Annex A1b

Model form of Approval in Principle for the design/ assessment of bridges and other highway structures where UK National Standards (Non-Eurocodes) are used

Name of Project	44 Dartmouth Park Road
Name of Bridge or Structure	Basement retaining wall adjacent York Rise
Structure Ref No	1393

1. HIGHWAY DETAILS

1.1 Type of Highway - Local Road

1.2 Permitted traffic speed - 20mph

1.3 Existing restrictions - None

2. SITE DETAILS

2.1 Description of existing structure layout/configuration - Flank wall of existing house borders public footpath on York Rise. Also rear masonry garden wall and garden, all at similar levels to the road. Refer to ELS survey drawing Z079 SITE SURVEY.

3. PROPOSED STRUCTURE

3.1 Description of structure and design working life - Reinforced concrete basement retaining walls and slabs with a design working life of 50 years. New basement to approximately 4m deep, beginning 3m back from the front of the house and extending beyond the rear wall of the house by 3m. Rear garden to be lowered by 2.5m for a 2m zone before stepping back up to existing ground level.

3.2 Structural type - Flank wall of new basement beneath existing house formed by mass concrete underpinning with a 250mm thick RC liner wall, designed as a propped cantilever, being propped by a new concrete and steel ground floor structure. Beyond the rear of the existing house the new basement walls will be constructed of a 250mm thick RC wall without underpinning, again, propped by the new ground floor structure.

3.3 Foundation type - 1.0m wide edge thickenings will be provided beneath the RC retaining walls which act as strip footings.

3.4 Span arrangements - The basement retaining walls span vertically from the new basement slab to the new ground floor structure. Horizontal forces arising from surcharge on the retaining wall are resisted by passive soil pressures on the opposite side of the new basement. The retaining walls are designed to resist earth pressures 'at rest'.

3.5 Articulation arrangements - The retaining walls are designed as propped cantilevers, spanning from a fixed base to a pinned prop at ground floor, level with the external ground.

3.6 Road restraint systems - Underpinning to be constructed in 1.0m long segments with temporary propping to excavations to prevent movement of soil.

3.7 Proposed arrangements for future maintenance and inspection of structure. - Basement will be an inhabited space so any movement will be identified early by plaster cracking. Significant movement is not anticipated but repairs can be made from inside the basement.

3.7.1 Traffic management - Not applicable

3.7.2 Arrangements for future maintenance and inspection of structure - Not applicable

3.7.3[A] Intrusive or further investigations proposed - Not applicable

3.8 Environment and sustainability - GGBS cement replacement will be specified to reduce the embodied energy of the concrete. Reclaimed structural steel should be used where available.

3.9 Durability - The concrete will be specified at an appropriate mix for the given soil conditions. Sulphate resisting cement will be used if required. Sufficient concrete cover will be provided to provide a design life of 50 years for the appropriate exposure class. Structural steelwork will have suitable paint systems specified to minimise maintenance.

3.10 Risks and hazards considered for design, execution, maintenance and demolition. - The contractor's Temporary Works Designer will provide a suitable method statement for the safe construction and future demolition of the structure. CDM Coordinator to comment.

4 ASSESSMENT CRITERIA

4.1 Actions

4.1.1 Permanent actions - Soil (ground) and highway vehicle surcharge

4.1.2 Snow, Wind and Thermal actions - None

4.1.3 Actions relating to normal traffic under Authorised Weight regulations and Construction & Use regulations - HA Loading

4.1.4 Actions relating to General Order traffic under Special Types General Order regulations - As 4.1.3

4.1.5 Footway or footbridge construction - 20KN/m^2

4.1.6 Actions relating to Special Order traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on cross-section - None

4.1.7 Accidental actions - As 4.1.3

4.1.8 Actions during construction - As 4.1.3

4.1.9 Any special action not covered above - As 4.1.3

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening - Not applicable

4.3 Minimum headroom provided - Not applicable

4.4 Authorities consulted and any special conditions required - Camden Council - maximum horizontal deflection at footpath level less than 25mm

4.5 Standards and documents listed in the Technical Approval Schedule - Refer to ANNEX B

4.6 Proposed Departures relating to methods for dealing with aspects not covered by Standards in 4.5 - None

4.7 Proposed Departures relating to methods for dealing with aspects not covered by standards in 4.5 - None

5. STRUCTURAL ANALYSIS

5.1 Method of analysis proposed for superstructure, substructure and foundations - Retaining wall designed using TEDDS software to Rankine's Theory. Foundations designed by hand base upon allowable bearing pressures from site investigation report.

5.2 Description and diagram of idealised structure to be used for analysis - Basement retaining wall to be propped cantilever with moment connection at base and pinned horizontal prop at head. Refer to structural drawings.

5.3 Assumptions intended for calculation of structural element stiffness - Materials designed in accordance with BS 8110 for concrete, BS 8666 for reinforcement and BS 5950 for structural steelwork

5.4 Proposed range of soil parameters to be used in the assessment of earth retaining elements - Weathered London Clay, Bulk Unit Weight 20kN/m^3, Undrained Cohesion 40kPa Friction Angle 24 degrees, Young's Modulus 24MPa

6 GEOTECHNICAL CONDITIONS

6.1 Acceptance of recommendations of the Geotechnical Design Report to be used in the assessment and reasons for any proposed changes - The report is accepted

6.2 Summary of design for highway structure in Geotechnical Design Report - Not applicable

6.3 Differential settlement to be allowed for in the Geotechnical Design Report - Not applicable

7 CHECK

7.1 Proposed Category - Category 1

7.2 If Category 3, name the proposed independent Checker - not applicable

8 DRAWINGS AND DOCUMENTS

8.1 List of drawings (including drawing numbers) and documents accompanying the submission -

1393/01 Lower Floor Plan
1393/02 Ground Floor Plan
1393/03 First Floor Plan
1393/04 Second Floor Plan
1393/05 Mezzanine Plan
1393/06 Roof Plan

9 THE ABOVE IS SUBMITTED FOR ACCEPTANCE

Signed [signature]

Name JONATHAN MCIVER

Design Team Leader

Position ASSOCIATE DIRECTOR

Engineering Qualifications BENG, CENG, MISTRUCTE

Name of Organisation CONSTRUCTURE LTD

Date 02/02/2016

10 THE ABOVE IS ~~REJECTED~~/AGREED SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW

Signed [signature]

Name G.NATKUNAN

Position held Structures and Bridges Section Manager

Engineering Qualifications BSc(HONS). CENG MICE.

Technical Approval Authority London Borough of Camden

Date 8-2-2016