

## **25 Rosslyn Hill, NW3**

### **PROPOSED BASEMENT EXTENSION**

#### **Structural Stability Report by**

**J. David Bennett B.Eng, C.Eng, FIStructE, MConsE.**

#### **Available Information:**

The property is a substantial semi-detached house built about 150 years ago in a residential road of houses of similar construction. The planning application drawings indicate a proposed rear extension to an existing basement (lower ground floor).

The site has a pronounced slope down from the rear to the front of the property resulting in there being 14 steps up to the front ground floor entrance of the existing house and only 6 steps down to the lower ground floor level at the front. This condition is almost reversed at the rear except that there is no direct access from the lower ground floor to the garden at present. This upward slope is continued to the end of the garden which is about a further 1m higher.

It is anticipated that the soil will be a mixture of silty sands and gravel down to London Clay which will form the main load bearing strata. Work of a similar nature has been recently undertaken for properties in Carlingford Road, Shepherd's Walk, Hampstead Hill Gardens, Lyndhurst Road and Pond Street. However the variable nature of the soil in this area of Hampstead is well known and consequently a site investigation has been commissioned to determine the particular nature of the ground on this site and to expose the existing foundations.

#### **Tunnels**

Ordnance Survey Maps of the district indicate that the tunnel from the Hampstead Heath Station to the Finchley Road Station carrying the London Overground Railway passes beneath No. 27 Rosslyn Hill close to the boundary with No.25. From existing information it appears that the ground level at the front of No. 25 Rosslyn Hill is approximately 20m above the level of the road over the railway tunnel at Hampstead Heath Station. Since the present proposals for a basement extension do not require foundations any deeper than those existing it can be safely assumed that they will have no effect on the tunnel.

The Northern Line Underground tunnel from Belsize Park to Hampstead passes somewhere below Rosslyn Hill but is one of the deepest in London and will have no effect on properties in the area even though vibrations may be felt from the train services.

**Extent of the Works:**

The work involves the partial demolition of the existing side extension and most of the rear extension with the construction of an extended basement extension and a modified side extension. This basement extension into the rear garden will be at a similar level to the existing basement and its roof will form a patio area at garden level a few steps down from the existing ground floor. The basement and roof over will be in reinforced concrete and the remainder of the work in traditional timber and masonry with steel beams where necessary.

**Design and Construction:**

The demolition of the existing extensions will require only nominal access scaffolding and any pinning and propping will not be necessary.

The walls of the basement will be designed as reinforced concrete cantilevers from a spread footing as illustrated in the attached typical detail. The design parameters for pressure on the walls will be in accordance with recommended values given in the Reinforced Concrete Designer's Handbook (by Charles E. Reynolds and James C. Steedman) for the relevant soil type. In addition it will be assumed that pressure from ground water could be present to a level of 0.75 of the depth of retained material. The walls will also be designed to support a surcharge load of 5kN/m<sup>2</sup> on the surface of the ground adjacent to the wall as well as the effects of pressure from any existing foundations. Each wall section will be checked for overturning and sliding and reinforced as necessary where subject to tensile stresses.

The walls to the side boundaries will be constructed in traditional hit and miss lengths of not more than 1.2m with the top of the wall packed with mortar to the underside of any existing foundation. Adjacent lengths will be connected with stainless steel dowel bars and it is anticipated that these walls will be cast against the face of the excavated soil except where the upper parts are in top soil which will require double shuttering. This procedure will maintain the stability of the ground and neighbouring properties at all times apart from minor disturbance of the soil at surface level.

Basement floor slabs will be checked for uplift due to possible water pressure and designed accordingly. It is likely that the slab will require reinforcing on each face and depending on the ground conditions it will probably be necessary to provide a layer of MOT type 1 compacted hardcore and a layer of blinding concrete before casting the basement slab.

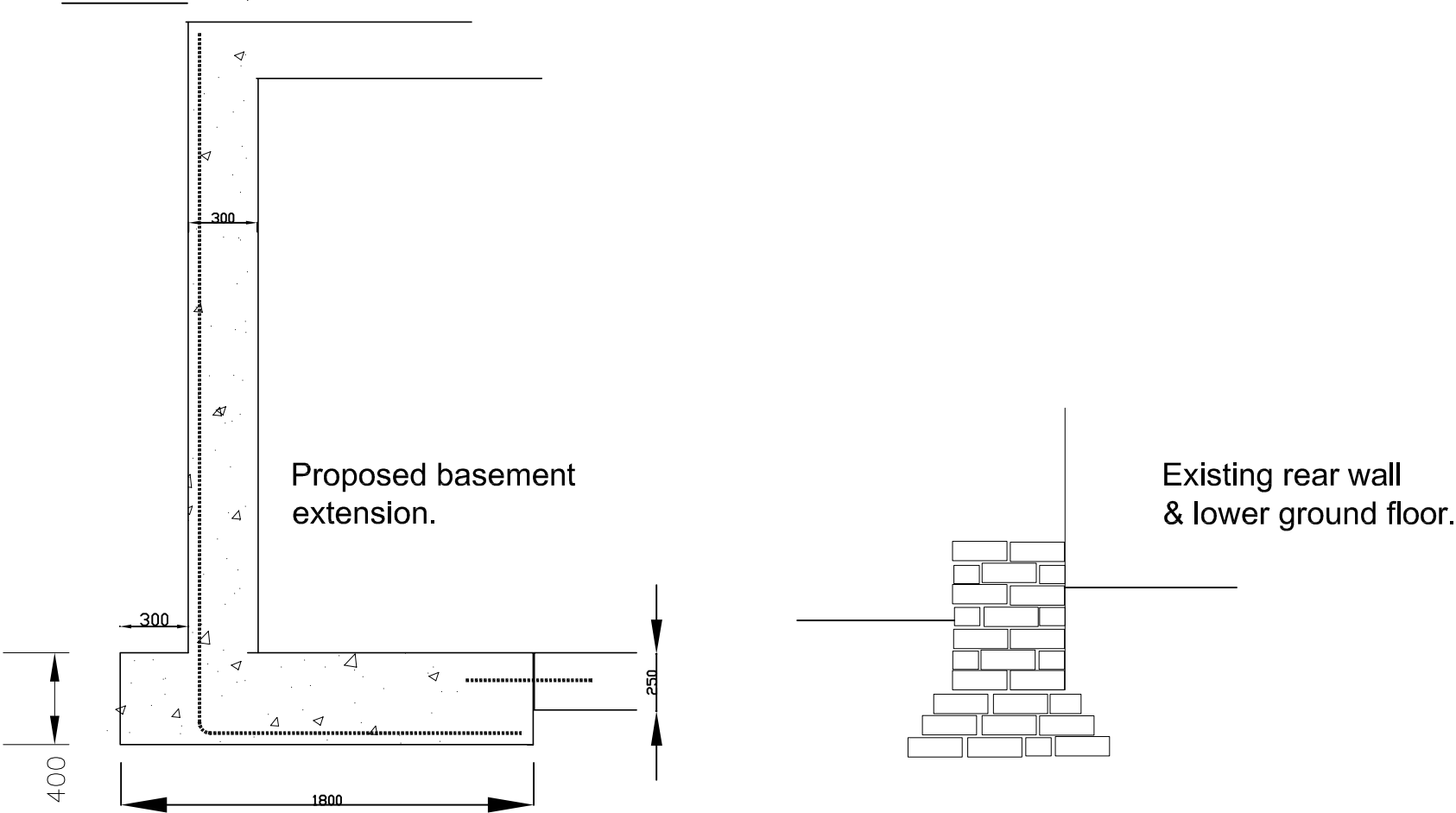
## **Ground Water**

A site investigation report is being commissioned to confirm the initial assumption that the soil is typical London Clay and to provide details of ground water levels. Generally it is expected that the ground water will be lying in the top soil and fill over relatively impervious beds of clay as well as percolating through any lower beds of silt, sand and gravel. Since the ground slopes down from the rear garden towards the house the ground water will follow a similar route.

In the existing construction the lower ground floor abuts a light well with open drainage at a slightly lower level. The brick retaining walls to the garden from the light well are buttressed against the rear wall of the house and have weep holes into the light well. In the proposed construction the buttresses are to be removed and the light well extended into the garden, but the foundations to the new retaining wall will be at a similar depth to those existing to the rear wall of the house and should not significantly change the flow of ground water and any surface water will drain into the light well as existing.

Similarly the proposed external staircase to the garden will drain down to a gulley and then under the passage to join existing drains at the front of the property.

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25 ROSSLYN HILL, NW3

Client :

WALLS TO REAR EXTENSION

JOB No.	DRAWING No.	REV.
Q548	01	
SCALE	DATE	
1:20 @ A3		