GENERAL SPECIFICATION

For

BASEMENT UNDERPINNING WORKS

At

47 Old Church St
London
SW3 5BS

For

Echlin and Bailey

By

A. D. Stokoe BSc(Hons), CEng MICE, MStructE

ADS Associates
6 The Square
Carshalton
Surrey
SM5 3BN

ADS/6129
November 2011
1.0 PROJECT DETAILS

1.1 Location
47 Old Church St,
London, SW3 5BS

1.2 Employer
Echlin and Bailey

1.3 Structural Engineers
ADS Associates
6 The Square
Carshalton
Surrey
SM5 3BN
Contact: A.D. Stokoe

1.4 Access for Site Inspection
TBC
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2.0 DRAWINGS

2.1 Structural: 6129/01 - Lower Ground & Ground Floor - Plans & Sections
6129/02 – First, Second, Loft and Roof - Plans & Sections
(Refer to latest revisions)

2.2 Other: Architects – TDO Drgs 1104 / 001, 010 to 014, 020, 030, 031,
099 to 104, 120, 121, 130

1. EXISTING BUILDING

The building is a three storey mid terraced town house, dating from the 1950’s. The property
is to be completely demolished with just the party walls to remain. The site does not include
the road, footway or verge outside the garden boundaries.

4.0 DESCRIPTION OF THE WORK

To underpin the existing foundations to enable a full basement to be formed
5.0 THE CONTRACT

5.1 The whole of the works in respect of workmanship and materials used shall be carried out utilising the best available materials and to standards required by all relevant Codes of Practice currently in force and all other respects covered under the description of 'Good Building Practice'.

5.2 Comply (and allow for any costs incurred) with all the statutory requirements of all relevant Safety, Health & Welfare regulations and Factories Acts. Under the legislation, the Contractor must have in existence a statement of his safety policy. The Employer is to have the right to call for this document for their examination.

5.3 Comply (and allow for any costs incurred) with all the statutory requirements of the Construction (Design and Management) Regulations 1994. Take control of the Health and Safety Plan provided by the Planning Supervisor and develop and implement the requirements of the same. Provide the necessary risk assessments and assure that all the operations are carried out on site in accordance with full regard for the health and safety as required under this legislation. On completion of the works, pass the updated Safety File to the Employer. This file is to include all necessary 'As built' records of the refurbished property.

5.4 The Contractor shall obtain all necessary licenses for the positioning of skips on public highways and shall conform to all the regulations with regard to lighting and warning signs.

5.5 This specification should be read in conjunction with all contract drawings. Any discrepancies between contract documents should be indicated to the Engineer.

6.0 SITE AVAILABILITY

6.1 The house is unoccupied and will remain so throughout the execution of the works. The Contractor must inform the occupant when he intends to begin work. He will be deemed to have visited the premises and to have made himself conversant with any difficulties in carrying out the works.

6.2 In the event that the house or garden are likely to be occupied by either authorised persons or unauthorised casual visitors, the Contractor shall take account of this fact and provide proper barriers to avoid accidental injury to any person.

7.0 PREPARATION AND PROTECTION OF THE WORKS

7.1 The Contractor shall provide all necessary boarding and tarpaulins for the proper protection of the building and the areas adjacent to the works.
8.0 SECURITY AND SAFETY OF THE WORKS

8.1 Security: Adequately safeguard the site, the works, products, materials, plant and any existing buildings affected by the Works from damage and theft. Take all reasonable precautions to prevent unauthorised access to the site, the Works and adjoining property.

8.2 Stability: Accept responsibility for the stability and structural integrity of the Works during the contract and support as necessary.

8.3 Occupied premises: Existing building will not be occupied during the Contract.

8.4 Work in all sections: Adequately protect all types of work and all parts of the Works, including work carried out by others, throughout the Contract. Wherever work is of an especially vulnerable nature or is exposed to abnormal risks provide special protection to ensure that damage does not occur.

8.5 Existing services: Notify all service authorities or private owners of proposed works not less than one week before commencing site operations. Before starting work check positions of existing services.

8.6 Trees/hedges/shrubs/lawns: Adequately protect and preserve, except those which are to be removed. Replace to approval, or treat as instructed, any species or areas damaged or removed without approval.

8.7 Roads and footpaths: Any damage to roads and footpaths caused by site traffic or otherwise consequent upon the Works must be made good to the satisfaction of the Local Authority or private owner. Adequately maintain approaches to the site and keep clear of mud and debris.

8.8 Existing features: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features which are to remain in position during execution of the Works.

8.9 Existing furniture and fittings: Prevent damage to any furniture, fittings or apparatus left in the existing property. Move as necessary to enable the Works to be executed, cover and protect as necessary and replace in original positions.

8.10 Adjoining property: Take all reasonable precautions to prevent damage to adjoining property. Obtain permission as necessary from the owners if requiring to erect scaffolding on, or otherwise use, adjoining property and pay all charges. Clear away and make good on completion or when directed. Bear the cost of repairing any damage arising from execution of the works.

8.11 Existing structures: Provide and maintain during the execution of the Works all incidental shoring, strutting, needling and other supports as may be necessary to preserve the stability of existing structures on the site or adjoining, that may be endangered or affected by the Works. Prevent over-stressing of completed work when removing supports.
9.0 PROTECT AGAINST THE FOLLOWING:

9.1 Noise:
- Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
- Do not use or permit employees to use radios or other audio equipment in ways or at times which may cause nuisance.

9.2 Nuisance: Take all necessary precautions to prevent nuisance from smoke, dust, rubbish and other causes.

9.3 Burning on site of materials arising from the work will not be permitted.

9.4 Moisture: Prevent the work from becoming wet or damp where this may cause damage. Dry out the works thoroughly. Control the drying out and humidity of the Works and the application of heat to prevent:
- Blistering and failure of adhesion.
- Damage due to trapped moisture.
- Excessive movement.

9.5 Rubbish: Remove rubbish and debris from time to time and keep the site and Works clean and tidy. Remove all rubbish, dirt and residues from voids and cavities in the construction before closing in.

10.0 SERVICES

10.1 Service Regulations: Any work carried out to, or which affects, new or existing services must be in accordance with the Bye Laws or Regulations of the relevant Statutory Authority and entirely to their inspectors’ satisfaction.

10.2 Service runs: Make adequate provision for new and existing services, including unobstructed routes and fixings.

10.3 Temporary works: Maintain, alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good.

10.4 Lighting and power: The permanent electrical installation may be used by the Contractor, but the Employer does not undertake that it will be available.

10.5 Water for the Works will be available on site.
11.0 EXCAVATIONS AND GROUND WORKS

11.1 Sub-soil: The Contractor must carry out any additional investigation deemed necessary to determine the nature of the sub-soil and he must allow for excavating in any material which may be encountered and keep the excavations free from storm or percolating water.

12.0 EXCAVATION PROCEDURE

12.1 Underpinning to be carried out in 1.2m max lengths for pier bases on alternate bay system. The sequence of underpinning to be approved by ADS Associates before construction work commences. Allow min 48 hours for concrete curing before dry-packing.

12.2 All cantilever Retaining wall sections to be propped against sliding during the temporary condition. Propping to remain in place until basement floor slab is in place and cured.

13.0 EXCESS EXCAVATION

13.1 Excavations taken wider or deeper than is required to contain the permanent work and the working space shown on the drawings below ground floor level shall be filled, at the Contractor's own expense, with excavated material, hardcore, or mass concrete, as directed by the Structural Engineer.

13.2 Excavation for working space shall be filled with properly consolidated excavated material.

14.0 SUPPORT OF EXCAVATIONS

14.1 Excavation shall be carried out by the Contractor in a manner which will avoid disturbance to the surrounding ground.

14.2 The Contractor shall be responsible for the safety of excavations. If a fall occurs in any excavation the Contractor shall carry out, at his own expense and to the satisfaction of the Structural Engineer any reinforcement or repairs which may become necessary as the result of such a fall.

14.3 Use as necessary support to sides of excavations and remove on completion unless otherwise instructed. Take measurements of any supports which are left in position and inform the Structural Engineer.
15.0 DISPOSAL OF MATERIALS

15.1 Topsoil: Stockpile all excavated preserved topsoil in temporary spoil heaps.

15.2 Surplus subsoil: Remove from site surplus excavated material not specified to be spread and levelled or stockpiled.

16.0 BACKFILLING

16.1 Fill excavation with mass concrete to within 50 – 75 mm of underside of existing footing.

16.2 Hand ram dry mortar packing between footing and concrete pile head.

16.3 Backfill and consolidate in 150mm layers all working pits and temporary excavations.

17.0 INSPECTION

17.1 ADS Associates and Building Control must be kept informed of the progress of the works and given reasonable notice regarding the availability of completed work for inspection before this is covered up. Work which is covered without opportunity being given for inspection shall be uncovered, if so required, and the cost of any additional work necessary to achieve this, together with the cost of any resulting delay shall be borne by the Contractor.

17.2 The bottoms of all excavations shall be made available for inspection by Building Control and must be offered for approval before concrete is placed.

17.3 Should the bottoms of excavations become damaged by water or otherwise softened or cut up after they have been approved, the damaged sections shall be removed and made up in mass concrete as directed by ADS Associates at the Contractor's expense.

1. STABILITY

The Contractor is responsible for ensuring the stability of the structure at all stages of construction.
19.0 ADJACENT BUILDINGS

19.0 During the construction of the works the Contractor will be responsible for the stability of existing buildings which are adjacent to the new works. The Contractor's responsibility will not be diminished by any approval of ADS Associates to any proposed method of working, propping or shoring.

19.1 In any circumstances where working space is formed within an area below a plane projected at 45° down from the bottom of any adjacent foundation such excavations shall be filled with mass concrete.

19.2 Details of any temporary shoring or strutting to adjacent buildings, which is deemed to be necessary, shall be submitted by the Contractor to ADS Associates for approval before work is commenced on site.

19.3 Any damage to adjacent buildings resulting from the manner in which the works are executed shall be made good to the satisfaction of ADS Associates at the Contractor's expense.

20.0 MATERIALS

20.1 Cement: The cement shall be Sulphate Resisting Portland Cement in accordance with the requirements of BS 12 or sulphate resisting cement to BS 4027.

20.2 Mortar: The non-shrink mortar shall be a 1:3 cement/sharp sand mix containing an expanding plasticising additive (e.g. Intraplast-Z by Messrs. Sika Ltd. or Conbex 100 by Messrs. Fosroc Ltd.). The water/cement ratio shall be within the range 0.36 to 0.40.

The mortar mix consistency shall be such that it has sufficient plasticity for it to be well rammed into the void between the pier bases and the underside of the existing footings, to fill all crevices.

The consistency of the mix and its workability shall be demonstrated to the Engineers by the Contractor for approval prior to the commencement of any final pinning-up operations.

20.3 Aggregates: Coarse and fine aggregates shall consist of naturally occurring materials complying with the requirements of BS 882. The fine aggregate is to be within gradings specified under one of zones 1, 2 or 3.

20.4 Water: The water shall comply with the requirement of BS 3148.
20.5 **Reinforcement:** The reinforcement shall be plain round mild steel bars, or round high yield steel bars, which comply with the requirements of BS 4449. The use of cold worked bars in accordance with the requirements of BS 4449 in place of high yield bars will be permitted.

Steel mesh fabric shall comply with the requirements of BS 4483.

21.0 **CONCRETE**

21.1 The concrete is to have a minimum cement content of 330 kg/m, a maximum coarse aggregate size of 20 mm and a maximum free water/cement ratio of 0.5. A minimum C28/35 Grade concrete is to be achieved to the requirements of BS 8500.

21.2 The Contractor is to inform ADS Associates of his intention to mix the concrete on site or to use ready mixed concrete. In either event details of the mix proportions, origin of aggregates and anticipated slump test results are to be submitted to the ADS Associates at least 14 days before the first section of concrete is to be poured.

22.0 **ADDITIVES**

22.1 No additives are to be used in the concrete without the approval of ADS Associates. The use of additives containing calcium chloride will in no circumstances be permitted.

22.2 Ready mixed concrete shall be manufactured, delivered and placed in accordance with BS 1926.

22.3 A slump test in accordance with BS 1881 (Part 2) is to be carried out on the first part of each delivery of concrete and any delivery not having the correct slump will be rejected. The Contractor shall supply and keep those on site the necessary equipment and shall keep proper records showing the results of these tests.

23.0 **SITE MIXED CONCRETE**

23.1 Site mixed concrete shall be mixed with a power driven batch mixer conforming to the requirements of BS 1305.

23.2 Slump tests in accordance with BS 1881 Part 2 shall be taken to establish compliance with the anticipated slump.

23.3 Four Concrete cubes, using 150mm moulds, using samples of concrete at three equal stages during the underpinning process and to BS 1881. Cubes are to be tested at 14 and 28 days with results issued to ADS Associates on receipt by Contractor.
Mix Proportions

Concrete quality to be 35N/mm² at 28 days unless noted otherwise, Max nominal aggregate to be 20mm.

Below Ground:
   Minimum cement content 330 kg/m³
   Maximum free water cement ratio 0.5

If no soil investigation has been instigated then sulphate resisting cement should be used in the ground construction.

Site mix for C35 strength concrete;
Site mix of 210kg by aggregate. (70kg fine and 140kg coarse) per 50kg bag of cement with a maximum 25 litres of water. Maximum aggregate size 20mm.

24.0 WORKMANSHIP

24.1 General: All workmanship shall be in accordance with current British Standard requirements and shall comply with BS8000: Workmanship on Building Sites.

24.2 Placing and Compaction: Concrete shall generally be deposited in layers not exceeding 300 mm thickness. Each layer shall be consolidated by internal high frequency mechanical vibration, in such a manner as to obtain complete compaction without segregation or excessive laitance.

25.0 UNSATISFACTORY CONCRETE WORK

25.1 Unsatisfactory Test Results: If, in the opinion of the ADS Associates any of the results of the specified tests of concrete or material are unsatisfactory, ADS Associates may order the work to be stopped pending his further instructions. Executed work for which test results are unsatisfactory shall be liable to rejection, and if so directed by the ADS Associates, the work represented by the tests shall be cut out and re-executed at the Contractor's expense.

25.2 Defects in Concrete: Regardless of satisfactory test results, any concrete work which, is badly placed or is defective in any way shall be liable to rejection.

25.3 Rejected Work and Delays: All work which is rejected by ADS Associates is to be cut out and replaced at the Contractor's expense. The cost of all delays, resulting from tests on material or concrete proving unsatisfactory or as a result of work being rejected, shall be borne by the Contractor.
26.0 UNFORSEEN WORKS

26.1 Any unforeseen works shall be brought to the attention of ADS Associates by the Contractor immediately they become apparent.

26.2 Unforeseen works shall be deemed to include the following:- Obstructions underground, variations in the assumed details, local pockets of poor sub-soil or inadequate sub-soil needing deeper excavation, excessive ground water, or any other matter in connection with the works not specifically allowed for in the Contractor's tender.

27.0 WORK AT OR AFTER COMPLETION

Generally:
- Make good all damage consequent upon the work.
- Remove all temporary markings, coverings and protective wrappings unless otherwise instructed.
- Clean the works thoroughly inside and out, move all splashes, deposits, efflorescence, rubbish and surplus materials consequent upon the execution of the work.
- Cleaning materials and methods to be as recommended by manufacturers of products being cleaned, and to be such that there is no damage or disfigurement to other materials or construction.

28.0 ADDITIONAL WORK (if required)

28.1 The Contractor shall allow in his tender for checking over the base of all soil, waste and rainwater pipes, together with all soil and surface water drains that are exposed by the excavations for the underpinning works.

28.2 The Contractor's tender shall include for renewing any defective sections, or sections disturbed by the works.

28.3 The main drain runs beyond the excavations for the underpinning works shall be checked over and tested by others, and are therefore deemed to be outside the scope of the contract for the underpinning works.

29.0 BUILDING CONTROL

The Contractor shall provide all necessary information for submission to the Building Control Officer and shall liaise as necessary to satisfy his requirements and shall be deemed to have allowed in his tender for this. Approval of any works by the Building Control Officer shall not be deemed an instruction to the Contractor unless confirmed as such by ADS Associates.