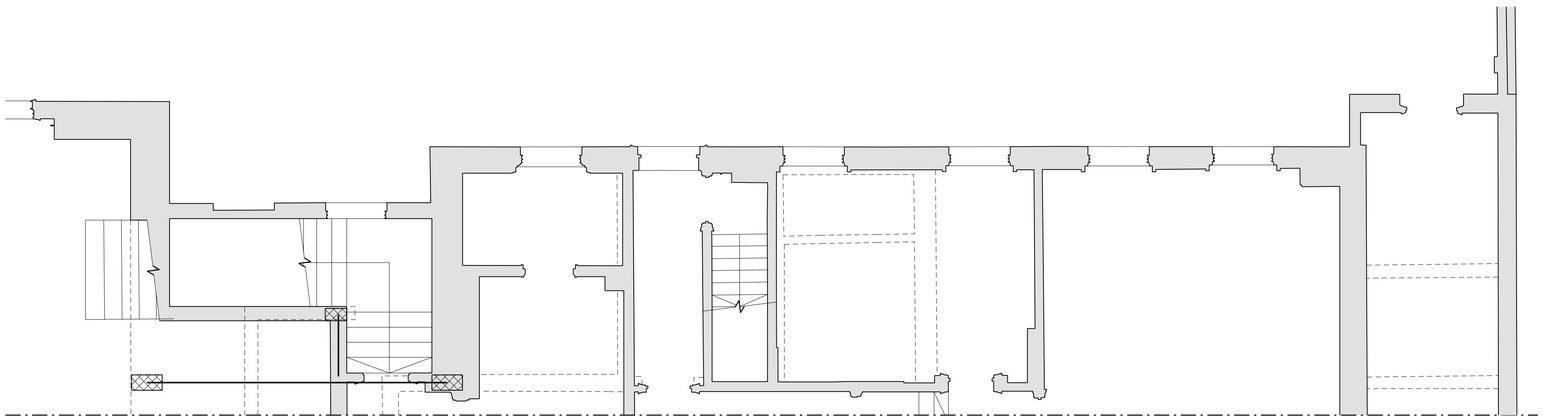
30/09/2010 15:25:03 shade.tbl



For continuation see drawing No. 8016/1001

Pool Level Part Plan





For continuation see drawing No. 8016/1002

Ground Floor Part Plan

Section B-B

Notes:

1. This drawing is to be read in conjunction with all relevant architects and engineers drawings and specifications
2. Do not scale this drawing
3. For General Notes refer to drawing No. 8061/600

Tender

STATUS

REV	COMMENTS	DATE	CHK
03	Revised as Clouded	30/09/10	AK
02	Issued for Tender	31/08/10	AK
01	Issued for Co-ordination	17/08/10	DP

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PROJECT: Beechwood House

SUBJECT: Pool Section B-B

SCALE @ A1	BY	DATE	CHECKED
1:50	AM	Aug 10	DP

DRAWING No. 8061/2001 REV 03

30/09/2010 15:27:35 shade.tbl