london basement

Project Address : 154 Haverstock Hill, London, NW3 2AY

Method Statement – New Basement Construction

Date Issued: 22.06.12

Revision: Revision A

Issued By: Stephen Merritt

Checked By: Grant Egmore-Frost

Introduction

- This method statement should be read in conjunction with the architectural scheme drawings found in the integrated planning statement document produced by Kyson.
- This method statement should be read in conjunction with the structural engineering design philosophy produced by MMP
- Please also refer to the attached London Basement underpinning section drawing Sheet 4. This sketch details the construction method we are likely to adopt, based on the assumed ground conditions at the property consisting of London Clay soil to depth (Refer to section B below).
- Please also refer to the attached hoarding and conveyor layout sketch (Sheet 5), which details a typical compound layout over the footpath and the highway.
- The key stages are as follows:-
    - Establish access, hoarding and conveyor
    - Investigatory works
    - Reinforced concrete underpinning
    - Steel frame installation
    - Excavation, drainage and basement slab construction
    - Internal waterproofing membrane and screed

Temporary Support to Excavated Faces

- Ground conditions will be continuously assessed by a competent person to determine the means and method of supporting any face of any excavation, all necessary shoring equipment will be available for use on site, however given the changing nature of the ground conditions, encountered below an existing property and the difficulties in battering back, stepping or "benching" the ground to reduce the risk of collapse, the most likely method to be adopted will be the introduction of trench sheets supported by Acrow props. Please refer to the attached diagrams which indicate the temporary works we will adopt during the underpinning works for excavated open faces.

- Our highly trained, experienced and competent Foreman (holding the 5 Day Site Managers Safety Training Scheme accreditation) shall ensure that every part of every excavation is inspected at the start of each shift (and at intervals as specified in law) and will record the findings of any such inspection in a register held on site.

A. Establish access, hoarding and conveyor

- The hoarding and conveyor will be positioned at the side of the property, which will be subject to any restrictions imposed by the local governing authority. The layout will be similar to the attached hoarding and conveyor layout sketch, which details a typical conveyor setup over the highway and footpath.
- Carefully protect and/or remove any internal or external fixtures and fittings affected by the works.
- Erect plywood hoarding with vertical standards, anchored to the ground. The hoarding will be fully secure with a lockable door for access.
- Provide protection to public where conveyor extends over footpath. Depending on the requirements of the local governing authority, construct a plywood bulkhead onto the pavement. Hoarding to have a plywood roof covering, night-lights and safety notices.
- Install conveyor at basement level. Ensure that the conveyor is adequately supported and secured to the hoarding using a temporary scaffold structure.
- Install temporary electrical and water supplies from Clients permanent connections.

B. Investigatory works

- A desk top study was carried out, referencing the British Geological Survey Library. This study found various Bore Hole logs, carried out within a 100m radius of the proposed site.
- The subsoil as per the reference bore holes consists of London clay soil to a depth of 10m. This information has been relayed to the structural engineer for incorporation into the detailed design.
- For these ground conditions, we will adopt the sequence of works as detailed in the attached Sheet 4.
- On commencement of construction London Basement will determine the foundation type, width and depth. Any discrepancies will be reported to the structural engineer in order that the detailed design can be modified.
- A desk study will also be undertaken to research any previous works to the property, or indeed neighbouring properties, which may have an impact of the design and construction of the basement works.
- Prior to installation of new structural beams in the superstructure, London Basement may undertake the local exploration of specific areas in the superstructure. This will

confirm the exact form and location of the temporary works that are required. The permanent structural work can then be undertaken while ensuring that the full integrity of the structure above is maintained.

C. Reinforced concrete underpinning

- This stage consists the construction of the reinforced concrete underpinning.
- The sequence of construction of the underpinning will be determined by The London Basement and the project engineer, depending on the structural environment and access constraints.
- The sacrificial trench sheets (if required) are installed at the back of the excavation. The method adopted to prevent localised collapse of the soil is to install these progressively one at a time. The trench sheets are held in place with acrows, until such time as the full underpinning excavation is sheeted.
- Once the toe section is cast, the lower level propping to the trench sheets can be removed, prior to casting the stem section. This method ensures that at all times the excavation is controlled, and indeed the integrity of the surrounding soil and structure above is maintained, to enable permanent works construction.
- The access trench is first excavated, directly underneath the wall to be underpinned. The width of any base is individually assessed on site with due regard to the type and condition of the foundation, and structural geometry above. The maximum width of any underpinning base will be 1000mm.
- Break off projecting brick or concrete footing back to internal face of brick wall. Excavate using hand and compressed air tools removing spoil until the design depth is reached, and removed to muck away conveyor.
- Soils, where unstable in the temporary condition, will be shored. For clays or dense sands exhibiting effective cohesion, shoring may not be implemented. Shoring system design will be undertaken by London Basement if required.
- Once the excavation is completed to the design depth and length. The stratum at the proposed founding depth is confirmed as being appropriate by our engineers or the building control inspector.
- The design steel reinforcement will be fixed in the toe section of the underpinning base. This will be checked by the building control inspector prior to concreting.
- Following construction of the toe, the design steel reinforcement will then be fixed in the stem (Or wall) section. This will be checked by the building control inspector prior to concreting.
- A single sided shutter is then erected, and concrete poured to form the underpinning base up to a maximum of 100mm below the underside of the existing foundation.

- After 24 hours the temporary wall shutters are removed. The void between the top of the underpin base and underside of the existing foundation will then be drypacked with a mixture of sharp sand and cement (Ratio 3:1 sharp sand:cement).
- A further 24 hours is allowed before adjacent sections can be excavated.
- Construction joints, if required, are formed using a suitable shear key or joggle joint. In exceptional circumstances, dowel bars are incorporated. Typically these are post drilled and resin fixed with specification as per structural design.
- A record will be kept of the sequence of construction, which will be in strict accordance with recognised industry procedures. The as-built records will be updated as necessary and issued to involved parties during the works.

D. Steel framework installation

- The new steel framework is to be installed to provide the new openings as per the architectural layouts. The framework will consist of a system of steel beams and columns that will bear at the new basement level.
- The new frame will be installed in a sequence to be determined by the London Basement and the project engineer, in conjunction with the district surveyor.
- Once full internal investigation of the property has been concluded, London Basement will carry out a temporary works design for the heavely loaded steel beams to be installed.
- Temporary works design will be undertaken once the full extent of the structural design is known.

Supporting existing timber floors above basement excavation:

- The timber floor will remain in situ, and be supported by a series of steel beams that will support the floors, to provide the open areas in the basement.
- Position 100x100mm temporary timber beam lightly packed to underside of joists either side of existing sleeper wall and support with vertical acrow props @ 750 centres. Remove sleeper walls and insert steel beam as a replacement. Beams to bear at masonry walls onto concrete padstones (refer to Structural Engineer's details for padstone & beam sizes) Dismantle props and remove timber plates.

Supporting existing solid concrete floors above basement excavation:

- The support of the existing concrete floor will be undertaken in conjunction with the underpinning process. Two opposite pins are constructed and allowed to cure as described elsewhere. The pins will project proud of the above existing perimeter walls by approx 100mm, this will allow bearing for the steel joists/ beams spanning across & supporting the area of solid floor above. The area of solid floor exposed will be the approx width of the pin and generally accepted to be self-supporting during this process. However if the underside is found to be in poor shape then temporary boarding and

props are to be introduced. This process is to continue one pin width at a time. Dry pack from the top of beam to the underside of solid slab as described elsewhere.

Supporting existing walls above basement excavation:

- Where steel beams need to be installed directly under load bearing walls, temporary works will be required to enable this work. Support consists the installation of steel needle beams at high level, supported on vertical props, to enable safe removal of brickwork below, and installation of the new beams and columns.
- Once the props are fully tightened, the brickwork will be broken out carefully by hand. All necessary platforms and crash decks will be provided during this operation.

- Decking and support platforms to enable handling of steel beams and columns will be provided as required.
- Once full structural bearing is provided via beams and columns down to the new basement floor level, the temporary works will be redundant and can be safely removed.
- Any voids between the top of the permanent steel beams and the underside of the existing walls will be packed out as necessary. Voids will be drypacked with a 1:3 (cement: sharp sand) drypack layer, between the top of the steel and underside of brickwork above.
- Any voids in the brickwork left after removal of needle beams can at this point be repaired by bricking up and/or drypacking, to ensure continuity of the structural fabric.

E. Excavation, drainage and basement slab construction

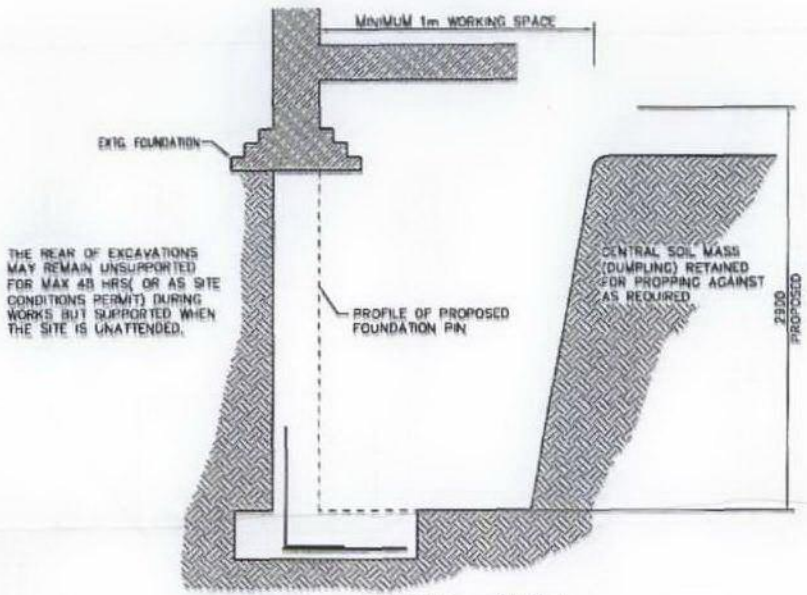
- Once the underpinning is complete to all walls, the bulk excavation can be completed.
- Depending on the structural design it may be a requirement to implement propping to resist sliding forces (As per structural engineering requirements) at the base of the underpins, prior to construction of the new basement slab, and to allow for excavation to formation level. Generally, the underpinning works are completed around the perimeter walls, with the central soil mass (Dumpling) left intact as detailed on the attached sheets. This enables the earth mass to act as a firm support for the underpinning stem single sided shutters, and also to provide a prop force at the base of the pins.
- The pump sump units and associated underground drainage will then be installed in conjunction with the mechanical and electrical details and architectural layouts.
- Once excavation to formation level has been completed, and the slab cast, any temporary shoring can be safely removed.
- The design steel reinforcement will then be fixed in the slab. This will be checked by the engineer and building control inspector prior to concreting.

F. Internal waterproofing membrane and screed

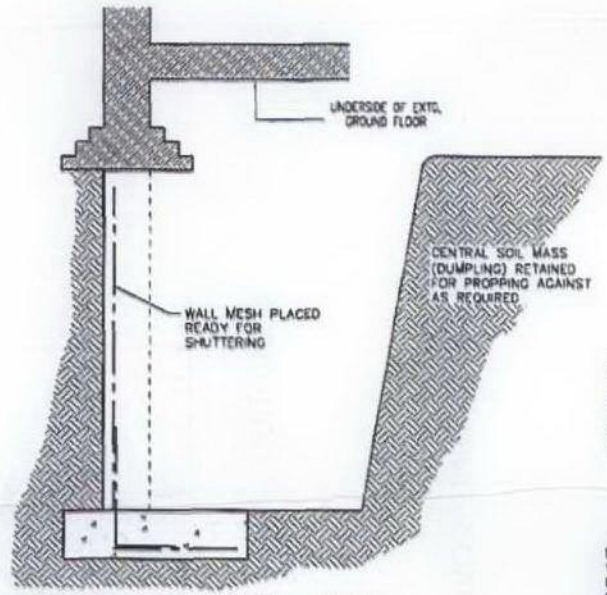
- Generally the waterproofing membrane will be in accordance with the attached sketch.
- Once the basement slab is complete, the DELTA internal waterproofing cavity membrane will be installed as per the architectural layouts and manufacturers technical specification.
- The floor finishes which may include insulation and under floor heating, can be laid as per the final architectural details.
- A cement and sand screed will be applied on the slab surface.
- This completes the structural work by the London Basement, in preparation for the fit out works.

SHEET 4 – UNDERPINNING STAGES

LONDON BASEMENT
SCALE : 1.50



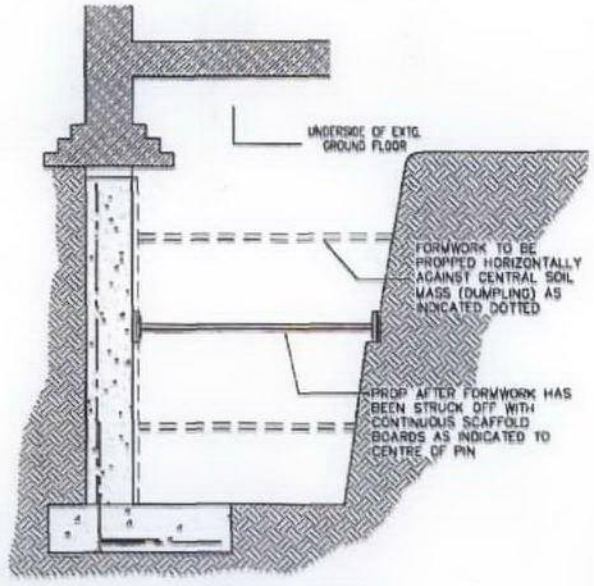
CLAY SOILS – STAGE 1



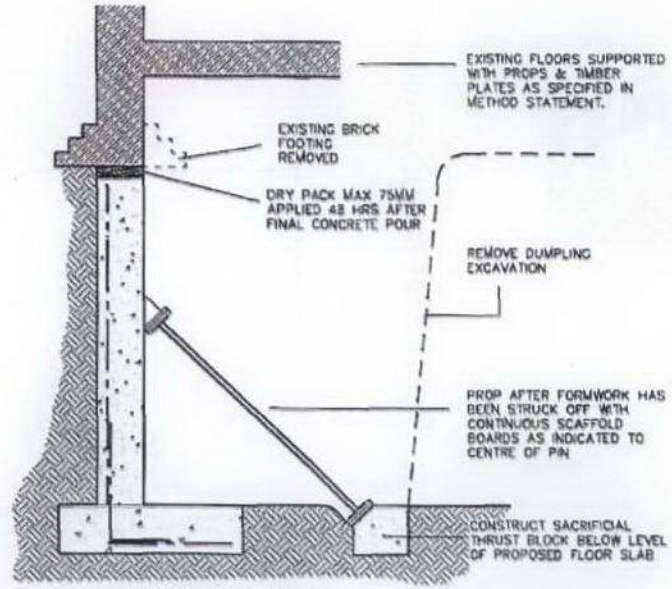
CLAY SOILS – STAGE 2

NOTE RE EXIST. FOUNDATIONS:
THE STAGING OF THE REMOVAL OF EXISTING FOUNDATIONS/CORBELS MAY VARY FROM THE DRAWING (FOLLOWING SITE INVESTIGATION) REFER TO METHOD STATEMENT.

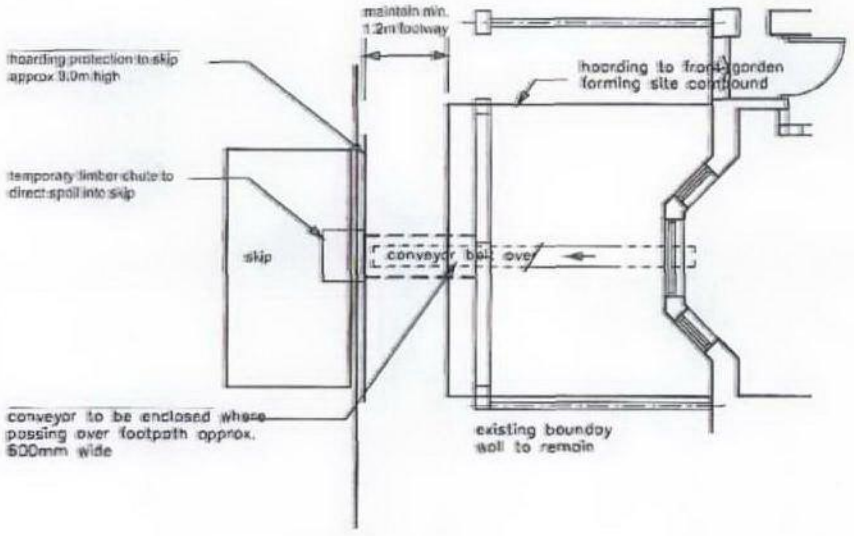
NOTE:
WHERE THE UNDERSIDE OF THE EXISTING FOOTINGS IS FOUND TO BE UNSTABLE IE. IN THE CASE OF LOOSE BRICKWORK AS OPPOSED TO CONCRETE FOUNDATIONS, THEN THE UNDERSIDE IS TO BE SUPPORTED AS NECESSARY WITH A SACRIFICIAL PROP IF REQUIRED.



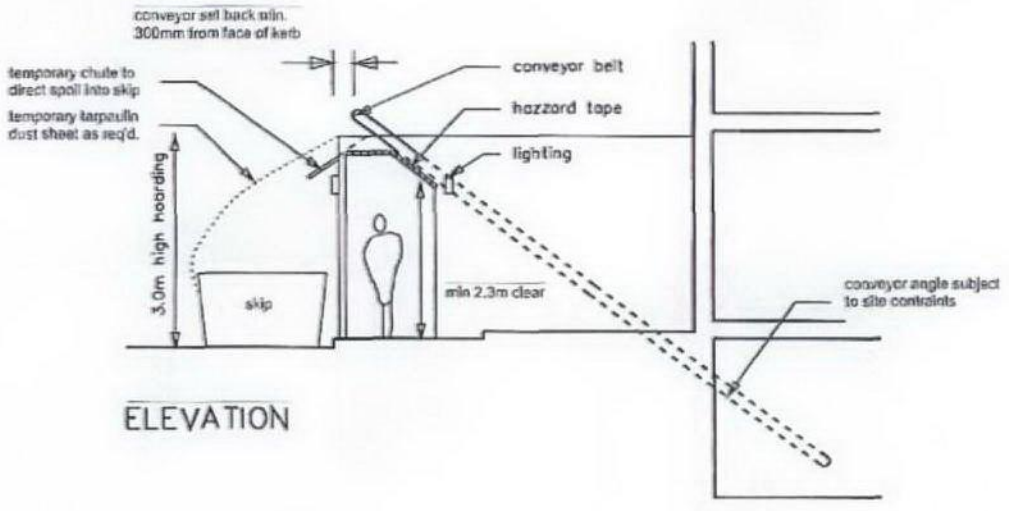
CLAY SOILS – STAGE 3



CLAY SOILS – STAGE 4



PLAN AT PAVEMENT LEVEL



ELEVATION

TYPICAL HOARDING & OVERHEAD CONVEYOR INSTALLATION

Sheet 5

scale 1:100

London Basement

Innovation House
292 Worton Road, Isleworth. TW7 6EL
Tel. 020 8847 9449 Fax. 020 8380 4999
www.londonbasement.co.uk