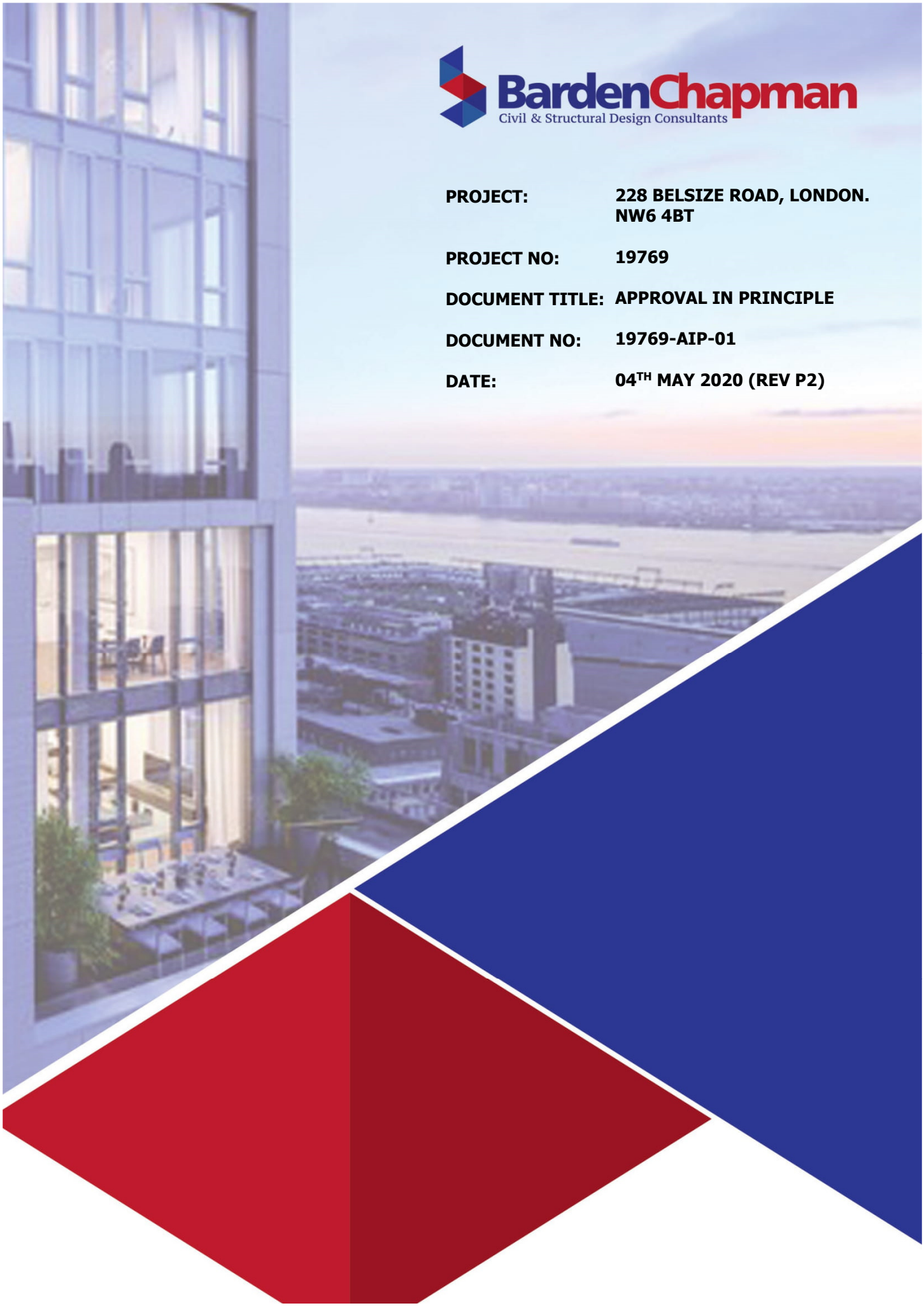


BardenChapman
Civil & Structural Design Consultants

PROJECT:	**228 BELSIZE ROAD, LONDON. NW6 4BT**
PROJECT NO:	**19769**
DOCUMENT TITLE:	**APPROVAL IN PRINCIPLE**
DOCUMENT NO:	**19769-AIP-01**
DATE:	**04TH MAY 2020 (REV P2)**

CONTENTS PAGE

Annex A1a

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

Name of Project	228 Belsize Road, London, NW6 4BT
Name of Bridge or Structure	Priory Road & Belsize Road (B509)
Structure Ref No.	…….

1. HIGHWAY DETAILS

The proposed development is situated at the corner of Belsize Road (B509) and Priory Road.

1.1 Type of Highway

Priory Road is a Minor Road (unclassified)
Belsize Road is a Distributor Road (B509)

1.2 Permitted Traffic Speed

Priory Road – 20 mph
Belsize Road – 20 mph

1.3 Existing Restrictions

Not Applicable (NA)

2. SITE DETAILS

The proposed works consist the demolition of a single storey side extension structure and construction of a new 3-storey side extension over basement. The proposed extension is to be tied back to the gable wall of an existing end block of Victorian terraces situated at the corner of Priory and Belsize Road. There is an existing basement to the end Victorian building which the proposed new basement will connect to. The proposed new basement and ground floor will be used as commercial space for expansion of the existing Restaurant with new residential flats at first and second floor. The site is rectangular in shape and the new basement extension will take up the full site footprint with a contiguous pile retaining wall provided around the perimeter to retain the soil and support the surcharge from adjacent roads.

2.1 Obstacles Crossed

Priory & Belsize Road will be retained by a contiguous basement pile wall around the perimeter of the site.

3. PROPOSED STRUCTURE

3.1 Description of structure and design working life

A contiguous pile wall will be designed with a 120 year design life. The substructure and superstructure will be designed with a 50 year design life.

3.2 Structural type

The basement structure will be a traditional reinforcement concrete frame box type structure. A contiguous pile wall will be installed around the perimeter of the basement extension with a 200mm thick internal concrete lining wall cast against the piled wall. The basement walls will typically be designed as propped cantilevers, with the ground floor slab used to restrain the top of the wall in the permanent case. A capping beam will be cast to monolithically connect the top of the contiguous piles, lining wall and ground floor slab.
Traditional masonry construction will be used above ground floor with 150mm metal deck slabs use to form the floor plates from first to roof level. Steel beams spanning between internal and external load bearing masonry walls will be used to break up the span of the metal deck floor plates.

3.3 Foundation type

The proposed new extension will be supported on a capping on the contiguous piled wall at ground floor. The basement slab will span from the existing corbel footings to the proposed new perimeter piled wall.

3.4 Span arrangements

The basement box structure will consist of a suspended basement and ground floor slab spanning circa 3.4m from the perimeter contiguous pile wall to an internal existing masonry wall. The 150mm metal deck slab forming the upper floor plates will span circa 3.5m between steel support beams which span 5.3m between load bearing masonry walls.

3.5 Articulation arrangements

The basement walls be designed as propped cantilevers, with the ground floor slab used to restrain the top of the wall and the basement slab used to restrain the bottom of the wall in the permanent condition.
The contiguous pile wall has been designed as top propped cantilever in the temporary sense by the piling contractor.

3.6 Classes and Levels

3.6.1 Consequence class
CC2 – Residential, office and public buildings where consequences of failure are medium.

3.6.2 Reliability class
RC2

3.6.3 Inspection level
IL2 – Normal Inspection

3.7 Road restraint systems requirements

In the temporary case a 2.4m high hoarding will be provided around the perimeter of the site.

3.8 Proposed arrangements for future maintenance and inspection

3.8.1 Traffic management
No special arrangements required.

3.8.2 Arrangements for future maintenance and inspection of structure
Access arrangements to structure.
No special arrangements required.

3.9 Environment and sustainability

A sustainability statement has been included in Appendix E outlining energy & CO2 emission, water usage, waste and site management.

3.10 Durability. Materials and finishes.

The contiguous piles around the perimeter of the basement will be designed for a 120 year design life. The remainder of the substructure and superstructure will be designed for a 50 year design life. The basement structure will be waterproofed to prevent any water ingress. Concrete below ground will be specified in accordance with the BRE Special Digest 1:2005 based on the results of the ground investigation. This requires a design sulphate class of DS-1 and ACEC class of AC-1.

Reinforcement will be given the following minimum cover to prevent corrosion of the bars in accordance with EC2 Parts 1,2 &3:

a) Unformed surfaces exposed to earth: 75mm
b) Unformed surfaces over vapour barrier: 50mm
c) Formed surfaces exposed to earth: 50mm
d) Formed surfaced exposed to weather: 35mm
e) Formed surfaced protected from weather / earth: 35mm

Concrete Strength as Follows:

- Capping beam - C32/40 to BS 8500
- Piles – C32/40 to BS 8500

Exposure classes as follows:

- Carbonation class: XC3 Wet/ Rarely Dry,
- Chloride Class: N/A
- Sea Water: N/A
- Freeze / Thaw: N/A
- Chemical Attack: XA1

Reinforcement type & grade as follows:

- H500N/mm2 to B500B

Finishes as follows:

- Unless noted otherwise on drawings, concrete finishes shall be to BS EN 13670 where finish are classed as Basic, Ordinary, Plain & Special. Finishes for this project shall be as follows:
- Formed Finishes Visible (Exposed)Concrete - Plain Finish

- Formed Finishes not Visible (Unexposed) Concrete – Ordinary Finish
- Unformed Finishes to Internal Areas – Plain Finished (power trowelled finishes to slabs)
- Unformed Finishes to External Areas – Ordinary Finishes (light brush finish to slab)

3.11 Risks and hazards considered for design. Execution, maintenance and demolition. Consultation with and/or agreement from CDM co-ordinator

A list of the risks and hazards considered for the proposed works have been outlined below with a detailed Risk Register included in Appendix C. The specific risk to the road/footpaths have been assessed, as well as the risk due to demolition of the structure at the end of its serviceable life. The Risk Register will be passed on to the Principal Designer and Contractor for their approval/comments. Please refer to BC document 19769-RA-01_Design Risk Assessment for further details.

Risks & Hazards considered:

- Access control to and from the site.
- Effects of proposed work on adjacent structures.
- Contamination on site.
- Moving plant & machinery on site.
- Instability of excavations.
- Effects of demolition work required.
- Effects of excavations on services.
- Falling from height.
- Hazardous materials.
- Effects of proposed works on adjoining highways.
- Noise & vibration
- Piling & underground structures

3.12 Estimated cost of proposed structure, together with other forms considered (including where appropriate proprietary manufactured structure), and the reasons for their rejection (including comparative whole life costs with dates of estimates)

NA – the structure will not be owned, adopted or maintained by the highway authority.

3.13 Proposed arrangements for construction

3.13.1 Construction of structure

a) Confirm the location of all buried services.
b) Demolish existing single storey extension.
c) Place piling mat.
d) Install all contiguous piles from ground level.
e) Cast capping beam around top of contiguous piled wall.
f) Lower site level to below capping beam.
g) Install knee props to capping beam.

h) Excavate to basement foundation level.
i) Install cellcore void former & waterproofing and pour basement slab.
j) Apply voltex waterproofing barrier to face of contiguous piles and cast lining walls
k) Pour ground floor slab, cast monolithically with capping beam and remove temporary propping. The ground floor slab acts as a diaphragm in this case and props the top of the contiguous wall in the permanent case. The contiguous pile wall has been designed as top propped cantilever in the temporary sense by the piling contractor.
l) Continue with traditional masonry construction above ground floor level.

3.13.2 Traffic management

The Contractor shall set up an adequate traffic management plan which should cover how deliveries are made to site and other site related traffic manoeuvring to site, around site and leaving site. All this should be controlled by adequate company procedures for the site and include a banksman were appropriate.

3.13.3 Service diversions

There are currently no main services identified as running through the site. The contractor shall take care when excavating, as services not identified on the asset search information may be encountered. If services found, excavation works shall halt until the services are disconnected and certified as such by a suitable qualified person.

3.13.4 Interface with existing structures

The retaining walls will be designed to resist a surcharge of 20 kN/m2 from the adjoining roads. Boundary sections have been developed for approval and are submitted with this document.

4 DESIGN CRITERIA

4.1 Actions

4.1.1 Permanent actions

Soil Pressure
(According to BS EN 1997-1-2004: Geotechnical Design, Part 1 General Rules)

Groundwater Pressure
(According to BS EN 1997-1-2004: Geotechnical Design, Part 1 General Rules)

Dead & Imposed load of concrete slabs & floor plates
(According to BS EN 1991-1-1: Actions on Structures – General Actions – Densities, Self-weight, Imposed Loads for Buildings)

4.1.2 Snow, wind and thermal actions

Snow load on structure is - not critical to the design

(According to BS EN 1991-1-3: Actions on Structures - General Actions – Snow Loads)

Wind loads on structure
(According to BS EN 1991-1-4: Actions on Structures - General Actions – Wind Actions)

Thermal actions are not applicable to the design.

4.1.3 Actions relating to normal traffic under AW regulations and C&U regulations

A surcharge of 20 kN/m2 shall be considered in the design in accordance with Ciria C-760 Guidance on Embedded Retaining Wall Design, which shall be applied to the adjacent roadways.

4.1.4 Actions relating to General Order Traffic under STGO regulations

A surcharge of 20 kN/m2 shall be considered in the design in accordance with Ciria C-760 Guidance on Embedded Retaining Wall Design, which shall be applied to the adjacent roadways.

4.1.5 Footway or footbridge variable actions

NA.

4.1.6 Actions relating to Special Order traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on deck cross-section

NA.

4.1.7 Accidental actions

NA.

4.1.8 Actions during construction

Due to the restricted nature of the site, all delivery of materials to and from site will occur on the roadway directly adjacent the proposed new contiguous piled wall. A surcharge of 20kN/m2 will be considered to be applied to the adjacent footpath and roadways to allow for road traffic and any potential site deliveries.

4.1.9 Any special action not covered above

NA.

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.

NA.

4.3 Minimum headroom provided

NA.

4.4 Authorities consulted and any special conditions required

The proposed structural drawings have been submitted to the local authority (Camden Building Control) for their comment/ approval. The lateral deflection of the top of the contiguous piled wall will be limited to 25mm in line with the requirements of the London Borough of Camden. A full monitoring strategy of the lateral deflection of the contiguous piled wall will be undertaken by the contractor to ensure that the threshold limit is not exceeded.

4.5 Standards and documents listed in the Technical Approval Schedule

Please refer to Appendix A for a full list of documents used in the building design in accordance with BD2 and IAN124.

4.6 Proposed Departures relating to departures from standards given 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 **Methods of analysis proposed for superstructure, substructure and foundations.**

The superstructure will be analysed using a combination of hand calculations and Tekla Tedds Analysis Software. Load take downs will be undertaken to determine column and pile loads along with bearing stresses in the load bearing masonry walls. Suspended slabs, capping beam and lining walls will be designed using Tedds. All elements will be designed in accordance to EC2. All piles to be designed by the Piling Contractor in both the temporary and permanent case. Temporary props will be designed in consultation with the Piling Contractor.

5.2 Description and diagram of idealised structure to be used for analysis

The basement walls and propping will be designed for both the temporary and permanent case. Temporary propping will be used to restrain the top of the contiguous piled wall during excavation and the ground floor slab will prop the wall in the permanent case. The contiguous pile wall will be designed by the Piling Contractor, however a retaining wall analysis has been complete to determine the required propping load for Temporary Works design. Please refer to Figure 5.2.1-3 below outlining the idealised structure.

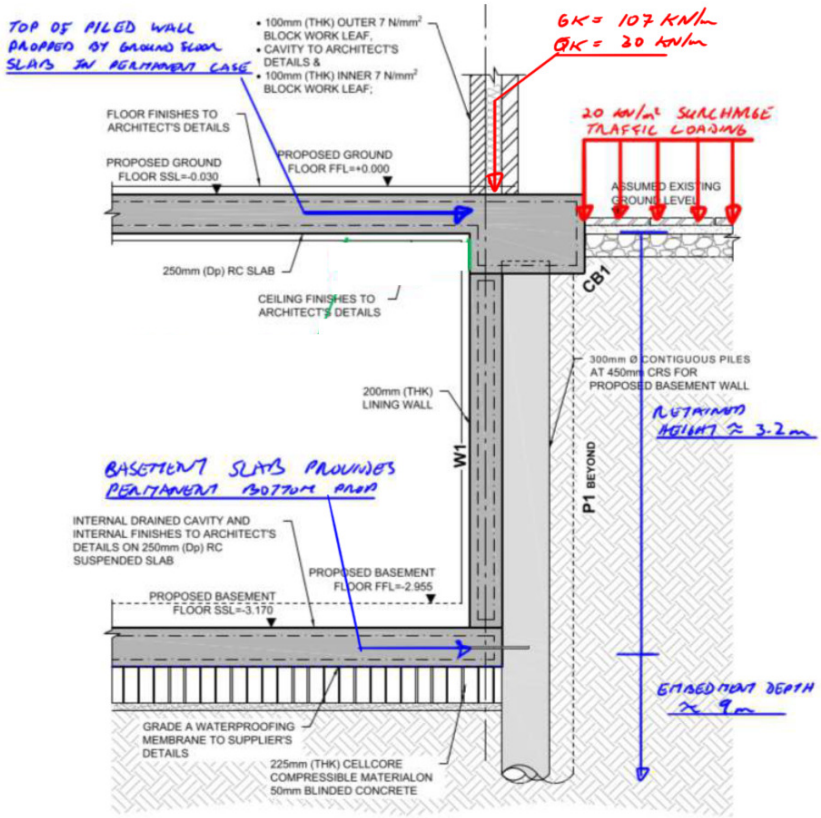


Figure 5.2.1 – Idealised Permanent Structure

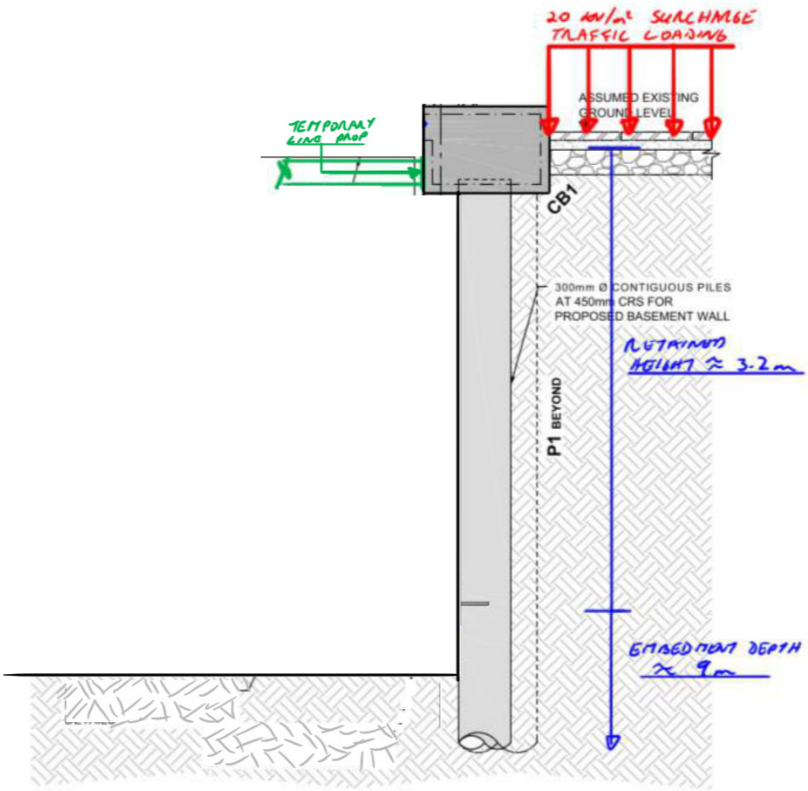


Figure 5.2.2 – Idealised Temporary Structure

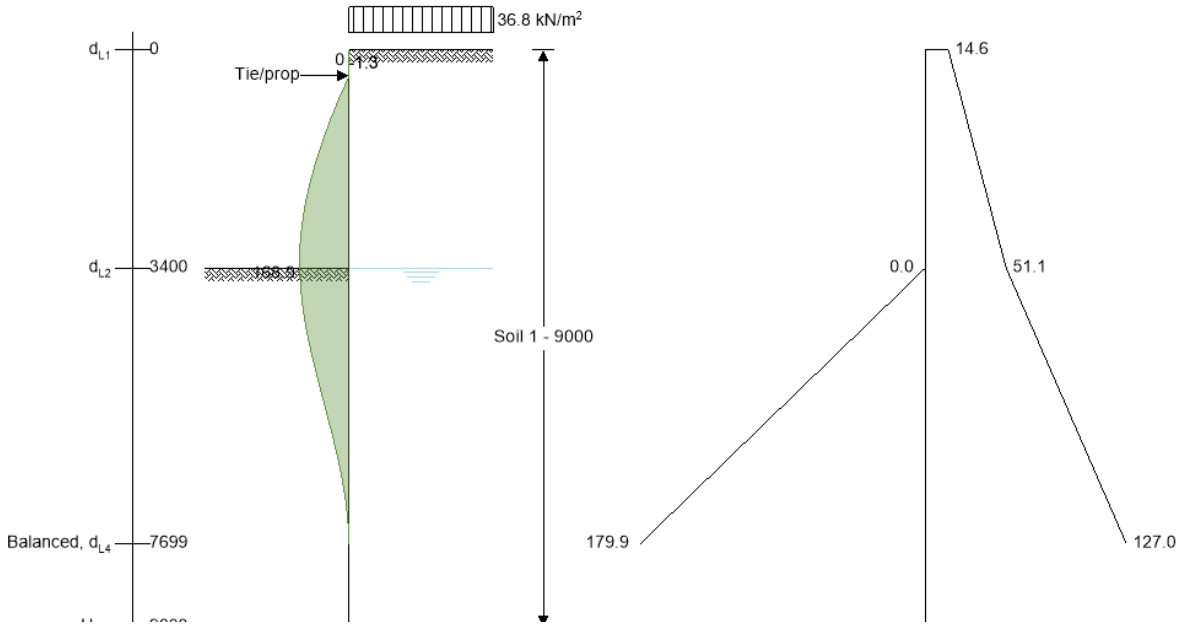


Figure 5.2.3 – Idealised Load Diagram

5.3 Assumptions intended for calculation of structural element stiffness

Young's Modulus of Steel, Esteel = 210 N/mm2
Young's Modulus of Concrete, Econcrete = 28 N/mm2

5.4 Proposed range of soil parameters to be used in the design/assessment of earth retaining elements

The design of the contiguous piled wall will be carried out by the piling subcontractor based on the soil properties given in the existing ground investigation report from a neighbouring property. A site specific investigation will be complete during the course of the piling works to confirm the design parameters used. The soil parameters used for preliminary design are outlined below raging from 1m to 24m below ground level:

Undrained Shear Strength Cu: 56-213 kN/m2
Bulk Density: 1.93 – 1.99 Mg/m3
Moisture Content: 31-27%
Liquid Limit: 75-71%
Plastic Limit: 29%
Plasticity Index: 46-42%

The site consists of shallow made ground over the London Clay Formation.

6. GEOTECHNICAL CONDITIONS

6.1 Acceptance of recommendations of the Geotechnical Design Report to be used in the design and reasons for any proposed changes.

An existing site inspection report from a neighbouring property has been used to inform the foundation design. The investigation report states "*that due to the presence of basement and the anticipated high loadings of the proposed structure that a piled foundation should be adopted on the this site"*.

Although the anticipated loads are expected to be much less than the above site, a piled foundation is proposed which will also cater for a retaining structure for the basement works.

The existing SI report is included in Appendix D with a Site Specific SI scheduled in coordination with the proposed piling works to confirm design parameters.

6.2 Summary of design for highway structure in Geotechnical Design Report.
Soil properties for the design of the retaining piled wall have been taken from the existing SI Report appended with this document with a Site Specific SI scheduled in coordination with the proposed piling works.

6.3 Differential settlement to be allowed for in the design of the structure.
NA

6.4 If the Geotechnical Design Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations.
A site specific Geotechnical Design Report is not yet available however an existing neighbouring SI Report has been used to advise the current proposed piled design. A site specific SI is scheduled to be completed in coordination with the proposed piling works.

7. CHECK

7.1 Proposed Category and Design Supervision Level.
Category 2

7.2 If Category 3, name of proposed independent Checker
NA

7.3 Erection proposals or temporary works for which Types S and P Proposals will be required, listing structural parts of the permanent structure affected with reasons
All temporary works shall have an independent check.

The permanent works designer shall satisfy that temporary works shall not have any adverse effect on the permanent works.

8. DRAWINGS AND DOCUMENTS

8.1 List of Drawings (including numbers) and documents accompanying the submission.

- Appendix A – Technical Approvals Schedule:
  Schedule of Documents Relating to Design or Assessment of Bridges and Other Highway Structures

- Appendix B – Structural Drawings:
  0000 Series - Notes Drawings
  19769-G-0000 – Structural Legend
  19769-G-0001 – General Notes
  19769-G-0002 – BGS Ground Profile Information
  19769-G-0003 – Tolerances, Movements & Allowable Fixing Zones
  19769-G-0004 – Fire Resistance Requirements

  2000 Series – GA Plans
  19769-S-2(-)99 – Existing & Proposed Basement Plan
  19769-S-2000 – Existing & Proposed Ground Floor Plan
  19769-S-2001 – Existing & Proposed First Floor Plan
  19769-S-2002 – Existing & Proposed Second Floor Plan
  19769-S-2003 – Existing & Proposed Loft Plan
  19769-S-2004 – Existing & Proposed Roof Plan

  2100 Series – Section & Details
  19769-S-2(-)99 – Sections Sheet 1 (Basement Sections)
  19769-S-2100 - Sections Sheet 2 (Above Ground Floor Plan)
  19769-S-2101 – Sections Sheet 3 (Above Ground Floor Plan)

- Appendix C – Designers Risk Assessment
  19769-RA-01 – Designer Risk Assessment

- Appendix D – Existing Ground Investigation Report
  Report On A Geotechnical Investigation at 258-262 Belsize Road, London NW6 by Soils Limited

- Appendix E – Sustainability Statement

9. THE ABOVE IS SUBMITTED FOR ACCEPTANCE

We confirm that details of the temporary works design will be/have been passed to the permanent works Designer for review.

Signed

Name DAVID BARDEN
Design Team Leader

Engineering Qualifications MISTRUCTE

Name of Organisation INSTITUTE OF STRUCTURAL ENGINEERS

Date 04/05/20

10. THE ABOVE IS REJECTED/AGREED[1] SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW

Signed

Name G Natkunan

Position held Structures Team Leader

Engineering Qualifications BSc(Hons) CEng MICE

TAA London Borough of Camden

Date 05.05.2020

APPENDIX A – TECHNICAL APPROVALS SCHEDULE

TECHNICAL APPROVAL SCHEDULE `TAS'
SCHEDULE OF DOCUMENTS RELATING TO DESIGN OR ASSESSMENT OF BRIDGES AND OTHER HIGHWAY STRUCTURES

British Standards

Reference	Title
BS 4449:2005 + A2:2009	Steel for the reinforcement of concrete
~~BS 5896:2012~~	~~Specification for high tensile steel wire and strand for the prestressing of concrete~~
BS 8500-1:2006 + A1:2012 (with Corrigendum No. 1)	Concrete. Complementary British Standard to BS EN 206-1 – Part 1. Method of specifying and guidance for the supplier
BS 8500-2:2006 + A1:2012 (with Corrigendum No. 1)	Concrete. Complementary British Standard to BS EN 206-1 – Part 2. Specification for constituent materials and concrete
~~BS 8006-1:2010 (with Corrigendum No. 1)~~	~~Code of practice for strengthened/reinforced soils and other fills~~
~~BS 7818: 1995 (with AMD Corrigendum 15047 and AMD Corrigendum 16540)~~	~~Specification for pedestrian restraint systems in metal~~

Eurocodes and associated UK National Annexes

Reference	**Eurocode Title (to be used with appropriate National Annex)**	**Date of National Annex**
BS EN 1990:2002 + A1:2005 (with 2008 and 2010 Corrigenda)	Eurocode - Basis of structural design	2004 (including A1:2005)
BS EN 1991-1-1: 2002 (with 2004 and 2009 Corrigenda)	Eurocode 1: Actions on structures. General actions. Densities, self-weight, imposed loads for buildings	2005
~~BS EN 1991-1-3:2003 (with 2004 and 2009 Corrigenda)~~	~~Eurocode 1: Actions on structures. General actions. Snow loads~~	~~2005 (with 2007 Corrigendum)~~
BS EN 1991-1-4:2005+ A1:2010 (with 2009 and 2010 Corrigenda)	Eurocode 1: Actions on structures. General actions. Wind actions.	2008 (including A1:2010)
~~BS EN 1991-1-5:2003 (with 2004 and 2009 Corrigenda)~~	~~Eurocode 1: Actions on structures. General actions. Thermal actions.~~	~~2007~~
BS EN 1991-1-6:2005 (with 2008, 2012 and 2013 Corrigenda)	Eurocode 1: Actions on structures. General actions. Actions during execution	2008
BS EN 1991-1-7:2006 (with 2010 Corrigendum)	Eurocode 1: Actions on structures. General actions. Accidental actions.	2008
BS EN 1991-2:2003 (with 2004 and 2010 Corrigenda)	Eurocode 1: Actions on structures. Traffic loads on bridges	2008 (with 2008 Corrigendum)
BS EN 1992-1-1:2004 (with 2008, 2010 and 2014 Corrigenda)	Eurocode 2: Design of concrete structures. General rules and rules for buildings	2005 (including A1:2009)

Reference	**Eurocode Title (to be used with appropriate National Annex)**	**Date of National Annex**
BS EN 1992-2:2005 (with 2008 Corrigendum)	Eurocode 2: Design of concrete structures. Concrete bridges. Design and detailing rules	2007
~~BS EN 1992-3:2006~~	~~Eurocode 2: Design of concrete structures. Liquid retaining and containing structures~~	~~2007~~
~~BS EN 1993-1-1:2005 (with 2006 and 2009 Corrigenda)~~	~~Eurocode 3: Design of steel structures. General rules and rules for buildings~~	~~2008~~
~~BS EN 1993-1-4:2006~~	~~Eurocode 3: Design of steel structures. General rules. Supplementary rules for stainless steel~~	~~2009~~
~~BS EN 1993-1-5:2006 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Plated structural elements~~	~~2008~~
~~BS EN 1993-1-6:2007 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Strength and stability of shell structures~~	~~N/A~~
~~BS EN 1993-1-7:2007 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Plated structures subject to out of plane loading~~	~~N/A~~
~~BS EN 1993-1-8:2005 (with 2005, 2006, 2009 and 2010 Corrigenda)~~	~~Eurocode 3: Design of steel structures. Design of joints~~	~~2008~~
~~BS EN 1993-1-9:2005 (with 2005, 2006 and 2009Corrigenda)~~	~~Eurocode 3: Design of steel structures. Fatigue strength~~	~~2008~~
~~BS EN 1993-1-10:2005 (with 2005, 2006 and 2009 Corrigenda)~~	~~Eurocode 3: Design of steel structures. Material toughness and through-thickness properties~~	~~2009~~

Reference	**Eurocode Title (to be used with appropriate National Annex)**	**Date of National Annex**
~~BS EN 1993-1-11:2006 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Design of structures with tension components~~	~~2008~~
~~BS EN 1993-1-12:2007 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Additional rules for the extension of EN 1993 up to steel grades S 700~~	~~2008~~
~~BS EN 1993-2:2006 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Steel bridges.~~	~~2008 (including A1:2012)~~
~~BS EN 1993-5:2007 (with 2009 Corrigendum)~~	~~Eurocode 3: Design of steel structures. Piling~~	~~2009 (including A1:2012)~~
BS EN 1994-1-1:2004 (with 2009 Corrigendum)	Eurocode 4: Design of composite steel and concrete structures. General rules and rules for buildings.	2008
~~BS EN 1994-2:2005 (with 2008 Corrigendum)~~	~~Eurocode 4: Design of composite steel and concrete structures. General rules and rules for bridges.~~	~~2007~~
~~BS EN 1995-1-1:2004 +A1:2008 (with 2006 Corrigendum)~~	~~Eurocode 5: Design of timber structures. General. Common rules and rules for buildings~~	~~2006 (including A1:2009 and A2:2012)~~
~~BS EN 1995-2:2004~~	~~Eurocode 5: Design of timber structures. Bridges~~	~~2006~~
~~BS EN 1996-1-1:2005 +A1:2012 (with 2006 and 2009 Corrigenda)~~	~~Eurocode 6: Design of masonry structures. General rules for reinforced and unreinforced masonry structures~~	~~2007 (including Amendment 2013)~~
~~BS EN 1996-2:2006 (with 2009 Corrigendum)~~	~~Eurocode 6: Design of masonry structures. Design considerations, selection of materials and execution of masonry~~	~~2007 (with 2007 AMD Corrigendum~~
~~BS EN 1996-3:2006 (with 2009 Corrigendum)~~	~~Eurocode 6: Design of masonry structures. Simplified calculation methods for unreinforced masonry structures~~	~~2007~~

Reference	**Eurocode Title (to be used with appropriate National Annex)**	**Date of National Annex**
BS EN 1997-1:2004 (with 2009 Corrigendum)	Eurocode 7: Geotechnical design. General rules	2007 (with 2007 Corrigendum)
BS EN 1997-2:2007 (with 2010 Corrigendum)	Eurocode 7: Geotechnical design. Ground investigation and testing	2009
BS EN 1998-1:2004 + A1:2013 (with 2009, 2011, 2013 Corrigenda)	Eurocode 8: Design for structures for earthquake resistance. General rules, seismic actions and rules for buildings.	2008
~~BS EN 1998-2:2005 + A2:2011 (with 2010 and 2012 Corrigenda)~~	~~Eurocode 8: Design of structures for earthquake resistance. Bridges~~	~~2009~~
BS EN 1998-5:2004	Eurocode 8: Design of structures for earthquake resistance. Foundations, retaining structure and geotechnical aspects	2008
~~BS EN 1999-1-1:2007 + A1:2009 and A2:2013~~	~~Eurocode 9: Design of aluminium structures. General structural rules~~	~~2008 (including A1:2010 and Corrigendum 2010)~~
~~BS EN 1999-1-3:2007 + A1:2011~~	~~Eurocode 9: Design of aluminium structures. Structures susceptible to fatigue.~~	~~2008 (including A1:2012)~~
~~BS EN 1999-1-4:2007 + A1:2011 (with 2009 Corrigendum)~~	~~Eurocode 9: Design of aluminium structures. Cold formed structural sheeting.~~	~~2009~~

BSi Published Documents

Reference	Title
PD 6687-1:2010	Background paper to the National Annexes to BS EN 1992-1 and BS EN 1992-3
PD 6687-2:2008	Recommendations for the design of structures to BS EN 1992-2:2005
PD 6688-1-1:2011	Recommendations for the design of structures to BS EN 1991-1-1
PD 6688-1-4:2009	Background information to the National Annex to BS EN 1991-1-4 and additional guidance
Reference Title PD 6688-1-7:2009	Recommendations for the design of structures to BS EN 1991-1-7
PD 6688-2:2011	Background to the National Annex to BS EN 1991-2. Traffic loads on bridges.
PD 6694-1:2011	Recommendations for the design of structures subject to traffic loading to BS EN 1997- 1:2004
PD 6695-1-9:2008	Recommendations for the design of structures to BS EN 1993-1-9
PD 6695-1-10:2009	Recommendations for the design of structures to BS EN 1993-1-10
~~PD 6695-2:2008 + A1:2012~~	~~Recommendation for the design of bridges to BS EN 1993~~
PD 6696-2:2007 + A1:2012	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2
~~PD 6697: 2010~~	~~Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2~~
~~PD 6698:2009~~	~~Recommendations for the design of structures for earthquake resistance to BS EN 1998~~
~~PD 6702-1: 2009~~	~~Structural use of aluminium - Part 1: Recommendations for the design of aluminium structures to BS EN 1999~~

Reference	**Title**
~~PD 6703:2009~~	~~Structural bearings – Guidance on the use of structural bearings~~
~~PD 6705-2:2010 + A1:2013~~	~~Structural use of steel and aluminium – Part 2: Recommendations for the execution of steel bridges to BS EN 1090-2~~
~~PD 6705-3: 2009~~	~~Structural use of steel and aluminium – Part 3: Recommendations on the execution of aluminium structures to BS EN 1090-3~~

Execution Standards referenced in British Standards or Eurocodes

Reference	Title
~~BS EN 1090-1:2009 + A1:2011~~	~~Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components~~
~~BS EN 1090-2:2008 + A1:2011~~	~~Execution of steel structures and aluminium structures – Part 2: Technical requirements for the execution of steel structures~~
~~BS EN 1090-3:2008~~	~~Execution of steel structures and aluminium structures – Part 3: Technical requirements for aluminium structures~~
BS EN 12063:1999	Execution of special geotechnical work. Sheet Pile Walls
BS EN 13670:2009	Execution of concrete structures

Product Standards referenced in British Standards or Eurocodes

Reference	Title
~~BS EN 1337-1:2000~~	~~Structural bearings. General design rules~~
~~BS EN 1337-2: 2004~~	~~Structural bearings. Sliding elements~~
~~BS EN 1337-3:2005~~	~~Structural bearings: Elastomeric bearings~~
~~BS EN 1337-5:2005~~	~~Structural bearings: Pot bearings~~
~~BS EN 1337-7: 2004~~	~~Structural bearings. Spherical and cylindrical PTFE bearings~~
~~BS EN 1337-8: 2007~~	~~Structural bearings. Guide bearings and restraint bearings~~
~~BS EN 1337-9:1998~~	~~Structural bearings: Protection~~
~~BS EN 1337-10: 2003~~	~~Structural bearings. Inspection and maintenance~~
~~BS EN 1337-11: 1998~~	~~Structural bearings. Transport, Storage and Installation.~~
BS EN 1317-1: 2010	Road Restraints Systems Part 1 - Terminology and general criteria for test methods
BS EN 1317-2: 2010	Road Restraint Systems Part 2 - Performance classes, impact test acceptance criteria and test methods for safety barriers including vehicle parapets
BS EN 1317-3: 2010	Road Restraint Systems Part 3 - Performance classes, impact test acceptance criteria and test methods for crash cushions
~~DD ENV 1317-4: 2002~~	~~Road Restraint Systems – Performance classes, impact test acceptance criteria and test methods for terminals and transitions of safety barriers.~~
~~BS EN 1317-5: 2007 + A2 2012~~	~~Road Restraint Systems – Part 5 - Product requirements and evaluation of conformity for vehicle restraint systems~~

Reference	Title
PD CEN/TR BS EN 1317-6: 2012	Road Restraint Systems – Pedestrian restraint systems, pedestrian parapets
PD CEN/TR BS EN 1317-6: 2012	Road Restraint Systems – Pedestrian restraint systems, pedestrian parapets
~~BS EN 10025-1:2004~~	~~Hot rolled products of structural steels – Part 1: General technical delivery conditions~~
~~BS EN 10025-2:2004~~	~~Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels~~
~~BS EN 10025-3:2004~~	~~Hot rolled products of structural steels – Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels~~
~~BS EN 10025-4:2004~~	~~Hot rolled products of structural steels – Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels~~
~~BS EN 10025-5:2004~~	~~Hot rolled products of structural steels – Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance~~
~~BS EN 10025-6: 2004 + A1:2009~~	~~Hot-rolled products of structural steels – Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition~~
~~BS EN 15050:2007 + A1:2012~~	~~Precast concrete products – Bridge elements~~
BS EN 10080: 2005	Steel for the reinforcement of concrete – weldable reinforcing steel - General
~~BS EN 10248-1: 1996~~	~~Hot rolled sheet piling of non-alloy steels. Technical delivery conditions~~
~~BS EN 10248-2: 1996~~	~~Hot rolled sheet piling of non-alloy steels. Tolerances on shape and dimensions~~

The Manual of Contract Documents for Highway Works (MCHW)

Reference	Title
Volume 1 : (including amendments to February 2016)	Specification for Highway Works
Volume 2 : (including amendments to February 2016)	Notes for Guidance on the Specification for Highway Works
Volume 3 : (including amendments to November 2008)	Highway Construction Details

Design Manual for Roads and Bridges (DMRB)

Reference	Title
~~BA 26/94~~	~~Expansion Joints for Use in Highway Bridge Decks~~
~~BA 28/92~~	~~Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures~~
~~BA 41/98~~	~~The Design and Appearance of Bridges~~
~~BA 47/99~~	~~Waterproofing and Surfacing of Concrete Bridge Decks~~
~~BA 67/96~~	~~Enclosure of Bridges~~
~~BA 68/97~~	~~Crib Retaining Walls~~
~~BA 82/00~~	~~Formation of Continuity Joints in Bridge Decks~~
~~BA 85/04~~	~~Coatings for Concrete Highway Structures & Ancillary Structures~~
~~BA 92/07~~	~~The Use of Recycled Concrete Aggregates in Structural Concrete~~

Reference	Title
BD 2/12	Technical Approval of Highway Structures
~~BD 7/01~~	~~Weathering Steel for Highway Structures~~
~~BD 10/97~~	~~Design of Highway Structures in Areas of Mining Subsidence~~
~~BD 12/01~~	~~Design of Corrugated Steel Buried Structures with Spans Greater than 0.9m and up to 8.0m~~
~~BD 29/04~~	~~Design Criteria for Footbridges~~
~~BD 33/94~~	~~Expansion Joints for Use in Highway Bridge Decks~~
~~BD 35/14~~	~~Quality Assurance Scheme for Paints and Similar Protective Coatings~~
~~BD 36/92~~	~~Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures~~
~~BD 43/03~~	~~The Impregnation of Reinforced and Prestressed Concrete Highway Structures using Hydrophobic Pore-Lining Impregnants~~
~~BD 45/93~~	~~Identification Marking of Highway Structures~~
~~BD 47/99~~	~~Waterproofing and Surfacing of Concrete Bridge Decks~~
~~BD 51/14~~	~~Portal and Cantilever Sign/Signal Gantries~~
~~BD 62/07~~	~~As Built, Operational and Maintenance Records for Highway Structures~~
~~BD 65/14~~	~~Design Criteria for Collision Protector Beams~~
~~BD 67/96~~	~~Enclosures of Bridges~~
~~BD 68/97~~	~~Crib Retaining Walls~~

Reference	Title
~~BD 78/99~~	~~Design of Road Tunnels~~
~~BD 82/00~~	~~Design of Buried Rigid Pipes~~
~~BD 90/05~~	~~Design of FRP Bridges & Highway Structures~~
~~BD 94/07~~	~~Design of Minor Structures~~
~~HA 66/95~~	~~Environmental Barriers: Technical Requirements~~
~~HD 22/08~~	~~Managing Geotechnical Risk~~
~~TD 19/06~~	~~Requirements for Road Restraint Systems~~
~~TD 27/05~~	~~Cross Sections and Headrooms~~
~~GD 01/15~~	~~Introduction to the Design Manual for Roads and Bridges~~
GD 02/08	Quality Management Systems for Highway Design
GD 04/12	Standard for Safety Risk Assessment on the Strategic Road Network

Reference	Assessment Document Title
~~BA 16/97~~	~~The Assessment of Highway Bridges and Structures [Incorporating Amendment No. 1 dated November 1997 and Amendment No.2 dated November 2001]~~
~~BA 38/93~~	~~Assessment of the Fatigue Life of Corroded or Damaged Reinforcing Bars~~
~~BA 39/93~~	~~Assessment of Reinforced Concrete Half-joints~~
~~BA 44/96~~	~~The Assessment of Concrete Highway Bridges and Structures~~
~~BA 51/95~~	~~The Assessment of Concrete Structures Affected by Steel Corrosion~~
~~BA 52/94~~	~~The Assessment of Concrete Structures Affected by Alkali Silica Reaction~~
~~BA 54/94~~	~~Load Testing for Bridge Assessment~~
~~BA 55/06~~	~~The Assessment of Bridge Substructures and Foundations, Retaining Walls and Buried Structures~~
~~BD 21/01~~	~~Assessment of Highway Bridges and Structures (including correction dated August 2001)~~
~~BD 44/15~~	~~The Assessment of Concrete Highway Bridges and Structures~~
~~BD 48/93~~	~~The Assessment and Strengthening of Highway Bridge Supports~~
~~BD 56/10~~	~~The Assessment of Steel Highway Bridges and Structures~~
~~BD 61/10~~	~~The Assessment of Composite Highway Bridges and Structures~~
~~BD 79/13~~	~~The Management of Sub-standard Highway Structures~~
~~BD 81/02~~	~~Use of Compressive Membrane Action in Bridge Decks~~

Reference	Assessment Document Title
~~BD 86/11~~	~~The Assessment of Highway Bridges and Structures For The Effects of Special Types General Order (STGO) and Special Order (SO) Vehicles~~
~~BD 97/12~~	~~The Assessment of Scour and Other Hydraulic Actions at Highway Structures~~
~~BD 101/11~~	~~Structural Review and Assessment of Highway Structures~~
~~BE 13~~	~~Fatigue Risk in Bailey Bridges~~

Interim Advice Notes

Document Reference	Title
~~53/04~~	~~Concrete Half-Joint Deck Structures~~
~~63/05r3~~	~~Asbestos Management Applicable To The Strategic Road Network~~
69/15	Designing for Maintenance
~~83/06~~	~~Principal And General Inspection Of Sign/Signal Gantries, And Gantries With Low Handrails Or Open Mesh Flooring~~
~~91/07~~	~~Interim Advice On The Identification Of 'Particularly At Risk' Supports~~
~~96/07r1~~	~~Guidance On Implementing Results of Research On Bridge Deck Waterproofing~~
~~97/07~~	~~Assessment and upgrading of existing parapets~~
~~104/15~~	~~The Anchorage of Reinforcement & Fixings in Hardened Concrete~~
105/08	Implementation of Construction (Design and Management) 2007 and the withdrawal of SD 10 and SD 11

Document Reference	Title
116/08	Nature conservation advice in relation to bats
117/08 Rev.2	Certification of combined kerb and drainage products
~~124/11~~	~~The use of Eurocodes for the design of highway structures~~
~~127/10 Rev 01~~	~~The use of foamed concrete~~
131/11	Deflection of permanent formwork
136/10	Structural safety reporting
143/11	Supplementary Advice and requirements for the provision for Non-Motorised Users and accessibility during planning, design, construction and handover of Improvement Schemes
~~149/11~~	~~Existing motorway minimum requirements~~
~~161/15~~	~~Smart Motorways~~
171/12	Risk-based Inspection Intervals
~~173/13~~	~~Implementation of BD 97/12 - The Assessment of Scour and Other Hydraulic Actions at Highway Structures~~
177/13	Introduction of the Construction Products Regulation (EU) 305/2011

Other Publications

Reference	Title
Circular Roads No 61/72	Routes for heavy and high abnormal loads
-	Traffic Management Act 2004
BRE Special Digest 1:2005 3rd Ed.	Concrete in aggressive ground
CHE Memo 227/08	The impregnation of reinforced and prestressed concrete highway structures using hydrophobic pore lining impregnants
~~CIRIA Document C543~~	~~Bridge detailing guide~~
CIRIA Document C580	Embedded retaining walls – guidance for economic design
CIRIA Document C660	Early-age thermal crack control in concrete
CIRIA Document C686	Safe access for maintenance and repair
CIRIA Report 103	Design of laterally-loaded piles
~~Concrete Society Technical Guide No. 9~~	~~Guidance on the Assessment of Concrete Bridges~~

APPENDIX B –STRUCTURAL DRAWINGS

1. STRUCTURAL LEGEND

1.1 BASIC LINETYPES

- GRIDLINE
- CENTRELINE
- VISIBLE EDGE OF STRUCTURE
- HIDDEN EDGE OF STRUCTURE

1.2 STRUCTURAL ELEMENTS ON PLAN

- EXISTING MASONRY WALL
- EXISTING LOAD BEARING WALL
- EXISTING LOAD BEARING WALL BELOW
- EXISTING/NEW INTERNAL NON-LOAD BEARING WALL
- EXISTING WALL TO BE DEMOLISHED
- NEW LOAD BEARING BLOCKWORK WALL
- NEW LOAD BEARING BRICK WALL
- NEW LOAD BEARING STRUCTURAL STUD PARTITION WALL
- Ex. Wx — EXISTING REINFORCED CONCRETE WALL
- Wx — NEW REINFORCED CONCRETE WALL
- Wx UNDER — NEW REINFORCED CONCRETE WALL UNDER
- Ex. Cx — EXISTING REINFORCED CONCRETE COLUMN
- Cx — REINFORCED CONCRETE COLUMN
- Cx UNDER — REINFORCED CONCRETE COLUMN BELOW
- Bx — NEW REINFORCED CONCRETE BEAM
- Ex. Bx — EXISTING REINFORCED CONCRETE BEAM
- Ex. SBx — EXISTING STEEL BEAM
- Ex.SCx — EXISTING STEEL COLUMN
- Ex.SCx UNDER — EXISTING STEEL COLUMN UNDER
- SBx — NEW STEEL BEAM
- SCx — NEW STEEL COLUMN
- SCx UNDER — NEW STEEL COLUMN UNDER
- PDx — NEW CONCRETE PADSTONE ON MASONRY AT STEEL BEARING
- Lx — NEW PRECAST CONCRETE OR STEEL LINTEL

1.3 STRUCTURAL ELEMENTS IN SECTION

- EXISTING REINFORCED CONCRETE SLAB/ BEAM
- NEW REINFORCED CONCRETE SLAB/ BEAM
- PRECAST CONCRETE UNITS

UB — UNIVERSAL BEAM; UC — UNIVERSAL COLUMN; T — TEE; RSA — ROLLED STEEL ANGEL; RSC — ROLLED STEEL CHANNEL

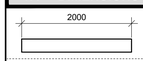
HOT ROLLED STEEL SECTIONS

RHS — RECTANGULAR HOLLOW SECTION; SHS — SQUARE HOLLOW SECTION; CHS — CIRCULAR HOLLOW SECTION

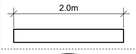
TUBULAR STEEL SECTIONS

- STRUCTURAL TIMBER

1.4 DIMENSIONS



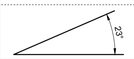
DIMENSIONS IN MILLIMETRES



DIMENSIONS IN METRES

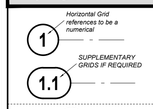
RADIAL DIMENSION

ARROW / LEADER

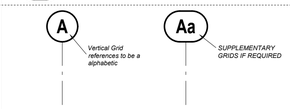


ANGULAR DIMENSION

1.5 GRID REFERENCES



HORIZONTAL GRID REFERENCE



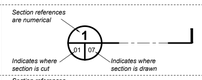
VERTICAL GRID REFERENCE

1.6 CALLUPS

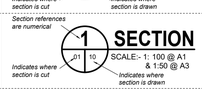
FLOOR PLAN
SCALE 1:100 @ A1 & 1:200 @ A3

ELEVATION
SCALE 1:100 @ A1 & 1:200 @ A3

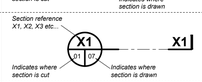
TYPICAL PLAN / ELEVATION TITLE



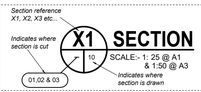
TYPICAL SECTION CUT MARK



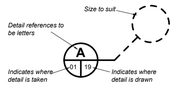
TYPICAL SECTION TITLE



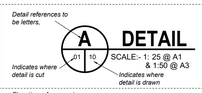
FULL HEIGHT CROSS SECTION CUT MARK



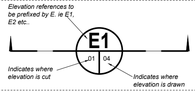
FULL HEIGHT CROSS SECTION TITLE



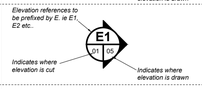
DETAIL LOCATOR



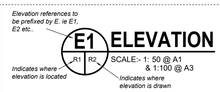
DETAIL TITLE



TYPICAL ELEVATION VIEW LOCATOR



ALTERNATIVE ELEVATION VIEW LOCATOR



ELEVATION TITLE

S.S.L. = +22.400 — STRUCTURAL LEVEL CALLUP ON PLAN IN METRES, REFERRED TO ORDNANCE DATUM

FIRST FLOOR S.S.L. = +20.400 — STRUCTURAL LEVEL CALLUP ON SECTION IN METRES, REFERRED TO ORDNANCE DATUM

- DIRECTION OF SPAN
- C.J — MASONRY CONTROL JOINT
- C.J — CONSTRUCTION JOINT IN CONCRETE ELEMENT
- E.J — EXPANSION JOINT

L.J.	LONGITUDINAL JOINT IN CONCRETE GROUND FLOOR SLAB
CT.J	CONTRACTION JOINT IN CONCRETE GROUND FLOOR SLAB
I.J.	INDUCED JOINT IN CONCRETE GROUND FLOOR SLAB
1:60 / 30°	FALL (GRADIENT)
X	REVISION REFERENCE FOR CLOUDED ELEMENT

1.7 REINFORCED CONCRETE LEGEND

T20	HIGH YIELD STEEL BAR 20mm DIAMETER
R10	MILD STEEL BAR 10mm DIAMETER
B	BOTTOM LAYER REINFORCEMENT
T	TOP LAYER REINFORCEMENT
FF	FAR FACE

FF	FAR FACE
NF	NEAR FACE
EF	EACH FACE
RL	RANDOM LENGTH
VL	VARYING LENGTH
ABR	ALTERNATE BARREVERSED
ABS	ALTERNATE BAR STAGGERED

eg. TYPICAL PLAN CALL UP 25 No. 16mm Ø HIGH YIELD BARS Mk. 45 AT 200mm Crs. WITH ALTERNATE BARS REVERSED

SLAB TOP REINF. Mk. 13 BARS PARALLEL TO SECTION CUT & Mk. 11 BARS PERPENDICULAR.

TYPICAL SECTION CALL UP 4 No. Mk. 23 LONGITUDINAL BARS IN BEAM WITH Mk. 08 LINKS.

SLAB BOTTOM REINFORCEMENT Mk. 11 BARS PERPENDICULAR TO SECTION CUT, Mk. 10 & 12 BARS PARALLEL & LAPPING OVER SUPPORT BEAM.

1.8 ABBREVIATIONS GENERAL

Crs.	CENTRE TO CENTRE
COL.	COLUMN
CONC.	CONCRETE
D.P.M.	DAMP PROOF MEMBRANE
Dp.	DEEP
Ø	DIAMETER

DRG. No.	DRAWING NUMBER
N.T.S.	NOT TO SCALE
REINF.	REINFORCEMENT
TYP.	TYPICAL
U/S	UNDERSIDE
U.N.O.	UNLESS NOTED OTHERWISE

1.9 ABBREVIATIONS FOR STRUCTURAL LEGENDS

P1	PILE MARK 1
BP1	BASE PAD MARK 1
SF1	STRIP FOOTING MARK 1
GB1	GROUND BEAM MARK 1
C1	CONCRETE COLUMN MARK 1
B1	CONCRETE BEAM MARK 1

UP1	CONCRETE UPSTAND MARK 1
PL1	CONCRETE PLINTH MARK 1
SC1	STEEL COLUMN MARK 1
SB1	STEEL BEAM MARK 1

1.10 CONTRACTOR'S ITEMS / DESIGN PORTION

CONTRACTORS ITEMS / DESIGN PORTION

No.	ITEM	REFERENCE	TIME UNDERTAKEN	CONFIRMATION TO
01	EXTENT OF EXISTING FOOTINGS TO PARTY BOUNDARY WALL AND INTERNAL WALLS TO BE CONFIRMED.	1. DEPTH AND MAKEUP OF EXISTING MASONRY WALL FOOTINGS UNKNOWN. OPENING UP WORKS REQUIRED FOR CONFIRMATION. CONTRACTOR TO MAKE ALLOWANCE FOR SOME IN HIS TENDER PRICE.	AT SITE START	BARDEN CHAPMAN ARCHITECT
02	CONNECTION DESIGN	1. STEEL TO STEEL CONNECTION DESIGN REQUIRED.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN
03	REBAR SCHEDULES	1. CONTRACTOR TO CONFIRM TO BARDEN CHAPMAN DATE REQUIRED.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN
04	PROPOSED STAIR CONSTRUCTION	1. STAIRS & LANDING DESIGN BY CONTRACTOR.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN
05	CERTIFICATES AND SAMPLES FOR RELEVANT BUILDING MATERIALS TO BE PROVIDED BY CONTRACTOR	1. CONTRACTOR TO PROVIDE CERTS/SAMPLES FOR READY MIXED CONCRETE, HOT ROLLED STEEL, TIMBER ROOF JOISTS, CUT & BENT REBAR. REFER TO RELEVANT BC SPECIFICATIONS.	ON RECIEPT	BARDEN CHAPMAN ARCHITECT
06	EXISTING & PROPOSED SERVICES	1. CONTRACTOR TO CONFIRM LOCATION OF ALL EXISTING SERVICES ON SITE PRIOR TO WORK COMMENCEMENT. CONTRACTOR TO NOTE ROUTE OF ALL PROPOSED SERVICES THROUGH GROUND BEAMS/FOUNDATIONS AND TO COORDINATE WITH BC.	AT SITE START	BARDEN CHAPMAN ARCHITECT
07	LOCAL AUTHORITY SERVICE CONNECTIONS	1. ALL LOCAL AUTHORITY SERVICE CONNECTIONS REQUIRED BY CONTRACTOR.	AT SITE START	BARDEN CHAPMAN ARCHITECT
08	FIRE PROTECTION TO STEELWORK	1. FIRE PROTECTION TO ALL STEELWORK BY CONTRACTOR.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN ARCHITECT
09	NON STRUCTURAL SCREED	1.DESIGN AND DETAIL OF ALL NON STRUCTURAL SCREED BY CONTRACTOR.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN ARCHITECT
10	BASEMENT WATERPROOFING	1.DESIGN AND DETAIL OF PROPOSED WATERPROOFING BY SUPPLIER.	28 DAYS PRIOR TO THIS ITEM OF WORK COMMENCING	BARDEN CHAPMAN ARCHITECT

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

ISSUE	DATE	DESCRIPTION	DRN.	ORIG.	CHK.
P1	27.03.20	ISSUED FOR COMMENT	BB	SMcL	DS

ISSUE STATUS: ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (0, 1, 2 etc.,)

Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
STRUCTURAL LEGEND

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	G-0000	P1

1. GENERAL NOTES FOR CONSTRUCTION

1.1. STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL PROJECT SPECIFICATIONS, ARCHITECT'S DRAWINGS, SERVICE ENGINEER'S DRAWINGS, AND OTHER RELEVANT DOCUMENTS.
1.2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND CO-ORDINATE ALL PROJECT DOCUMENTS PRIOR TO COMMENCEMENT OF WORK. IN THE EVENT OF A DISCREPANCY OR CLASH BETWEEN DRAWINGS, THE ENGINEER SHALL BE NOTIFIED BEFORE WORK PROCEEDS.
1.3. ANY DETAILS FOUND ON SITE THAT DIFFER FROM THOSE SHOWN ON THE DRAWINGS SHALL BE NOTIFIED TO THE ENGINEER IMMEDIATELY.
1.4. FIGURED DIMENSIONS ONLY SHALL BE USED. NO SCALING PERMITTED. ALL DIMENSIONS SHALL BE CHECKED ON SITE.
1.5. ALL SETTING OUT AND LEVELS INDICATED ON STRUCTURAL DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION/ FABRICATION UNLESS THEY HAVE BEEN CONFIRMED IN WRITING BY THE ARCHITECT.
1.6. REFER TO ARCHITECT'S DRAWINGS FOR THE FOLLOWING INFORMATION:
1.6.1. SETTING OUT OF GRIDLINES ON SITE.
1.6.2. SETTING OUT OF BUILDING ENVELOPE.
1.6.3. DETAILS OF REQUIRED SURFACE FINISHES, CHASES, AND ARISES.
1.6.4. ABOVE GROUND WATERPROOFING AND INSULATION DETAILS.
1.7. REFER TO SERVICE BUILDERSWORK DRAWINGS FOR THE FOLLOWING INFORMATION:
1.7.1. SETTING OUT AND DIMENSIONS OF ALL SERVICE OPENINGS.
1.7.2. CAST-IN SERVICES, SLEEVES AND FRAMES.
1.7.3. LOCATION AND DETAILS OF SUPPORTS AND PLINTHS FOR PLANT, BRACKETS FOR SUPPORTING SERVICES, ACCESS LADDERS AND PLATFORMS.
1.7.4. DETAILS AND SETTING OUT OF LIGHTNING PROTECTION.
1.7.5. DETAILS AND SETTING OUT OF EARTHING PITS.
1.8. REFER TO CONTRACTOR'S DRAWINGS FOR THE FOLLOWING INFORMATION:
1.8.1. TEMPORARY WORKS REQUIRED FOR MAINTAINING STRUCTURAL STABILITY DURING CONSTRUCTION.
1.8.2. CRANE AND HOIST LOCATIONS, TOGETHER WITH ASSOCIATED ACCESS PLATFORMS AND RESTRAINTS.
1.8.3. TEMPORARY ACCESS ROUTES FOR SITE OPERATIVES AND SITE VEHICLES.
1.8.4. ALLOCATED STORAGE AREAS FOR MATERIALS.
1.8.5. ALL BRACKETS, INSERTS, AND FIXINGS FOR CLADDING, LIFTS, LIFTING INSTALLATIONS ETC.
1.9. CONSTRUCTION METHODS, PROCEDURES, AND SEQUENCES ARE THE CONTRACTOR'S RESPONSIBILITY AND HE SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE SAFETY OF SITE OPERATIVES AND THE PUBLIC. THE CONTRACTOR SHALL MAINTAIN THE STRUCTURAL INTEGRITY OF ALL EXISTING AND NEW STRUCTURES WITHIN OR ADJOINING THE WORKS, AT ALL STAGES. THE CONTRACTOR'S TEMPORARY WORKS PROPOSALS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 2 WEEKS PRIOR TO WORK COMMENCING.
1.10. THE STRUCTURAL MEMBERS SHOWN ON DRAWINGS HAVE BEEN DESIGNED TO CARRY IN PLACE DESIGN LOADS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT OF ANY ADDITIONAL LOADS IMPOSED DURING CONSTRUCTION.
1.11. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. DETAILS OF ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 2 WEEKS PRIOR TO WORKS COMMENCING.
1.12. THE CONTRACTOR SHALL SUBMIT ALL MANUFACTURER'S DRAWINGS AND SPECIFICATIONS FOR EQUIPMENT SUPPORT, ANCHORAGE ETC. TO THE ENGINEER FOR REVIEW AT LEAST 2 WEEKS PRIOR TO PLACING AN ORDER FOR EQUIPMENT.
1.13. THE CONTRACTOR'S PROPOSED SUBSTITUTIONS, IF ANY, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 4 WEEKS PRIOR TO WORKS COMMENCING.
1.14. WHERE MATERIALS, PRODUCTS AND WORKMANSHIP ARE NOT FULLY DETAILED OR SPECIFIED THEY SHALL BE OF A STANDARD APPROPRIATE TO THE WORKS AND IN ACCORDANCE WITH GOOD BUILDING PRACTICE.
1.15. ALL ARTICLES, MATERIALS AND GOODS SHALL BE NEW AND OF GOOD QUALITY, SUITABLE FOR THE REQUIRED PURPOSE AND SHALL CONFORM TO THE APPROPRIATE BRITISH STANDARD, WHERE SUCH EXISTS. WHERE REFERENCES TO THE ABOVE ARE MADE, IT SHALL BE INFERRED THAT THE LATEST EDITION APPLIES, TOGETHER WITH SUBSEQUENT AMENDMENTS, UNLESS OTHERWISE SPECIFIED. ALL PROPRIETARY SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
1.16. NOTHING INCLUDED OR OMITTED ON THESE DRAWINGS SHALL RELIEVE THE CONTRACTOR OF HIS DUTY TO CARRY OUT THE WORKS IN ACCORDANCE WITH CURRENT STANDARDS OF SAFETY AND GOOD BUILDING PRACTICE.
1.17. THE CONTRACTOR SHALL INVITE THE BUILDING CONTROL OFFICER TO CARRY OUT HIS INSPECTIONS PRIOR TO COVERING UP OF STRUCTURAL ELEMENTS AND CONCRETING OF NEW FOUNDATIONS, SLABS ETC.

2. EXCAVATIONS

2.1. THE BASES OF ALL EXCAVATIONS ARE TO BE TAKEN DOWN TO THE LEVELS SPECIFIED ON THE ENGINEER'S DRAWINGS, OR OTHER INSTRUCTIONS, AND SHALL BE TO THE SATISFACTION OF THE ARCHITECT, ENGINEER AND BUILDING CONTROL OFFICER.
2.2. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL BE REMOVED FROM SITE.
2.3. THE SIDES OF EXCAVATIONS SHALL BE PROPERLY SUPPORTED AND RETAINED BY SUITABLE METHODS TO THE CONTRACTOR'S DESIGN. THE REMOVAL OF SUPPORT SHALL BE DONE IN SUCH A MANNER AS NOT TO ENDANGER THE WORKS AND SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR ENSURING THE STABILITY OF THE WORKS.
2.4. THE BASES OF ALL EXCAVATIONS SHALL BE CAREFULLY TRIMMED AND FINISHED TO THE SPECIFIED LEVELS AND ALL LOOSE MATERIALS REMOVED.
2.5. SHOULD THE EXCAVATED SURFACE BE CUT UP OR SOFTENED UNDER THE ACTION OF PONDED WATER OR BE BROKEN UP BY ANY CAUSE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, EXCAVATE & REMOVE SOIL DOWN TO SOLID FORMATION AND BACKFILL WITH CONCRETE OR FILL, AS SPECIFIED BY THE ENGINEER, PROPERLY CONSOLIDATED TO THE SPECIFIED LEVEL.
2.6. IF POOR GROUND, CAVITIES OR SOFT SPOTS ARE MET WITHIN ANY PART OF THE EXCAVATION, THE CONTRACTOR SHALL EXCAVATE TO SOLID FORMATION AND FILL UP TO THE SPECIFIED LEVEL WITH FILL OR CONCRETE, AS DIRECTED BY THE ENGINEER.
2.7. SHOULD THE CONTRACTOR EXCAVATE ANYWHERE TO A GREATER SIZE OR DEPTH SHOWN ON THE WORKING DRAWINGS, OR SHOULD THE SIDES OF THE EXCAVATION CAVE IN ANYWHERE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FILL AND TIGHTLY PACK THE EXCESS SPACE WITH CONCRETE OR OTHER APPROVED MATERIAL.
2.8. THE CONTRACTOR SHALL ENSURE THAT THE FORMATIONS ARE NOT DAMAGED. CONCRETE OR FILL SHALL BE PLACED ON THE SAME DAY THE EXCAVATION HAS TAKEN PLACE, UNLESS THE FOUNDATION IS BLINDED WITH CONCRETE OR OTHERWISE PROTECTED FROM DAMAGE, A LAYER OF 50 mm LEAN MIX BLINDING CONCRETE SHALL BE LAID ON PREPARED FORMATIONS UNDER CONCRETE BASES OR STRIP FOOTINGS.
2.9. THE ENGINEER SHALL BE INFORMED BEFORE ANY CONCRETE OR HARDCORE IS PLACED AND SHALL BE GIVEN THE OPPORTUNITY TO INSPECT THE BASE OF ALL EXCAVATIONS.
2.10. THE CONTRACTOR SHALL MAKE PROVISION FOR AND DEAL WITH ALL WATER WHICH MAY FIND ITS WAY INTO THE WORKS FROM ANY SOURCE WHATSOEVER AND SHALL EXCAVATE SUMPS, CUT DRAINS, PROVIDE & WORK PUMPS AND PROVIDE & WORK ALL NECESSARY MATERIALS, PLANT AND EQUIPMENT FOR DEALING WITH ANY WATER ENCOUNTERED.
2.11. THE CONTRACTOR SHALL NOT PUMP OR OTHERWISE PUT WATER DIRECTLY INTO ANY DRAIN.
2.12. WHERE REINFORCEMENT FOR CONCRETE CONSTRUCTION IS TO BE PLACED, A BLINDED LAYER OF C16/20 (50 mm THICK) CONCRETE SHALL BE LAID TO RECEIVE THE REINFORCEMENT.

3. UNDERPINNING

3.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT HIS OPERATIONS DO NOT IN ANY WAY IMPAIR THE SAFETY OR CONDITIONS OF THE EXISTING STRUCTURES. HE SHALL PROVIDE ANY TEMPORARY SUPPORTS REQUIRED FOR THIS PURPOSE, IN ADDITION TO ANY TEMPORARY SUPPORTS SHOWN ON THE ENGINEER'S DRAWINGS.
3.2. UNDERPINNING SHALL BE CARRIED OUT IN A 1,3,5,2,4 SEQUENCE AS INDICATED ON THE ENGINEER'S PLANS. IN NO CASE SHALL THE WIDTH OF SECTIONS EXCAVATED EXCEED 1000 mm. THE TOTAL SUM OF UNSUPPORTED LENGTHS SHALL NOT EXCEED ONE FIFTH OF THE WALL LENGTH. IN NO CASE SHALL A SECTION BE EXCAVATED IMMEDIATELY ADJACENT TO ONE WHICH HAS BEEN COMPLETED.
3.3. UNDERPINNING GREATER THAN A DEPTH OF 1.5 m SHALL BE CARRIED OUT IN SEPARATE LIFTS. EACH LIFT SHALL BE NOT GREATER THAN 1.5 m DEEP. THE LOWER BAYS SHALL BE STAGGERED WITH THOSE IMMEDIATELY ABOVE AND SHALL BE TIED TO ADJACENT HORIZONTAL AND VERTICAL BAYS WITH 4 x H20 BARS (600 mm LONG) PER INTERFACE.
3.4. THE UNDERSIDE OF EXISTING WALL FOOTINGS SHALL BE CLEANED AND HACKED FREE OF SOIL OR LOOSE MATERIAL, BEFORE CASTING OF CONCRETE COMMENCES.
3.5. CONSTRUCT BODY OF UNDERPIN USING (C30/37, WITH AC (TBC) ACEC CLASSIFICATION & DS (TBC) SULPHATE RESISTING CEMENT, MAX 20 mm AGGREGATE SIZE) CONCRETE. UNDERPINNING SHALL BE CAST IN SECTIONS, AS INDICATED ON THE ENGINEER'S DRAWINGS. EXCAVATION AND UNDERPINNING SHALL BE CARRIED OUT ON THE SAME DAY. UNCONCRETED SECTIONS SHALL BE KEPT COVERED TO PREVENT INGRESS OF WATER.
3.6. NEW CONCRETE UNDERPIN SECTIONS SHALL BE STOPPED 75 mm BELOW THE UNDERSIDE OF EXISTING FOOTINGS. FINAL PINNING UP TO THE WALL SHALL BE CARRIED OUT WITH 1:3 DRY PACK MORTAR WELL RAMMED IN, AS SOON AS UNDERPIN HAS SET HARD.
3.7. EXCAVATION OF ANY SECTION OF UNDERPINNING SHALL NOT BE COMMENCED UNTIL AT LEAST 48 HRS AFTER COMPLETION OF ANY ADJACENT SECTION OF WORK. ADJACENT UNDERPIN CONCRETE SECTIONS SHALL HAVE ATTAINED A MINIMUM STRENGTH OF 10 N/mm^2.
3.8. THE JOINT BETWEEN ADJACENT SECTIONS OF UNDERPINNING SHALL BE MADE BY FORMING A ROUGH SURFACE, AGAINST WHICH THE FIRST UNDERPIN SECTION IS CAST, WITH H20 DOWELS AT 300 mm CRS HAMMERED 300 mm INTO THE EXCAVATION FACE. ON CONSTRUCTION OF THE NEXT UNDERPIN SECTION, THE EXPOSED CONCRETE FACE AND PROJECTING DOWELS SHALL BE THOROUGHLY CLEANED BEFORE THE ADJACENT UNDERPIN IS CAST.

4. CAST IN-SITU CONCRETE

4.1. ALL CONCRETE SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL STRUCTURAL CONCRETE SPECIFICATION FOR BUILDINGS (NSCS), PUBLISHED BY THE CONCRETE SOCIETY AND MODIFIED BY THE PROJECT SPECIFICATION.
4.2. SCHEDULE OF CONCRETE STRENGTHS U.N.O. ON DRAWINGS:
4.2.1. BLINDING CONCRETE FOR FORMATIONS: DESIGNATED MIX GEN 1 TO BS EN 206 & BS 8500-2 WITH DS (TBC) DESIGN CLASS AND AC (TBC) ACEC CLASS.
4.2.2. REINFORCED CONCRETE 28 DAY STRENGTH:
ELEMENTS EXPOSED TO WEATHER C32/40
OTHER RC CONCRETE ELEMENTS C30/37
4.2.3. EXTERNAL SLABS WITH SURFACE EXPOSED TO WEATHER: DESIGNATED MIX PAV2 AIR-ENTRAINED CONCRETE MIX TO BS EN 206 & BS 8500-2.
4.2.4. ALL UNPROTECTED REINFORCED CONCRETE IN CONTACT WITH THE GROUND: DESIGNATED MIX C32/40 WITH DS (TBC) DESIGN CLASS AND AC (TBC) ACEC CLASS.
4.3. SCHEDULE OF MINIMUM COVER:
4.3.1. UNFORMED SURFACES OVER VAPOUR BARRIER: 50 mm
4.3.2. FORMED SURFACES EXPOSED TO EARTH: 40 mm
4.3.3. FORMED SURFACES EXPOSED TO WEATHER: 50 mm
4.3.4. FORMED SURFACES PROTECTED FROM WEATHER / EARTH - BEAMS, COLUMNS, SLABS: 30 mm U.N.O.
4.4. HIGH YIELD BARS (fy = 500) DEFORMED TYPE 2 TO BS 4449
MILD STEEL BARS (fy = 250)
PLAIN LAP LENGTHS TO BS EN 1992-1-1. BARS ≤ 32 mm DIAMETER.
C28/35 CONCRETE 'GOOD' BOND CONDITIONS

SLABS :	43 x BAR DIAMETER
BEAMS :	39 x BAR DIAMETER
COLUMNS:	51 x BAR DIAMETER
WALLS :	56 x BAR DIAMETER

NOTES:
1. IF BAR SIZE = 40 mm, REDUCE THE LAP LENGTH BY 8%
2. FOR GRADE 40 CONCRETE, REDUCE THE LAP LENGTH BY 10%
3. FOR 'POOR' BOND CONDITIONS E.G. TOP MAT REBAR IN BEAMS / SLABS > 250 mm DEEP, INCREASE THE LAP LENGTH BY 33% (BEAMS) OR 42% (SLABS)
4.5. CUBE TESTING REQUIREMENTS, FORMWORK AND CURING TIMES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
4.6. CONCRETE FINISHES:
UNLESS NOTED OTHERWISE, CONCRETE FINISHES SHALL BE TO BS EN 13670, WHERE FINISHES ARE CLASSED AS BASIC, ORDINARY, PLAIN & SPECIAL. FINISHES ON THIS PROJECT SHALL BE AS FOLLOWS:

4.6.1. FORMED FINISH FOR EXPOSED CONCRETE:	PLAIN FINISH
4.6.2. FORMED FINISH FOR UNEXPOSED CONCRETE:	ORDINARY FINISH
4.6.3. UNFORMED FINISH TO INTERNAL AREAS:	PLAIN FINISH
4.6.4. UNFORMED FINISH TO EXTERNAL AREAS:	ORDINARY FINISH

4.7. THE CONTRACTOR SHALL PROVIDE INFORMATION OF THEIR METHODS OF CONTROLLING THE CURING OF THE CONCRETE & SHALL DETAIL THESE IN A METHOD STATEMENT FOR SUBMISSION TO THE ENGINEER/ARCHITECT, IN ACCORDANCE WITH THE SPECIFICATION.
4.8. EXPOSED SLABS NOT RECEIVING ANY OTHER TREATMENT SHALL BE SURFACE SEALED WITH BASF `FEBCLEAR SUPER' (OR SIMILAR APPROVED), APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4.9. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED POURING SEQUENCE TO THE ENGINEER/ARCHITECT FOR REVIEW AT LEAST 2 WEEKS PRIOR TO THE PROPOSED 1ST POUR. THIS WILL INCLUDE PROPOSED CONSTRUCTION JOINTS; THE CONTRACTOR SHALL CHECK THE REQUIREMENTS IN THE CONCRETE SPECIFICATION. TYPICALLY, CONSTRUCTION JOINTS IN SUSPENDED BEAMS & SLABS WILL ONLY BE ACCEPTED AT 1/3 POINTS OF SPANS MAXIMUM. MAXIMUM LENGTH OF TIME BEFORE POURING AGAINST PREVIOUS WORK IS 4 DAYS.
4.10. THE CONTRACTOR IS TO NOTIFY THE ENGINEER/ARCHITECT 2 DAYS IN ADVANCE OF EACH CONCRETE POUR.
4.11. ALL CONCRETE FACES SHALL BE CAST AGAINST FORMWORK U.N.O.
4.12. ALL HOLDING DOWN BOLTS, BOLT BOXES AND CAST-IN PLATES SHALL BE DETAILED AND SUPPLIED BY THE STEELWORK SUB-CONTRACTOR AND CHECKED FOR POSITION BY THE STEELWORK SUB-CONTRACTOR, PRIOR TO BEING CAST IN PLACE BY THE CONCRETE SUB-CONTRACTOR.
4.13. REINFORCEMENT ESTIMATES ARE AS FOLLOWS:

FOUNDATIONS	175 kg/m³
WALLS	125 kg/m³
SLABS	130 kg/m³

4.14. BEAM REINFORCEMENT BASED ON OVERALL BEAM VOLUME (WITH BEAM DEPTH MEASURED FROM S.S.L. TO BEAM SOFFIT).
4.15. SLAB REINFORCEMENT BASED ON OVERALL BEAM VOLUME (WITH BEAM DEPTH MEASURED FROM S.S.L. TO BEAM SOFFIT)
4.16. THE ABOVE RATES MAKE NO ALLOWANCE FOR SUPPORT BARS, CHAIRS ETC. TO HOLD THE REBAR IN PLACE DURING CONCRETING OR SHEAR LINKS TO SLABS.
4.17. THE CONTRACTOR SHALL REFER TO ARCHITECT'S BUILDERSWORK DRAWINGS FOR DETAILED SETTING OUT OF EDGES, OPENINGS AND STAIRS.
4.18. FOR CORROSION PROTECTION, TOP COATS, FIRE PROOFING, FIRE STOPPING AND WATERPROOFING DETAILS, REFER TO ARCHITECT'S DRAWINGS AND SPECIFICATION.

5. STRUCTURAL STEEL

5.1. STRUCTURAL STEELWORK SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATION AND COMPLY WITH THE NATIONAL STRUCTURAL STEELWORK SPECIFICATION FOR BUILDING CONSTRUCTION, LATEST EDITION, PUBLISHED BY BCSA/SCI, AS MODIFIED BY THE PROJECT NOTES AND SPECIFICATIONS.
5.2. UNLESS NOTED OTHERWISE ON THE DRAWINGS, STEEL SHALL BE GRADE S355 WELDABLE STRUCTURAL STEEL TO BS EN 10025 & 10210 (LATEST EDITION). BOLTS, NUTS ETC. SHALL BE GRADE 8.8 TO BS 3692:2001.
5.3. CONNECTIONS:
THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL CONNECTIONS, INCLUDING BASE PLATES. CONNECTIONS SHOWN ARE INDICATIVE ONLY. CONNECTIONS SHALL BE DESIGNED FOR FORCES & MOMENTS SHOWN ON THE DRAWINGS. CALCULATIONS & JOINT DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW 2 WEEKS PRIOR TO FABRICATION. BOLTS IN DIRECT TENSION TO BE FITTED WITH LOCK NUTS. ALL CONNECTIONS TO BE DESIGNED FOR 75 kN (+OR-) AXIAL & 75 kN SHEAR MINIMUM (ULTIMATE LOADS). BASE PLATE CONNECTIONS TO BE DESIGNED FOR A LATERAL LOAD EQUAL TO 2.5% OF THE AXIAL COLUMN LOAD. FOR LARGE LATERAL LOAD SITUATIONS ON BASE PLATES, THE BASE PLATE IS TO BE PROVIDED WITH A SHEAR KEY OR TO BE CAST INTO A SHALLOW POCKET IN THE FOUNDATION. WHERE CONNECTIONS ARE DETAILED ON THE DRAWINGS, THE CONTRACTOR IS TO CONFIRM HIS ACCEPTANCE OF THESE DETAILS IN WRITING PRIOR TO THE START OF FABRICATION.
5.4. CORROSION PROTECTION:
5.4.1. INTERNAL ENVIRONMENT:
ALL INTERNAL STEELWORK SHALL BE PROTECTED AGAINST CORROSION AS FOLLOWS: (SEE ALSO SPECIFICATION FOR FURTHER GALVANIZING DETAILS):
A - SHOT BLAST TO SA 2 1/2.
B - WITHIN 2 HOURS OF SHOT BLASTING APPLY 2 PACK EPOXY ZINC PHOSPHATE PREFABRICATION PRIMER TO 20 MICRONS DFT.
C - POST FABRICATION CLEAN DOWN AND SPOT PRIME ALL AREAS OF BARE METAL WITH PREFABRICATION PRIMER.
D - APPLY TO THE CLEAN DRY SURFACE 1 COAT OF 2 PACK EPOXY HIGH BUILD ZINC PHOSPHATE PRIMER TO A DRY FILM THICKNESS OF 75 MICRONS. ALLOW 7 DAYS TO ACHIEVE MAXIMUM HARDNESS BEFORE DISPATCH TO SITE.
E - AFTER ERECTION, PREPARE AND CAREFULLY SPOT PRIME ALL DAMAGED AREAS AND BOLT HEADS ETC. WITH PRIMER.
F - APPLY DECORATIVE PAINT FINISH WHERE REQUIRED BY THE ARCHITECT. THE DECORATIVE PAINT SYSTEM USED SHALL BE COMPATIBLE WITH THE UNDERLYING PAINT SYSTEM.
5.4.2. EXTERNAL STEELWORK:
A - ALL EXTERNAL STEELWORK SHALL BE PROTECTED AGAINST CORROSION AS FOLLOWS: (SEE SPECIFICATION FOR FURTHER DETAILS):
B - BLAST CLEAN TO SA2 FOR ROUGHNESS, USING GALVANIZING CHILLED IRON GRIT GRADE G24.
C - HOT DIP GALVANIZED TO BS EN ISO 1461:2009 TO ACHIEVE 90 MICRON DFT. (NOTE: NO FURTHER DRILLING/FABRICATION OF STEELWORK TO BE CARRIED OUT AFTER GALVANIZING).
D - NOTE: ALL BOLTS, FASTENINGS ETC. FOR GALVANIZED STEELWORK SHALL BE GALVANIZED AND GIVEN THE SAME PAINT BUILD UP AS FOR GALVANIZED MEMBERS.
5.5. SHOP DRAWINGS:
THE CONTRACTOR SHALL SUBMIT FULL WORKSHOP DRAWINGS FOR ALL STRUCTURAL STEELWORK MEMBERS TO THE ENGINEER FOR REVIEW AT LEAST 4 WEEKS PRIOR TO FABRICATION.
5.6. FIRE PROTECTION:
ALL STRUCTURAL STEEL SHALL ACHIEVE FIRE PROTECTION AS REQUIRED IN THE FIRE CERTIFICATE BY 75 mm CONCRETE ENCASEMENT, INTUMESCENT PAINT SYSTEM OR ANOTHER APPROVED DURABLE SYSTEM. EXACT DETAILS OF THE FIRE PROTECTION SYSTEM TO BE SUBMITTED TO THE DESIGN TEAM 2 WEEKS PRIOR TO STEELWORK FABRICATION. INTUMESCENT PAINT SYSTEMS SHALL BE COMPATIBLE WITH THE PRIMER.
5.7. WELD TESTS ARE REQUIRED FOR ALL SITE / SHOP WELDS AND SHALL BE CARRIED OUT IN ACCORDANCE WITH THE STEELWORK SPECIFICATION.
5.8. SITE WELDING OR SITE CUTTING OF STEELWORK WILL ONLY BE ALLOWED WITH THE EXPRESS APPROVAL OF THE ENGINEER. SITE WELDED CONNECTIONS DESIGNATED BY THE ENGINEER SHALL BE SUBJECT TO ULTRA-SONIC WELD TESTING. REFER TO STEELWORK SPECIFICATION FOR DETAILS.
5.9. NON-SHRINK GROUT BENEATH ALL STEEL BEAM BEARINGS, STEEL BASE PLATES OR PRECAST ELEMENTS TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 60 N/mm².
5.10. WHERE ANY STAINLESS STEEL BRICKWORK SUPPORT ANGLES, PROPRIETARY STAINLESS STEEL MASONRY SUPPORT SYSTEMS OR STAINLESS STEEL FABRICATED ELEMENTS ARE PROVIDED, THESE ARE TO BE INSULATED FROM ALL MILD STEEL ELEMENTS USING NON-CONDUCTIVE WATERPROOF GASKETS AND NYLON OR TEFLON WASHERS & BRUSHES.
5.11. REFER TO MASONRY NOTES FOR BLOCKWORK WALL RESTRAINT DETAILS.
5.12. THE STEEL FABRICATOR SHALL INSPECT THE PREPARED FOUNDATIONS AND HOLDING DOWN BOLTS FOR POSITION AND LEVEL NOT LESS THAN 7 DAYS BEFORE ERECTION OF STEELWORK STARTS. HE SHALL THEN NOTIFY THE ENGINEER IF HE FINDS ANY DISCREPANCIES, WHICH ARE OUTSIDE THE DEVIATIONS SPECIFIED IN THE NATIONAL STRUCTURES STEELWORK SPECIFICATION.
5.13. THE CONTRACTOR SHALL ALLOW FOR COORDINATION WITH OTHER CONTRACTORS WHOSE WORK INTERFACES WITH THE STEEL FRAME.
5.14. ALL STEELWORK SET OUT IS TO THE CENTROID OF THE SECTION, U.N.O.

6. TIMBER

6.1. STRUCTURAL TIMBER SHALL MEET THE REQUIREMENTS OF BS EN 338, BS EN 1912 AND THE PROJECT SPECIFICATION. THE TIMBER SHALL BE STRESS GRADED AND MARKED TO BS 4978. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TIMBER THAT MEETS THE REQUIREMENTS OF THIS SPECIFICATION.
6.2. STRUCTURAL TIMBER TO BE GRADE C24, UNLESS NOTED OTHERWISE.
6.3. NO TIMBER SHOWING SIGNS OF DECAY OR INSECT ATTACK SHALL BE USED. NO TIMBER WHICH COULD HAVE COME INTO CONTACT WITH SUCH INFECTED TIMBERS SHALL BE USED.
6.4. PRESERVATION WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH BS 8417. DOUBLE VACUUM TREATMENT WITH ORGANIC SOLVENT PRESERVATIVES TO BE USED. ALL PRESERVATIVES TO ARCHITECT'S APPROVAL.
6.5. ALL MATERIALS AND FIXINGS SHALL BE PROTECTED FROM THE WEATHER.
6.6. NAILS, FIXINGS AND METAL CLIPS TO BE HOT DIPPED GALVANISED, SHERADISED OR ELECTRO-GALVANISED POST-FABRICATION. THE MINIMUM THICKNESS OF METAL SHALL BE 1.8mm. NAILS, FIXINGS AND METAL CLIPS SHALL BE IN ACCORDANCE WITH THE LATEST BRITISH STANDARDS.
6.7. RESTRAINT STRAPS TO BE PROVIDED AT SPACINGS AND LENGTH INDICATED ON DRAWINGS. ALL RESTRAINT STRAPS SHALL BE IN ACCORDANCE WITH BS EN 845.
6.8. PROVIDE NOGGINS MIN. 38mm THICK AND AT LEAST THREE QUARTERS OF DEPTH OF JOIST ALONG LINES OF SUPPORT AND MIDSPANS. FOR SPANS GREATER THAN 4500mm, PROVIDE NOGGINS AT 1/3 AND 2/3 POINTS.
6.9. DOUBLE UP JOISTS UNDER NEW PARTITIONS RUNNING PARALLEL TO THE JOIST SPAN AND BOLT TOGETHER WITH M12 BOLTS AT 600mm CRS WITH OVERSIZE WASHERS.
6.10. FOR PARTITIONS RUNNING PERPENDICULAR TO THE JOIST SPAN, PROVIDE SOLID NOGGINS UNDER NEW PARTITION BASE RAIL.
6.11. TRIMMERS TO STRUCTURAL OPENINGS SHALL BE JOINTED TO TRIMMING JOISTS WITH JOIST HANGERS TO BS EN 845, UNLESS NOTED OTHERWISE.
6.12. NO NOTCHING OF JOISTS SHALL OCCUR WITHOUT PRIOR WRITTEN APPROVAL FROM BCCE.
6.13. TIMBERS SHOULD BE SUPPORTED ON AN EVEN BED AT BEARINGS. PACKING, IF REQUIRED, SHOULD BE PROVIDED UNDER THE FULL AREA OF THE BEARING AND BE APPROVED BY BCCE.

7. MASONRY

7.1. ALL MASONRY SHALL BE DESIGNED IN ACCORDANCE WITH BS EN 1996-1, BS EN 1996-2 AND THE PROJECT SPECIFICATION.
7.2. ALL MATERIALS FOR MASONRY ANCILLARY ITEMS SHALL BE GALVANISED OR STAINLESS STEEL, IN ACCORDANCE WITH BS EN 1996-2.
7.3. BLOCKWORK SHALL BE IN ACCORDANCE WITH BS EN 771-3. MINIMUM COMPRESSIVE STRENGTH = 7.3 N/mm^2 U.N.O. MINIMUM NET DRY DENSITY = 2000 kg/m^3 U.N.O.
7.4. BRICKWORK SHALL BE IN ACCORDANCE WITH BS EN 771-3 AND SHALL BE STANDARD FORMAT BRICKS. MINIMUM COMPRESSIVE STRENGTH = 20.0 N/mm^2 U.N.O. MINIMUM NET DRY DENSITY = 1740 kg/m^3 U.N.O.
7.5. MASONRY DENSITIES ARE SUBJECT TO AGREEMENT WITH THE ENGINEER, ARCHITECT & ACOUSTIC CONSULTANT. LIGHTWEIGHT MASONRY SHALL NOT BE USED WITHOUT PRIOR WRITTEN APPROVAL FROM THE DESIGN TEAM.
7.6. U.N.O. WALL SETTING OUT AND THICKNESSES ARE AS SHOWN ON ARCHITECTURAL DRAWINGS AND MUST BE READ IN CONJUNCTION WITH THE ARCHITECT'S SPECIFICATION.
7.7. WALL TIES SHALL BE TYPE 2 U.N.O. IN ACCORDANCE WITH PD 6697 & STAINLESS STEEL IN ACCORDANCE WITH BS EN 845-1. TIES SHALL HAVE MINIMUM 50 mm EMBEDMENT WITH MINIMUM 800 N TENSILE CAPACITY & MINIMUM 1300 N COMPRESSIVE CAPACITY. TIES SHALL BE SPACED AT 450 mm CRS VERTICALLY & 750 mm CRS STAGGERED HORIZONTALLY U.N.O. AT OPENINGS, TIES SHALL BE SPACED AT 225 mm FROM THE EDGE OF THE OPENING AND AT 300 mm CRS VERTICALLY U.N.O.
7.8. ANCON IHR - B SLIDING HEAD RESTRAINT TIES (OR SIMILAR APPROVED) SHALL BE PROVIDED AT 450 mm CRS AT THE HEAD OF MASONRY WALLS. VERTICAL RESTRAINT SHALL BE ANCON TIES (OR SIMILAR APPROVED) AT 450 mm CRS WHERE MASONRY IS SECURED TO VERTICAL COLUMNS WITH DEBONDED SLEEVES.
7.9. ALL NEW MASONRY AND REPAIR MASONRY TO EXISTING STRUCTURES SHALL BE MATCHED IN COLOUR, TEXTURE AND DIMENSIONS AND LAID IN THE SAME BOND PATTERN AS THE REMAINING STRUCTURE, UNLESS OTHERWISE SPECIFIED BY THE ARCHITECT.
7.10. ALL NEW MASONRY, REPAIR MASONRY AND REPOINTING TO EXISTING STRUCTURES SHALL BE LAID IN A MINIMUM 1:2:9 CEMENT:LIME:SAND MORTAR.
7.11. REPOINTING: RAKE OUT AND REPOINT JOINTS TO MINIMUM DEPTH OF 40 mm OR UNTIL LOOSE MORTAR HAS BEEN REMOVED.
7.12. NEW BRICKS BELOW DPC SHALL BE CLASS B ENGINEERING BRICK SETS IN 1:3 CEM SAND MORTAR WITH SRPC MORTAR. BLOCKWORK SHALL BE LAID IN GRADE (1:1:6) MORTAR ABOVE GROUND AND GRADE (1:4) CEM SAND MORTAR WITH SRPC MORTAR WHERE BURIED.
7.13. DRY PACK SHALL BE 1:3 CEMENT: COARSE SAND, OF MINIMUM THICKNESS 75 mm. DRY PACK SHALL BE WELL RAMMED IN.
7.14. STAINLESS STEEL BED JOINT REINFORCEMENT SHALL BE PROVIDED IN TWO COURSES ABOVE AND BELOW NEW OPENINGS IN SOLID MASONRY U.N.O. MINIMUM CROSS SECTIONAL AREA SHALL BE 49 mm² PER m WIDTH U.N.O.
7.15. WHERE NEW MASONRY CONSTRUCTION ABUTS EXISTING MASONRY CONSTRUCTION, EXISTING MASONRY SHALL BE PLASTERED WITH A SCUD AND FAIRING COAT. STAINLESS STEEL STAIFIX CHANNELS (OR SIMILAR APPROVED) AND DOVETAIL SLOTS AT 450 mm CRS SHALL BE FIXED TO THE EXISTING WALL AS STARTERS FOR EACH NEW LEAF OF MASONRY.
7.16. LINTELS IN MASONRY WALLS SHALL BE PROPRIETARY PRE-STRESSED CONCRETE LINTELS OR GALVANISED PRESSED STEEL LINTELS, USED IN ACCORDANCE WITH MANUFACTURER'S DETAILS AND TO MANUFACTURER'S SAFE WORKING LOADS. LINTEL PROPPING DURING CONSTRUCTION & BEARING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S DETAILS & RECOMMENDATIONS. ALL LINTELS SHALL HAVE MINIMUM 1 HR FIRE RESISTANCE.
7.17. THE CONTRACTOR SHALL ENSURE THAT ALL LINTELS PROVIDED MATCH THE REQUIRED EXTERNAL WALL FINISHES. E.G. - PRECAST LINTELS SHALL NOT BE PROVIDED IN EXPOSED BRICKWORK EXTERNAL LEAF.

8. TEMPORARY WORKS

8.1. THE CONTRACTOR IS ENTIRELY RESPONSIBLE FOR MAINTAINING THE STABILITY OF ALL EXISTING BUILDINGS AND STRUCTURES WITHIN AND ADJACENT TO THE WORKS AND OF ALL PROPOSED WORKS FROM THE DATE OF POSSESSION TO PRACTICAL COMPLETION OF THE WORKS.
8.2. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL NECESSARY TEMPORARY WORKS FOR THE DURATION OF THE PROJECT. PARTICULAR ATTENTION SHOULD BE GIVEN TO THE BEARING OF TEMPORARY PROPS.
8.3. BEFORE WORK COMMENCES, THE CONTRACTOR SHALL SUBMIT AT LEAST 2 WEEKS IN ADVANCE, DETAILED METHOD STATEMENTS AND TEMPORARY WORKS SEQUENCES IN ACCORDANCE WITH THE RELEVANT CODES AND SPECIFICATIONS FOR THE FOLLOWING ITEMS:
A. TEMPORARY WORKS SUPPORT TO EXISTING PARTY WALL.

9. DEMOLITION

9.1. THE CONTRACTOR IS RESPONSIBLE FOR THE DEVELOPMENT OF ALL DEMOLITION SEQUENCES AND METHOD STATEMENTS. DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 2 WEEKS PRIOR TO COMMENCEMENT OF WORKS.
9.2. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, DETAIL AND INSTALLATION OF ALL TEMPORARY WORKS, TO THE STRUCTURAL PERFORMANCE REQUIREMENTS INDICATED ON THE DRAWINGS & SPECIFICATIONS.
9.3. ALL TEMPORARY PROPPING ON THE ENGINEER'S DRAWINGS IS INDICATED AS A GUIDE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND MAINTENANCE OF ALL TEMPORARY WORKS.
9.4. TEMPORARY PROPPING MUST REMAIN IN PLACE UNTIL THE PERMANENT STRUCTURE IS SUFFICIENTLY ADVANCED TO PROVIDE EFFECTIVE SUPPORT. THIS MUST BE AGREED WITH THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STABILITY OF ALL STRUCTURES TO BE LEFT IN PLACE.
9.5. THE CONTRACTOR SHALL ONLY DEMOLISH EXISTING STRUCTURES TO THE EXTENT INDICATED ON THE DRAWINGS. UNDER NO CIRCUMSTANCES SHALL ADDITIONAL STRUCTURE BE REMOVED WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER. WHEN SAW CUTTING EXISTING STRUCTURES FOR REMOVAL, DO NOT OVER CUT AT CORNERS.
9.6. NO DEMOLITION WORKS SHALL COMMENCE ON SITE UNTIL THE CONTRACTOR'S METHOD STATEMENTS HAVE BEEN SUBMITTED TO THE ENGINEER FOR REVIEW.
9.7. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS AND LICENSES FOR CARRYING OUT THE WORKS INCLUDING SCAFFOLD LICENSES ETC.
9.8. ANY LIMITS ON WORKING HOURS WITH RESPECT TO NOISE SHALL BE STRICTLY OBSERVED AND ARE SUBJECT TO LOCAL AUTHORITY GUIDELINES.
9.9. DEMOLITION SHALL COMMENCE AT THE UPPER LEVELS AND PROGRESS IN A SAFE CONTROLLED MANNER DOWN THROUGH THE BUILDING TO A SEQUENCE AGREED WITH BCCE.
9.10. DEMOLISHED MATERIAL SHALL BE PROMPTLY DISCHARGED FROM SITE. NO MATERIAL SHALL BE ALLOWED TO ACCUMULATE ON THE FLOORS, STAIR FLIGHTS OR LANDINGS.
9.11. WHEN DEMOLISHING LARGE ELEMENTS, THE ITEM BEING REMOVED SHALL BE TEMPORARILY SUPPORTED UNTIL IT IS COMPLETELY SEVERED FROM THE MAIN STRUCTURE AND SHALL THEN BE CAREFULLY LOWERED. IT IS NOT PERMITTED TO ALLOW LARGE ELEMENTS TO FREEFALL.

10. FOUNDATIONS

10.1. ALL FOUNDATIONS SHALL BE EXCAVATED TO FORMATIONS WITH A SAFE BEARING CAPACITY OF TBC kN/m2 U.N.O. THE BUILDING CONTROL OFFICER, ARCHITECT AND ENGINEER SHALL BE INVITED TO INSPECT THE FORMATION OF ALL FOUNDATIONS.
10.2. IF A SUITABLE BEARING STRATUM IS NOT FOUND AT THE DEPTH/LEVEL INDICATED ON THE DRAWINGS, EXCAVATION SHALL BE TAKEN DEEPER AS DIRECTED BY THE ENGINEER.
10.3. ALL FOUNDATIONS TO BE FORMED UNLESS THE ENGINEER APPROVES THE USE OF SOIL AS SHUTTER.
10.4. PRIOR TO COMMENCING ANY EXCAVATIONS ADJACENT TO EXISTING STRUCTURES, THE FORMATION LEVEL OF ALL EXISTING FOUNDATIONS SHALL BE CONFIRMED.
10.5. ALL EXISTING DRAINAGE AND SERVICES SHALL BE EXPOSED LOCALLY AT THE LOCATION OF NEW FOUNDATIONS TO VERIFY EXACT LOCATION AND DEPTH.
10.6. EXISTING FOUNDATIONS SHALL NOT BE UNDERMINED BY NEW EXCAVATIONS UNLESS PERMITTED BY THE ENGINEER.
10.7. ALL BASES SHALL BE SYMMETRICAL ABOUT COLUMNS U.N.O.
10.8. ALL BACKFILLING TO BE D.O.T. TYPE 1 FULLY COMPACTED IN 150 mm THICK LAYERS. RECOMPACTED CLAY AND OTHER DUG MATERIAL IS NOT PERMITTED BELOW NEW SLABS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

ISSUE	DATE	DESCRIPTION	DRN / ORIG	P.E. / P.D.
P1	27.03.20	ISSUED FOR COMMENT	BB / SMcL	SMcL / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

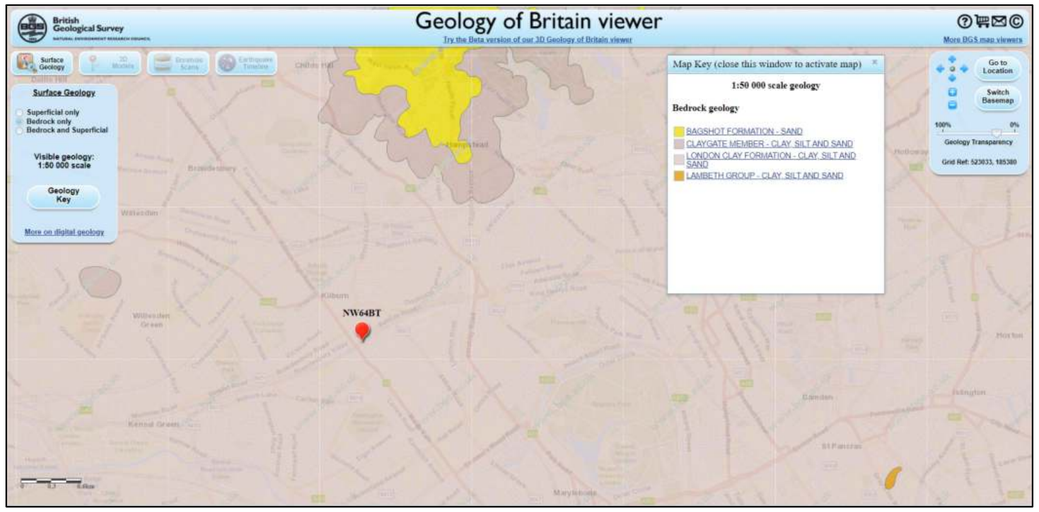
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
GENERAL NOTES SHEET 1

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	G-0001	P1

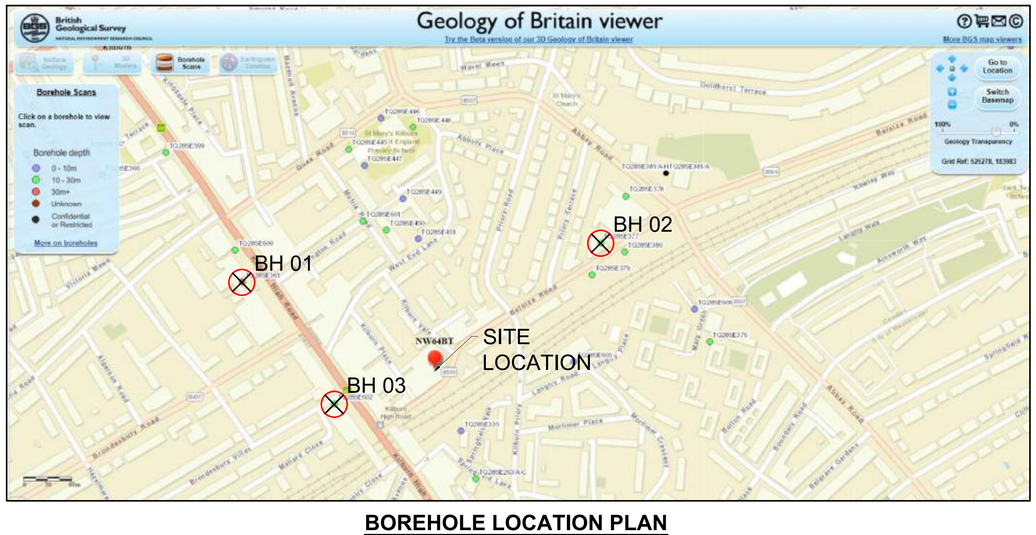


BEDROCK GEOLOGY PLAN

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.

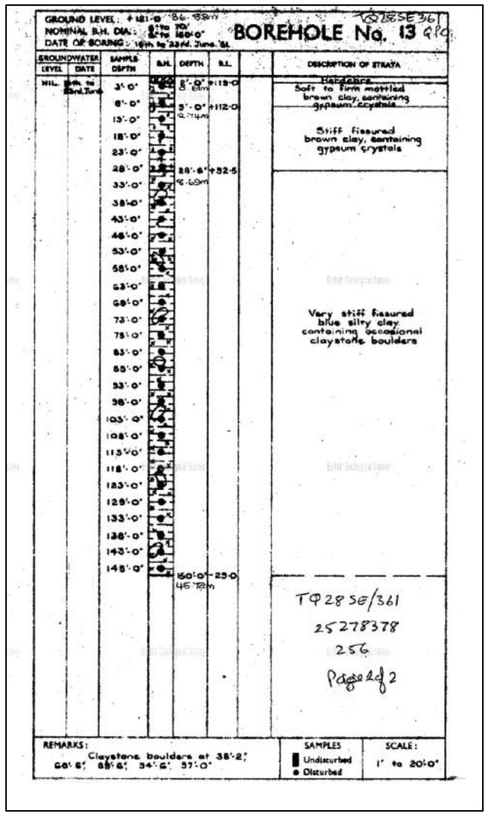
SUPERFICIAL GEOLOGY PLAN

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.



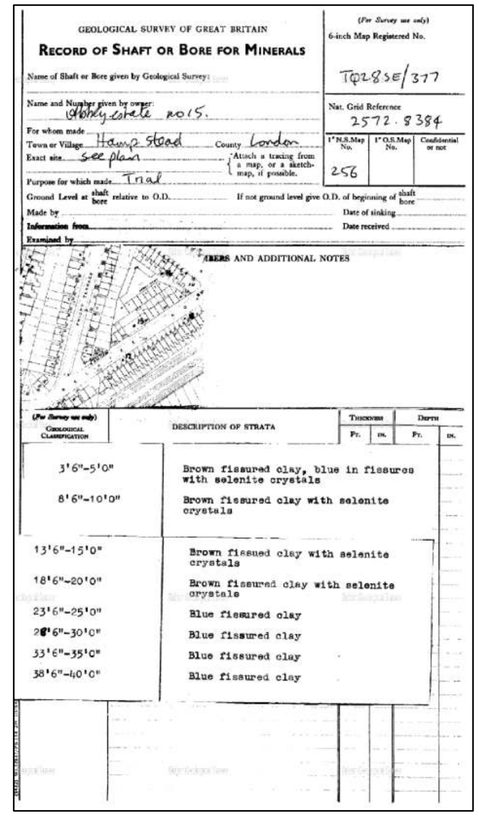
BOREHOLE LOCATION PLAN

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.



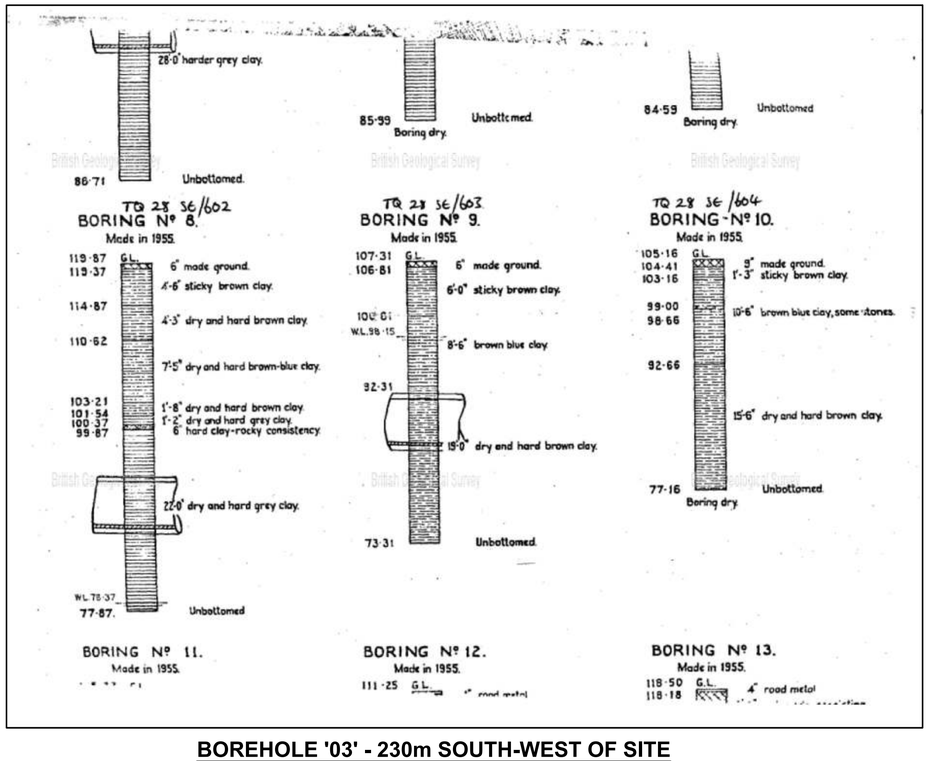
BOREHOLE '01' - 320m WEST OF SITE

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.



BOREHOLE '02' - 150m NORTH-EAST OF SITE

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.



BOREHOLE '03' - 230m SOUTH-WEST OF SITE

SCALE @ A1: N.T.S.
SCALE @ A3: N.T.S.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

ISSUE	DATE	DESCRIPTION	DRN. / ORIG.	P.E. / P.D.
P1	27.03.20	ISSUED FOR COMMENT	BB / SMcL / SMcL	DB

ISSUE STATUS: ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

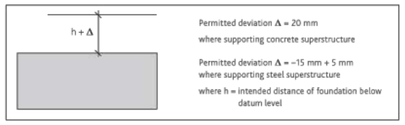
PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
BGS GROUND PROFILE INFORMATION

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	G-0003	P1

1. OVERALL STRUCTURE

1.1. INCLINATION



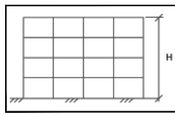
Permitted deviation Δ = 20 mm
where supporting concrete superstructure

Permitted deviation Δ = −15 mm + 5 mm
where supporting steel superstructure
where h = intended distance of foundation below datum level

Foundation bolts and similar inserts

Note: Deviations are coordinated with BS EN 1090–2: 2008 Cl. D.2.20.

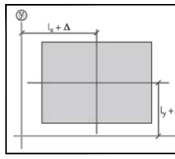
1.2. LEVEL



Permitted deviation Δ for
H ≤ 10 m = 15 mm
10 m < H < 100 m = 0.5(H + 20) mm
H ≥ 100 m = 0.2(H + 200) mm
where H = sum of the intended storey heights in m

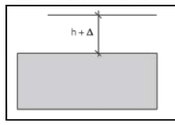
2. BASE SUPPORT (FOUNDATIONS)

2.1. PLAN SECTION



Permitted deviation Δ = 25 mm
where l_x = intended position in the x direction
l_y = intended position in the y direction

2.2. VERTICAL SECTION

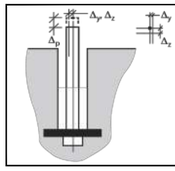


Permitted deviation Δ = 20 mm
where supporting concrete superstructure

Permitted deviation Δ = −15 mm + 5 mm
where supporting steel superstructure
where h = intended distance of foundation below datum level

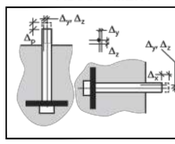
3. FOUNDATION BOLTS AND SIMILAR INSERTS

3.1. PRESET BOLT PREPARED FOR ADJUSTMENT



- Distance of centre of a bolt group from intended design position
  Permitted deviation = 6 mm
- Location of bolt at tip, from centre of bolt group
  Permitted deviation Δ_y, Δ_z = 10 mm
- Protrusion
  Permitted deviation Δ_y: −5 mm ≤ Δ_y ≤ 25 mm

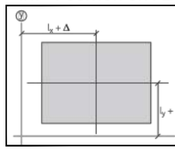
3.2. PRESET FOUNDATION BOLT NOT PREPARED FOR ADJUSTMENT



- Distance of centre of a bolt group from intended design position
  Permitted deviation = 3 mm
- Location of bolt at tip, from centre of bolt group
  Permitted deviation Δ_y, Δ_z = 3 mm
- Vertical protrusion
  Permitted deviation Δ_y: −5 mm ≤ Δ_y ≤ 45 mm
- Horizontal protrusion
  Permitted deviation Δ_z: −5 mm ≤ Δ_z ≤ 45 mm

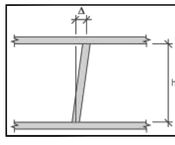
4. ELEMENTS - COLUMNS AND WALLS

4.1. POSITION ON PLAN



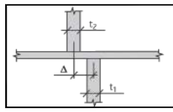
Permitted deviation Δ = 10 mm
where l = distance to centreline from grid line

4.2. VERTICALLY BY STOREY OF THE STRUCTURE



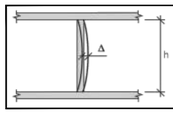
Permitted deviation Δ for
h ≤ 10 m = the larger of 15 mm or h/400
h > 10 m = the larger of 25 mm or h/600
where h = height of element in mm

4.3. OFFSET BETWEEN FLOORS



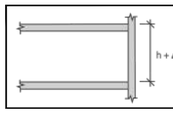
Permitted deviation Δ = the larger of
10 mm or t/30 mm, but not more than 20 mm
where t = thickness in mm = $(t_1 + t_2) / 2$

4.4. CURVATURE BETWEEN ADJACENT FLOORS



Permitted deviation Δ for
h ≤ 10 m = the larger of 15 mm or h/400
h > 10 m = the larger of 25 mm or h/600
where h = height of element in mm

4.5. LEVEL PER STOREY OF STRUCTURE



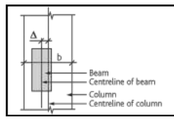
Permitted deviation Δ = 10 mm
where h = storey height in mm

4.6. DISTANCE BETWEEN ADJACENT COLUMNS AND WALLS

Permitted deviation Δ = the larger of
20 mm or l/600 mm, but not more than 40 mm
where l = distance between centrelines in mm

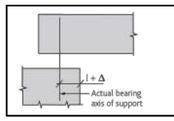
5. ELEMENTS - BEAMS AND SLABS

5.1. LOCATION OF BEAM TO COLUMN CONNECTION



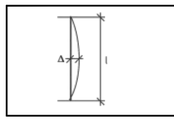
Permitted deviation Δ = the larger of
20 mm or b/30 mm
where b = dimension of column in the same direction as Δ in mm

5.2. POSITION OF BEARING AXIS OF SUPPORT



Permitted deviation Δ = the larger of
15 mm or l/20 mm
where l = intended distance from edge in mm

5.3. STRAIGHTNESS OF BEAMS

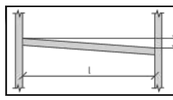


Permitted deviation Δ = the larger of
15 mm or l/600 mm
where l = distance between supports

5.4. DISTANCE BETWEEN ADJACENT BEAMS

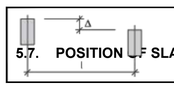
Permitted deviation Δ = the larger of
20 mm or l/600 mm, but not more than 40 mm
where l = distance between support centrelines in mm

5.5. INCLINATION OF BEAM OR SLAB



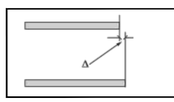
Permitted deviation Δ = (10 + l/500) mm
where l = span of element in mm

5.6. LEVEL OF ADJACENT BEAMS



Permitted deviation Δ = (10 + l/500) mm
where l = distance between support centrelines in mm

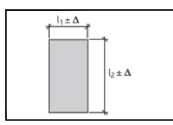
5.7. POSITION OF SLAB EDGE



Permitted deviation Δ = 10 mm

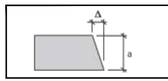
6. SECTION OF ELEMENTS

6.1. CROSS-SECTION DIMENSION OF ELEMENTS



Permitted deviation Δ – for
l ≤ 150 mm = 10 mm
l = 400 mm = 15 mm
l ≥ 2500 mm = 30 mm
with linear interpolation for intermediate values
where l_1, l_2 = intended dimensions

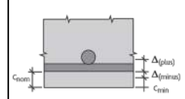
6.2. SQUARENESS OF ELEMENT



Permitted deviation Δ = the larger of
10 mm or a/25 mm, but not more than 20 mm
where a = length in mm

7. POSITION OF REINFORCEMENT WITHIN ELEMENTS

7.1. LOCATION OF REINFORCEMENT



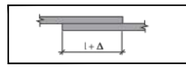
Permitted deviation $\Delta_{(plus)}$ for
h ≤ 150 mm = +10 mm
h = 400 mm = +15 mm
h ≥ 2500 mm = +20 mm

Permitted deviation $\Delta_{(minus)}$ = 10 mm

where c_{min} = required minimum cover
c_{nom} = nominal cover given on drawings
Δ = permitted deviation from c_{nom}
h = height of cross section

For foundations and members in foundations, permitted plus-deviations maybe increased by 15 mm. The given minus-deviations apply.

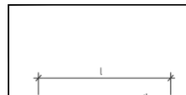
7.2. LENGTH OF REINFORCEMENT LAP JOINTS



Permitted minus-deviation Δ = 0.06l mm
where l = intended lap length in mm

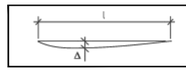
8. SURFACE STRAIGHTNESS

8.1. FLATNESS



- Basic unformed surface (Cl. 8.6.2.1)
  Permitted global deviation Δ = 12 mm
  Permitted local deviation Δ = 5 mm
- Ordinary unformed surface (Cl. 8.6.2.2)
  Permitted global deviation Δ = 9 mm
  Permitted local deviation Δ = 3 mm
- Ordinary surfaces (Cl. 8.6.1.2)
  Permitted global deviation Δ = 9 mm
  Permitted local deviation Δ = 5 mm
- Plain surfaces (Cl. 8.6.1.3)
  Permitted global deviation Δ = 9 mm
  Permitted local deviation Δ = 3 mm

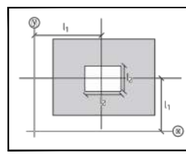
8.2. EDGE STRAIGHTNESS



Permitted deviation Δ for
l < 1 m = 8 mm
l > 1 m = 8 mm/m, but no greater than 20 mm
where l = length of edge

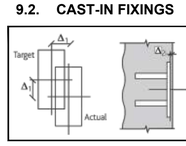
9. HOLES AND FIXINGS

9.1. HOLES



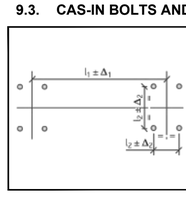
- Position
  Permitted deviation Δ_1 = 10 mm
  where l_1 = intended distance to centre line
- Size
  Permitted deviation Δ_2 =
  l_2 ≤ 150 mm = 6 mm
  l_2 = 400 mm = 15 mm
  l_2 ≥ 2500 mm = 30 mm
  with linear interpolation for intermediate values
  where l_2 = intended dimension

9.2. CAST-IN FIXINGS



- Deviation in plane
  Permitted deviation Δ_1 = 10 mm
- Deviation in depth
  Permitted deviation Δ_2 = 10 mm

9.3. CAS-IN BOLTS AND SIMILAR FIXINGS



- Location of fixing or groups relative to the intended design position
  Permitted deviation Δ_1 = 6 mm
  where l_1 = distance between bolt groups
- Internal distance between fixings in a group relative to the intended design position
  Permitted deviation Δ_2 = 3 mm
  where l_2 = distance between bolts
- Protrusion of fixing
  Permitted deviation = $\Delta_{(cast)}$ + 25 mm
  $\Delta_{(screw)}$ − 5 mm

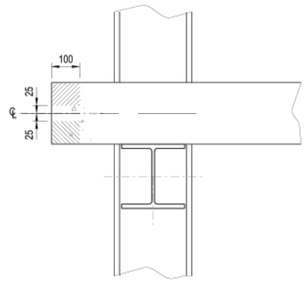
10. ALLOWABLE FIXING ZONES

10.1. ALLOWABLE FIXING ZONES FOR IN-SITU CONCRETE ARE NOT APPLICABLE TO BOLT SIZES LESS THAN M6 WITH AN EMBEDMENT DEPTH LESS THAN THE COVER TO REINFORCEMENT

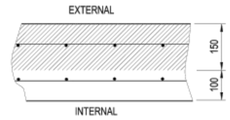
10.2. THE RESTRICTIONS NOTED ON THIS DRAWING REFER TO FIXINGS /ANCHORS THAT ARE 'POST FIXED' AND NOT TO FIXINGS/ANCHORS CAST OR BUILT IN

10.3. SHOT FIXINGS NOT PERMITTED

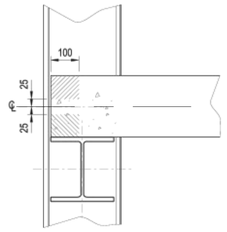
10.4. REINFORCEMENT IS NOT TO BE CUT/DRILLED OUT: WHERE REINFORCEMENT IS ENCOUNTERED FIXING POSITIONS ARE TO BE RELOCATED



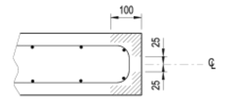
TYPICAL FLOOR CANTILEVER (SECTION)



TYPICAL EXTERNAL RETAINING WALL (PLAN)



TYPICAL SLAB EDGE (SECTION)



BASEMENT R.C. INTERNAL WALLS (PLAN)

DENOTES NON-FIXING ZONES

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

ISSUE	DATE	DESCRIPTION	DRN / CHKD	P.E. / P.D.
P1	27.03.20	ISSUED FOR COMMENT	BB / SMcL	SMcL / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,)
☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
TOLERANCES, MOVEMENTS AND ALLOWABLE FIXING ZONES

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	G-0004	P1

1. EXISTING BUILDING (SEE KEY PLAN FOR LOCATION)

1.1. THE EXISTING STRUCTURE CONSISTS OF A THREE STOREY PLUS BASEMENT END OF TERRACE VICTORIAN STRUCTURE WITH SINGLE STOREY EXTENSION TO THE RIGHT-HAND SIDE LOCATED ON THE CORNER OF BELSIZE AND PRIORY ROAD. THE BUILDING IS THOUGHT TO BE CONSTRUCTED AS EARLY AS 1871 WITH THE SINGLE STOREY SIDE EXTENSION CONSTRUCTED IN 1994. THE EXISTING STRUCTURE IS OF TYPICAL LOAD BEARING MASONRY SUPPORTED ON ASSUMED CORBEL FOOTINGS WIT LIGHTWEIGHT TIMBER JOIST FLOOR PLATES AT EACH LEVEL. ALLOWANCE FOR FIRE PROTECTION TO THE EXISTING STRUCTURE NEEDS TO BE MADE AND UPGRADNG OF AREAS, WHERE APPLICABLE, COMPLETED TO ACHIEVE THE FIRE RATING OUTLINED ON THE ARCHITECTS FIRE STRATEGY DRAWINNGS.

1.2. NO OPENING WORKS HAVE BEEN COMPLETED TO DATE AND THE CONTRACTOR SHOULD PROVIDE CONFIRMATION THAT ALL OF THE EXISTING FLOORS IN THE BUIILDING CAN ACHIEVE THE REQUIRED FIRE RATINGS THROUGH OPENING WORKS IF REQUIRED.

2. SCHEME MINIMUM PERIODS OF FIRE RESISTANCE

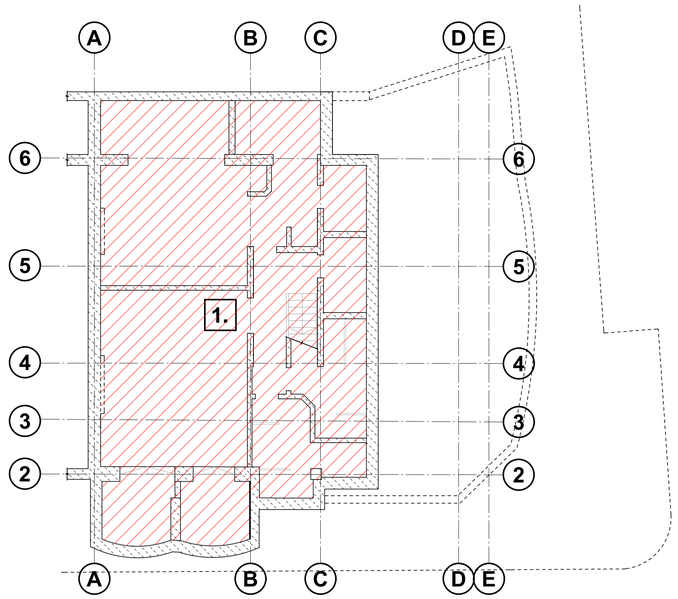
2.1. THE CONTRACTOR SHALL NOTE THE FOLLOWING REQUIRED FIRE RATINGS PROVIDED BY THE FIRE CONSULTANT.

MINIMUM PERIODS OF FIRE RESISTANT (MINS)				
NO.	**LOCATION**	**LOAD-BEARING CAPACITY**	**INTEGRITY**	**METHODS OF EXPOSURE**
001	STRUCTURAL FRAME, LOAD BEARING WALLS, BEAMS OR COLUMNS	60	60	EXPOSED FACES
002	COMPARTMENT FLOORS	60	60	FROM UNDERSIDE
003	LIFT SHAFTS	60	60	EACH SIDE SEPARATELY
004	STAIR ENCLOSURE	60	60	EACH SIDE SEPARATELY
005	WALLS SEPARATING FLATS FROM ADJACENT RESIDENCES	60	60	EACH SIDE SEPARATELY
006	SEPARTING FLATS FROM COMMON CORRIDOR	60	60	EACH SIDE SEPARATELY
007	PROTECTED HALLWAY WITHIN FLATS	60	60	EACH SIDE SEPARATELY
008	PLANT ROOM	60	60	EACH SIDE SEPARATELY
009	REFUSE STORE	60	60	EACH SIDE SEPARATELY
010	CYCLE STORE	60	60	EACH SIDE SEPARATELY
011	EXTERNAL WALLS BOUNDARY DISTANCE < 1m	60	60	EXPOSED FACES
012	EXTERNAL WALLS BOUNDARY DISTANCE < 1m	60	60	EXPOSED FACES

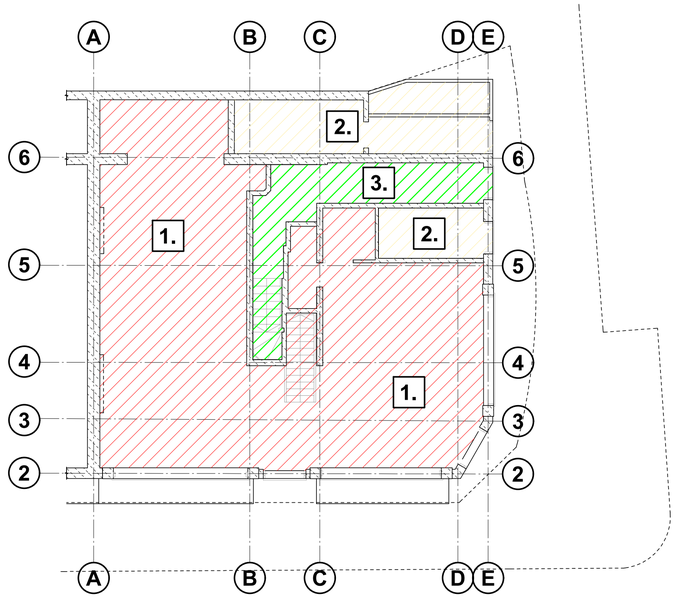
PLEASE REFER TO ARCHITECT'S FIRE STRATEGY DRAWINGS FOR FULL DETAILS

2.2. THE ABOVE FIRE RATINGS GENERALLY DICTATES STRUCTURE TO BE FIRE PROTECTED AS FOLLOWS:

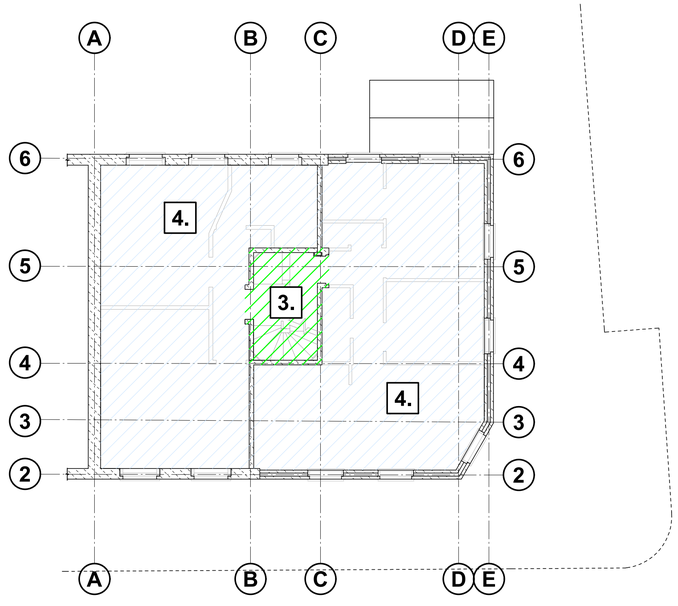
REQUIRED MIN FIRE RESISTANCE (MEMBER)	PART OF STRUCTURE	PART OF STRUCTURE (MIN)
FLOOR PLATE	COMPOSITE DECKING	60
STRUCTURAL BEAMS	BEAMS	60
STRUCTURAL COLUMNS	COLUMNS	60
STRUCTURAL WALLS	WALLS	60
STAIRS	STAIRS	60



PROPOSED BASEMENT PLAN
SCALE @ A1: 1:100
SCALE @ A3: 1:200



PROPOSED GROUND FLOOR PLAN
SCALE @ A1: 1:100
SCALE @ A3: 1:200



PROPOSED FIRST FLOOR PLAN
SCALE @ A1: 1:100
SCALE @ A3: 1:200

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

KEY PLAN

1. BASEMENT AND GROUND FLOOR RESTAURANT
2. GROUND FLOOR ANCILLARY AREA
3. STAIR AND ACCESS CORRIDORS
4. UPPER FLOOR RESIDENTIAL

ISSUE	DATE	DESCRIPTION	DRN / ORIG
P1	27.03.20	ISSUED FOR COMMENT	BB / SMcL / SMcL / DB
			P.E / P.D.

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,)
☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

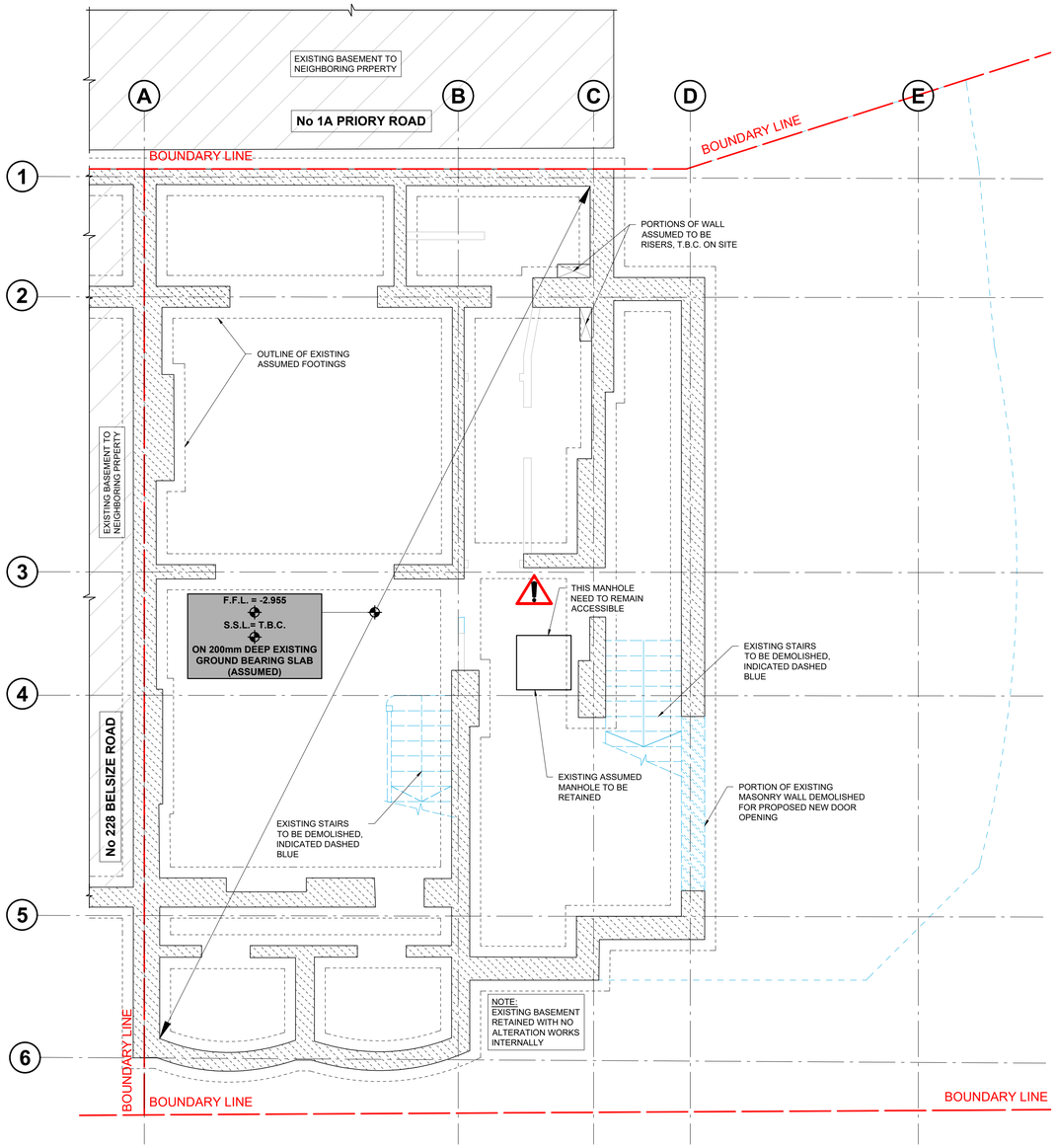
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

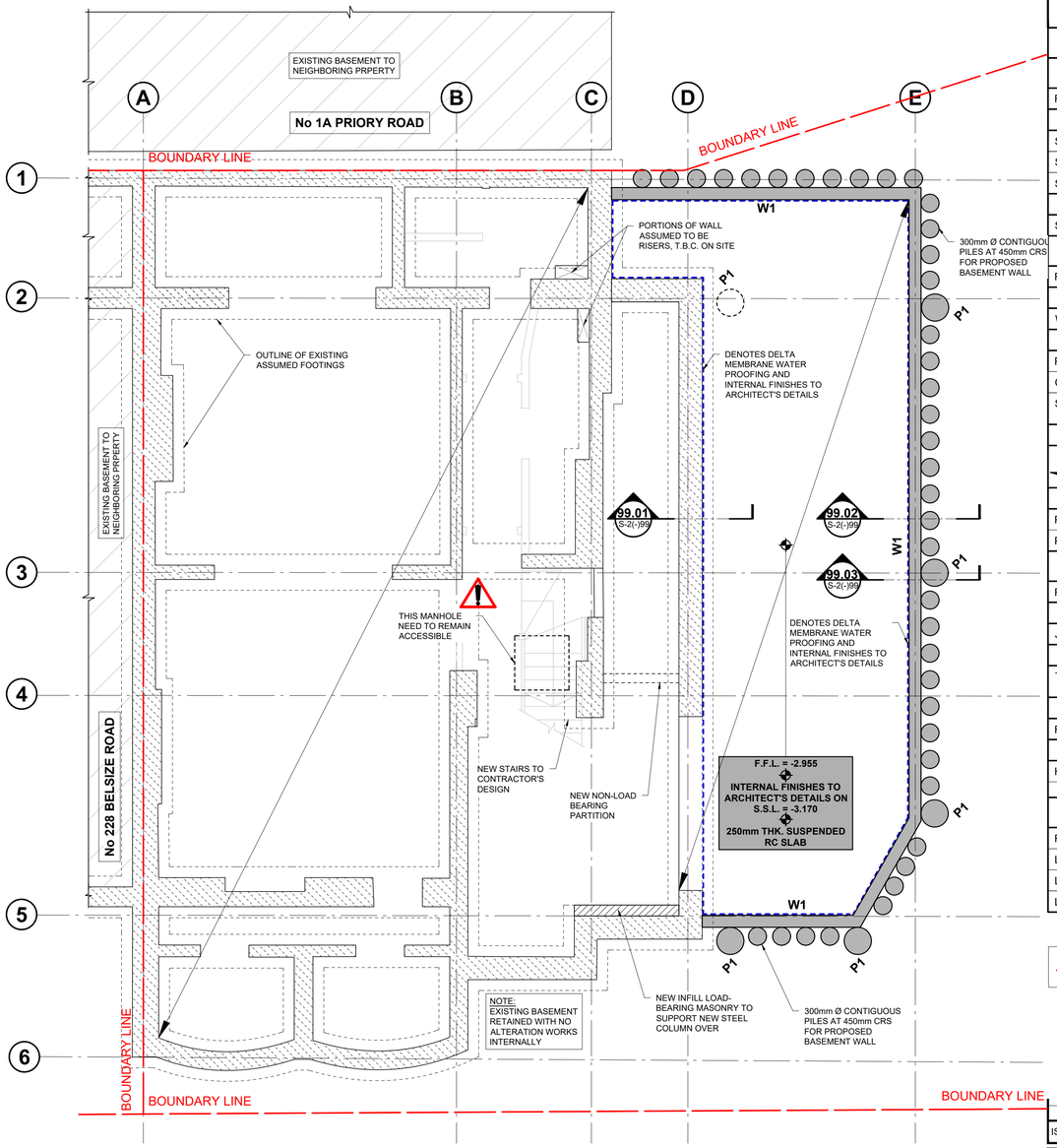
DRAWING TITLE
FIRE RESISTNACE REQUIREMENTS

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	G-0005	P1



EXISTING BASEMENT DEMOLITION PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED BASEMENT PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE, GALVANIZED.

ISSUE	DATE	DESCRIPTION	DRN / ORIG	CHK'D
P1	29.04.20	ISSUED FOR COMMENT	BB / SMG	SM-L / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (0, 1, 2 etc.,)

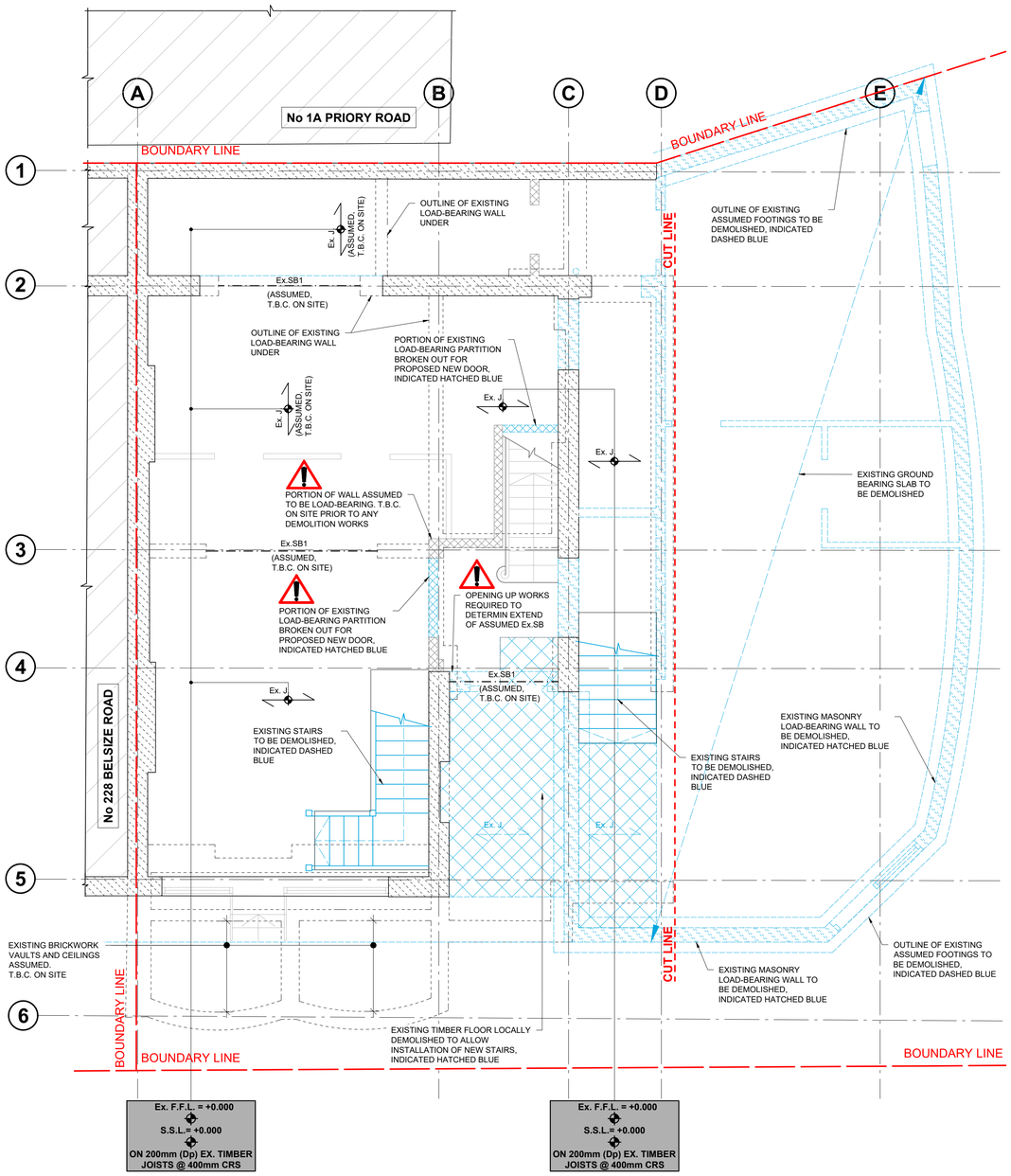
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

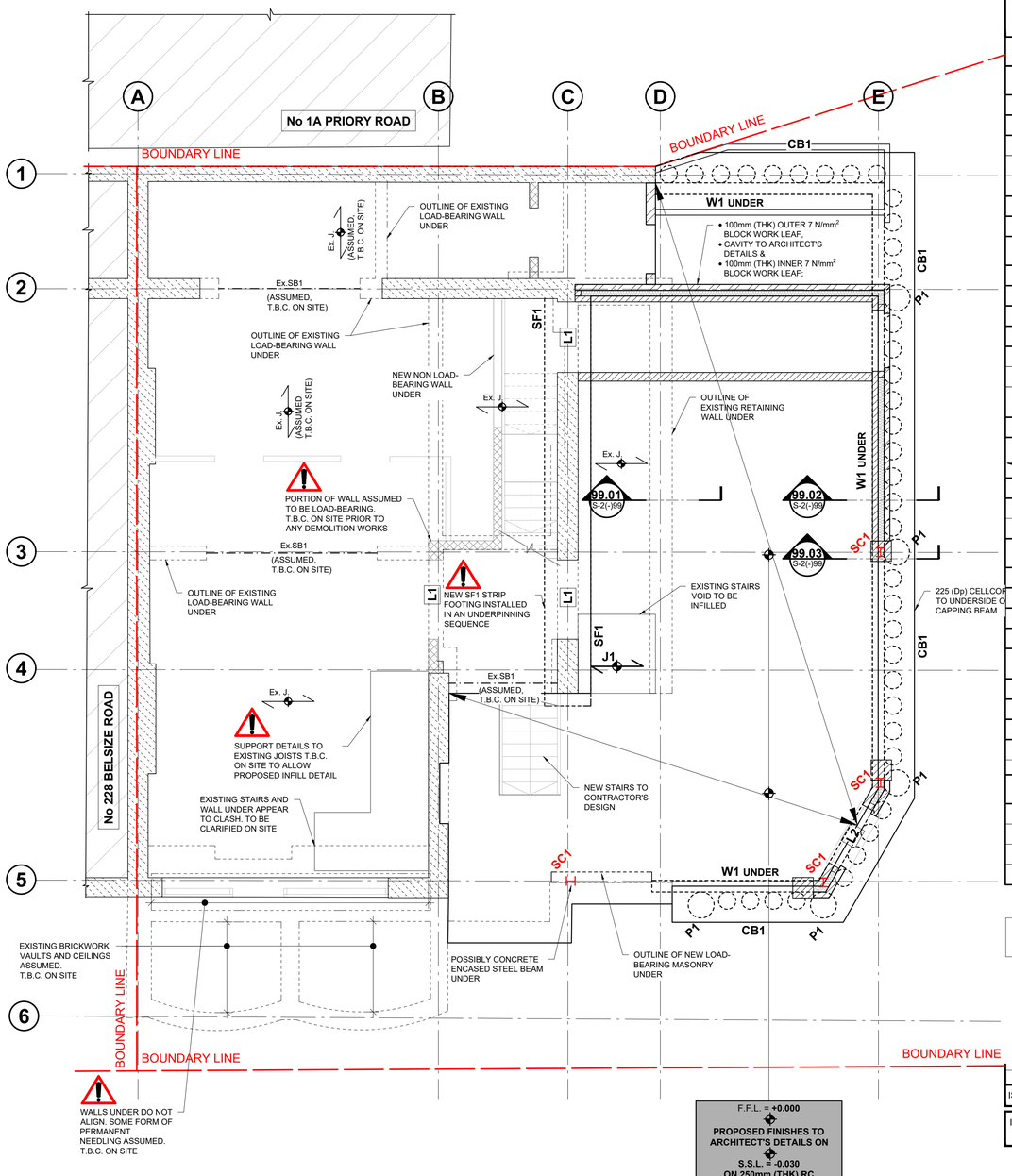
DRAWING TITLE
EXISTING AND PROPOSED BASEMENT PLAN

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2(-)99	P1



EXISTING GROUND FLOOR DEMOLITION PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED GROUND FLOOR PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	BB / SMcL	SMcL / DB
P1	29.04.20	ISSUED FOR COMMENT	DRN / ORIG	P.E / P.D.

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

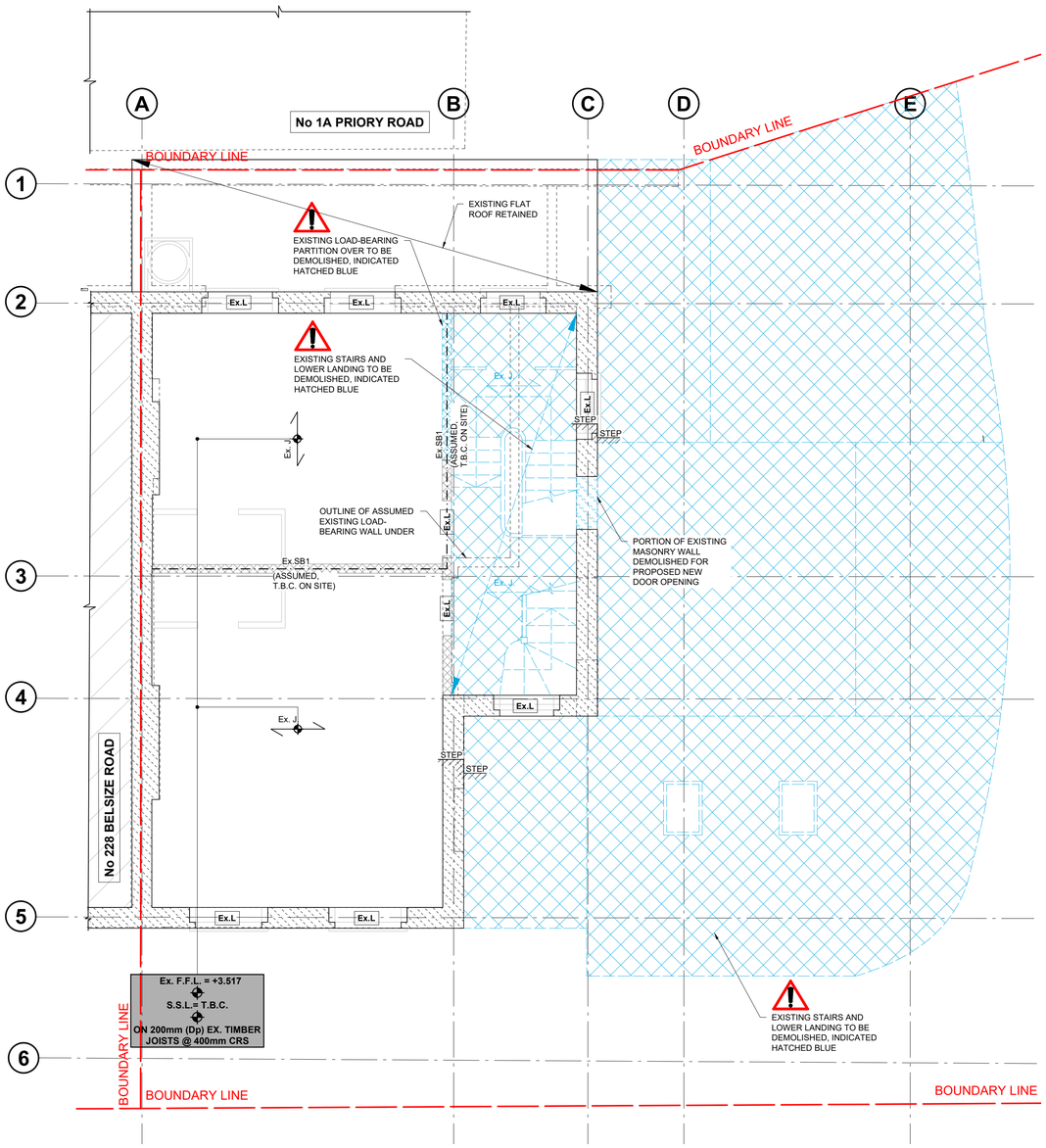
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

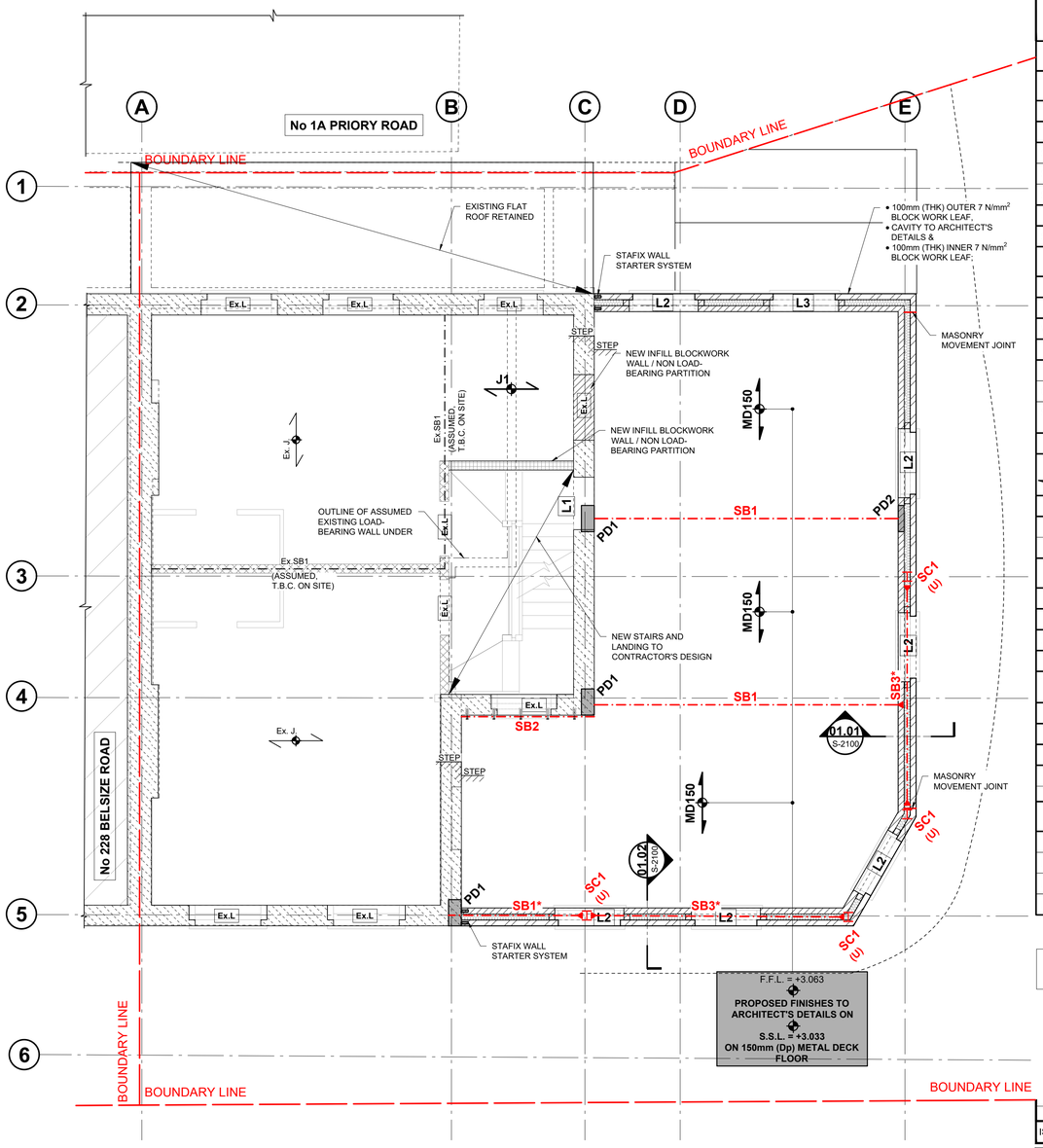
DRAWING TITLE
EXISTING AND PROPOSED GROUND FLOOR PLAN

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2000	P1



EXISTING FIRST FLOOR DEMOLITION PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED FIRST FLOOR PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	ORIG	P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB	SMcL / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

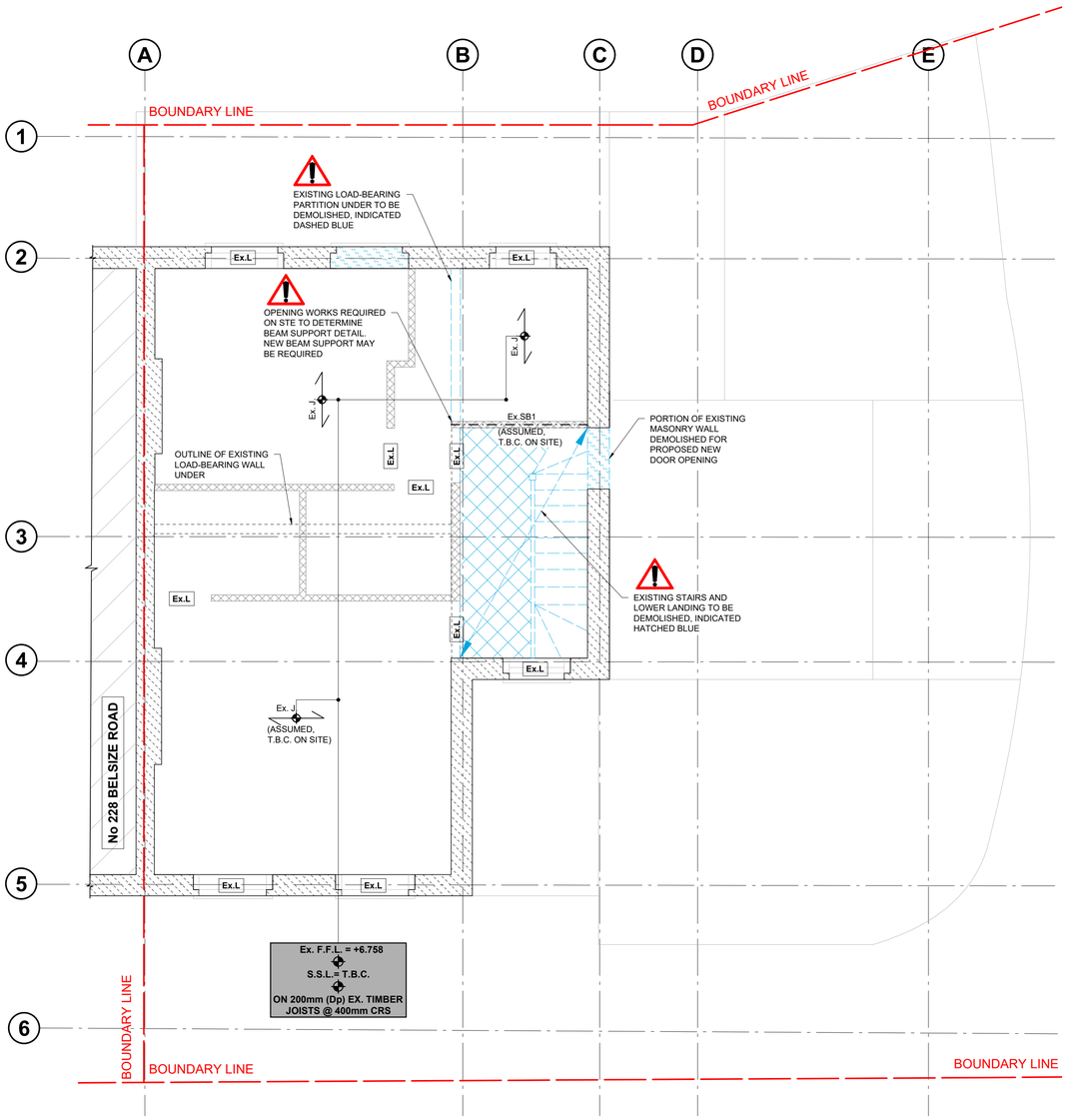
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

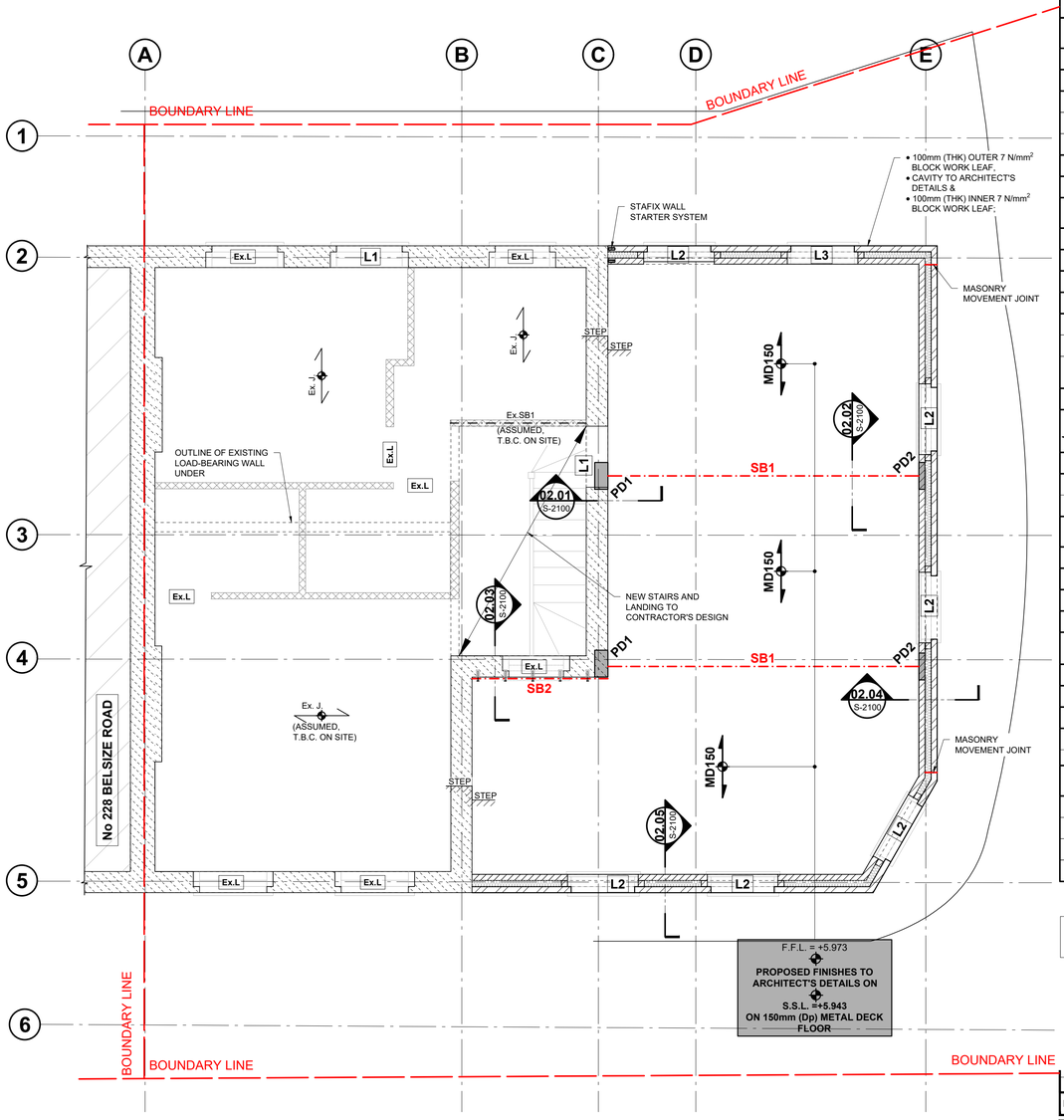
DRAWING TITLE
EXISTING AND PROPOSED FIRST FLOOR PLAN

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2001	P1



EXISTING SECOND DEMOLITION PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED SECOND FLOOR PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	ORIG	P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB SMcL	SMcL DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

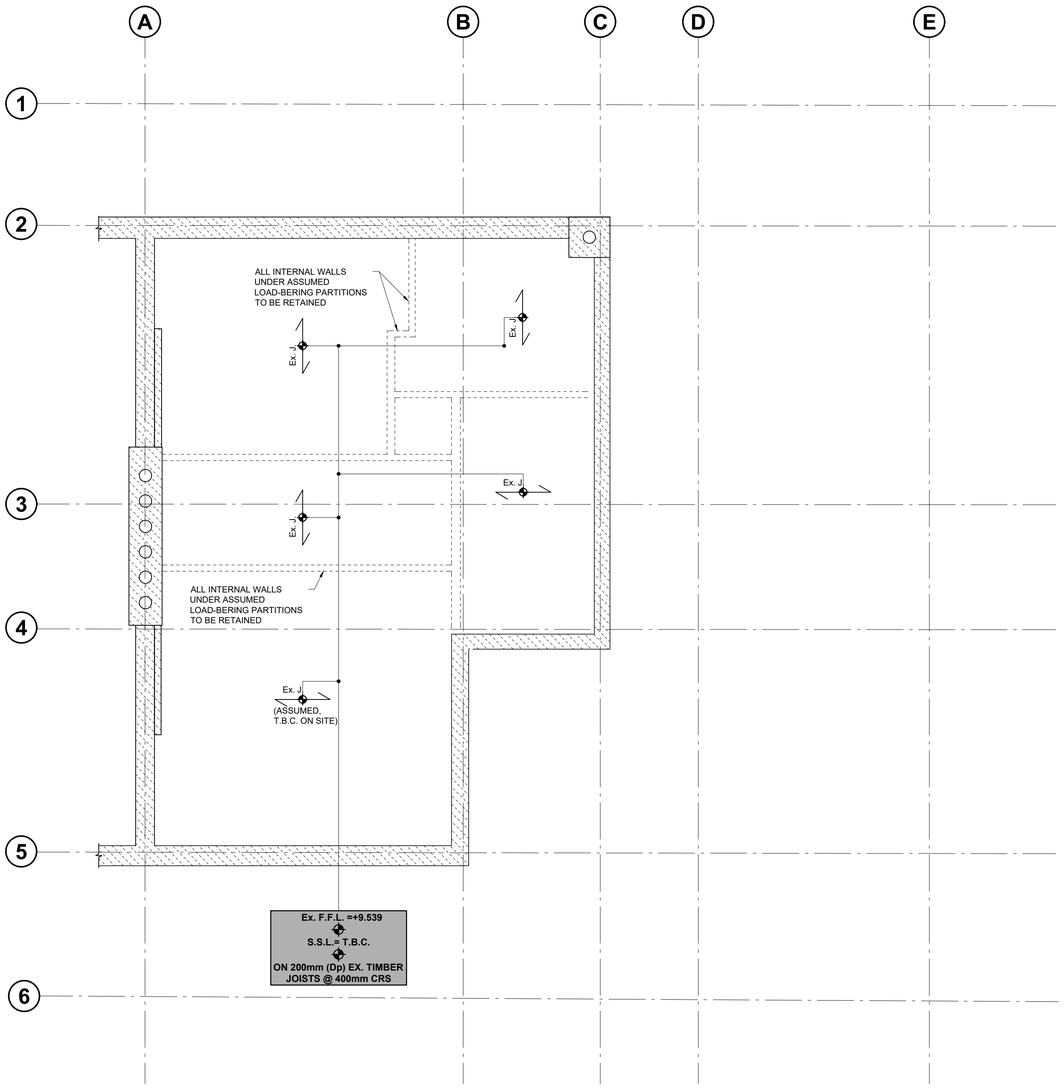
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

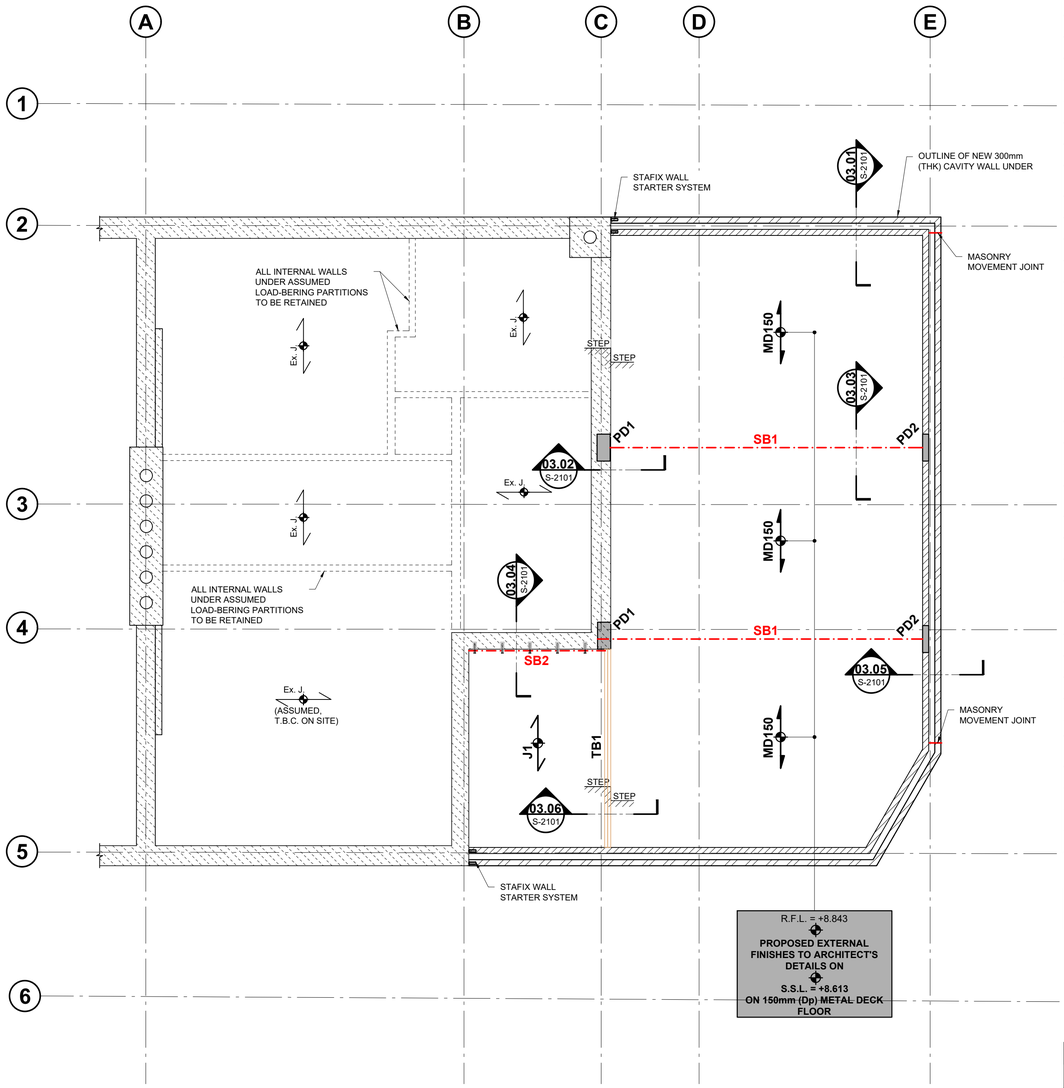
DRAWING TITLE
EXISTING AND PROPOSED SECOND FLOOR PLAN

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2002	P1



EXISTING LOFT PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED LOFT PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
STEEL BEAMS		
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
STEEL COLUMNS		
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
CONCRETE WALLS		
W1	200 (THK) RC LINING WALL	C30/37
CONCRETE FOOTINGS		
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
CONCRETE FLOOR SYSTEMS		
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
PAD STONES		
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
TIMBER JOISTS		
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
TIMBER BEAMS		
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
TIMBER RAFTERS		
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
TIMBER HIPS		
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	DRN / ORIG	P.E / P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB / SMd	SMd / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (0, 1, 2 etc.,)

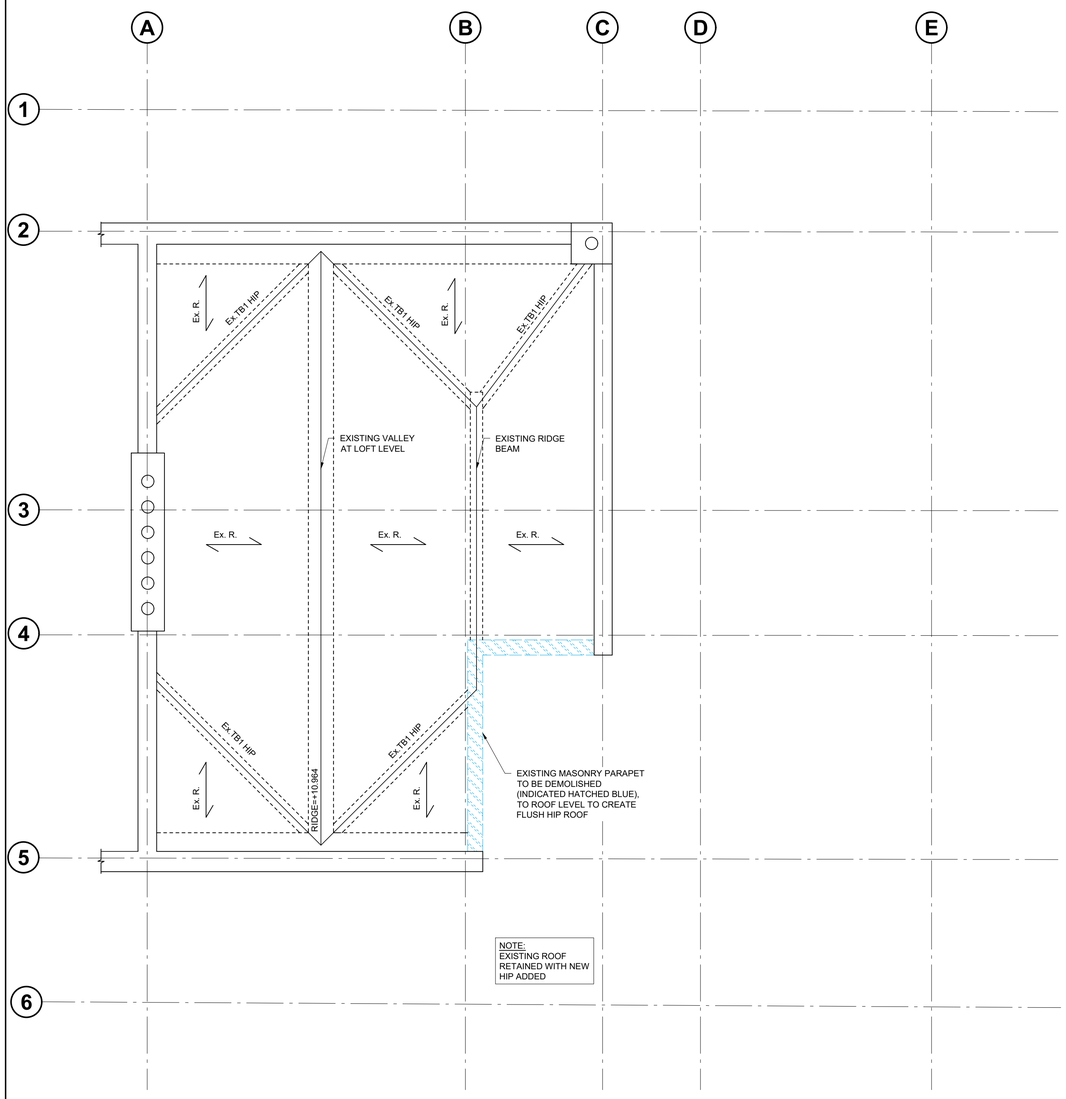
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

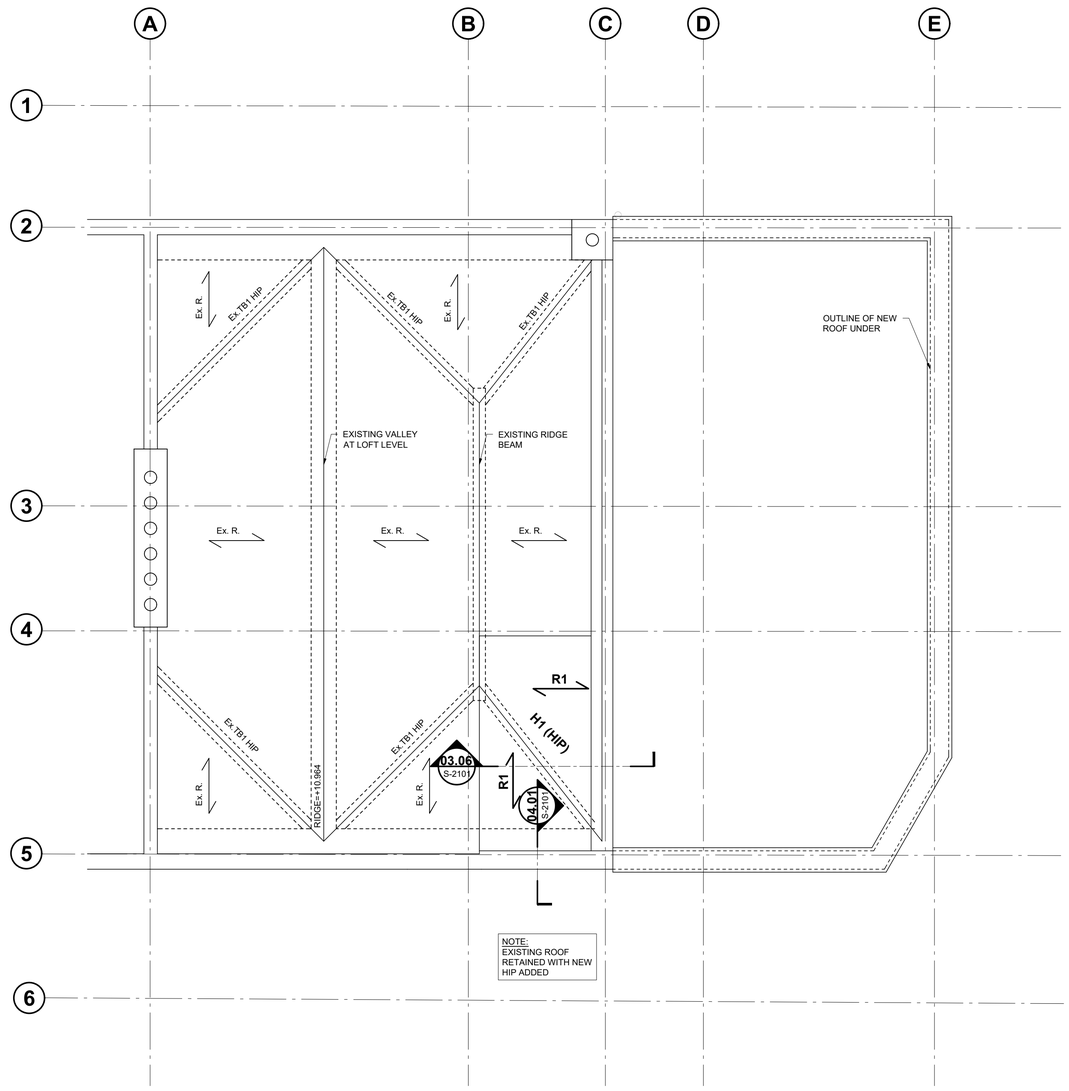
DRAWING TITLE
EXISTING AND PROPOSED LOFT PLAN

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2003	P1



EXISTING ROOF DEMOLITION PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100



PROPOSED ROOF PLAN

SCALE @ A1: 1:50
SCALE @ A3: 1:100

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	ORIG	DRN	CHK
P1	29.04.20	ISSUED FOR COMMENT	BB	SMcL	DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

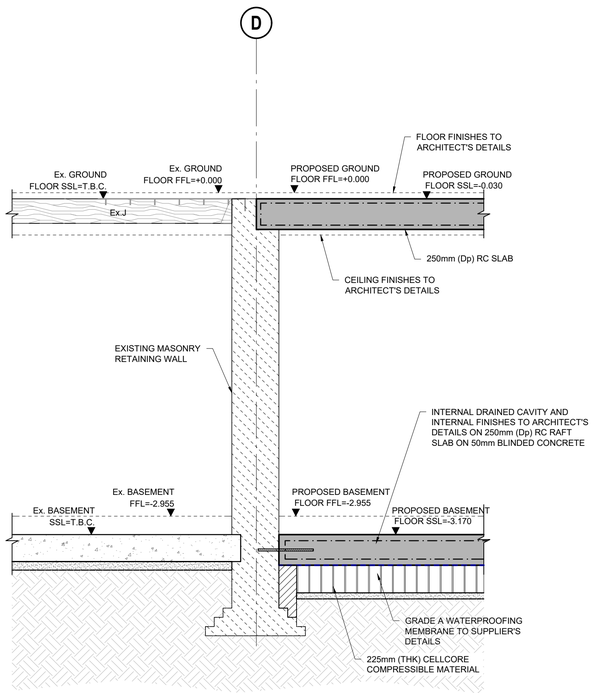
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

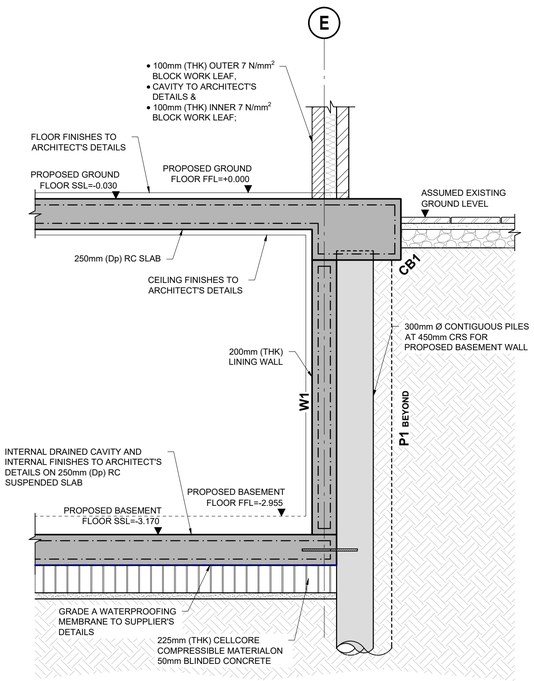
PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
EXISTING AND PROPOSED ROOF PLAN

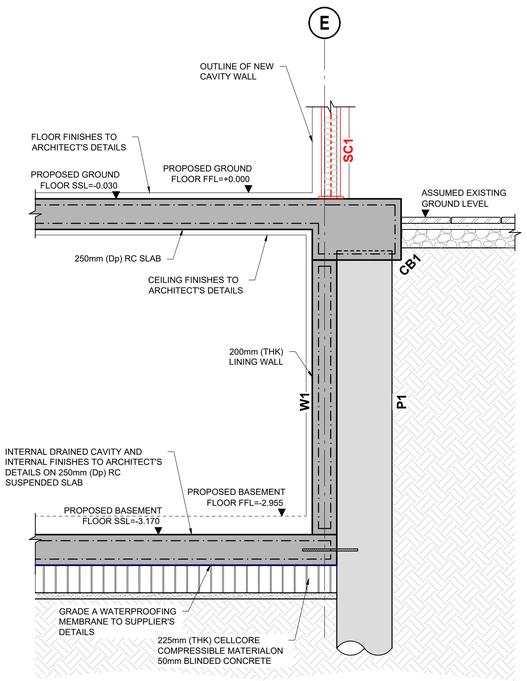
SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2004	P1



99.01 S-2000 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



99.02 S-2000 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



99.03 S-2000 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	DRN / ORIG	P.E / P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB / SMc	SMc / DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc,,) ☐ PLANNING (PL1, PL2, PL3 etc,,) ☐ TENDER (T1,T2, T3 etc,,) ☐ CONSTRUCTION (O, 1, 2 etc,,)

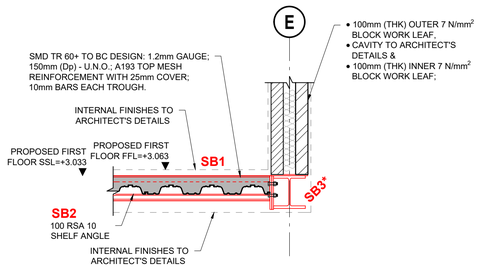
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

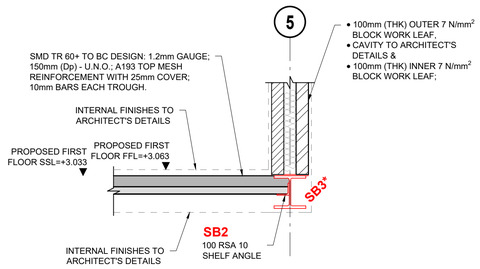
PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
SECTIONS SHEET 1 (BASEMENT SECTIONS)

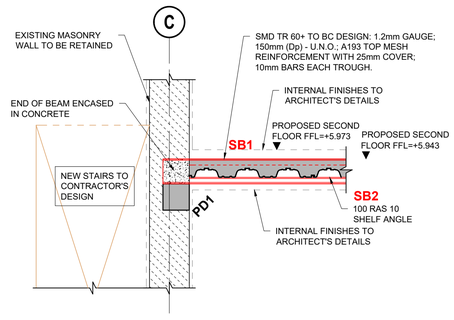
SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2(-)99	P1



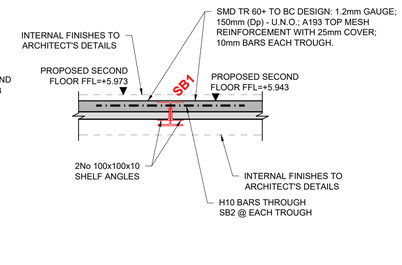
01.01 S-2002 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



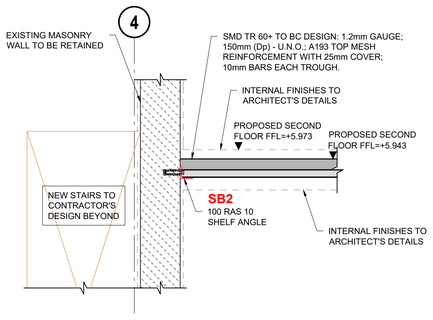
01.02 S-2002 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



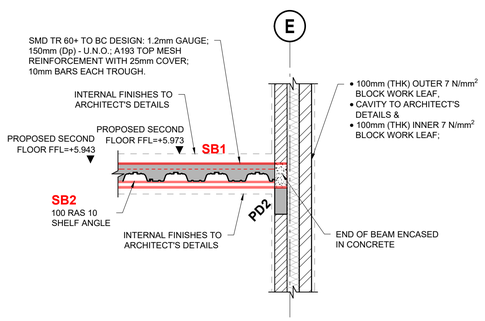
02.01 S-2003 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



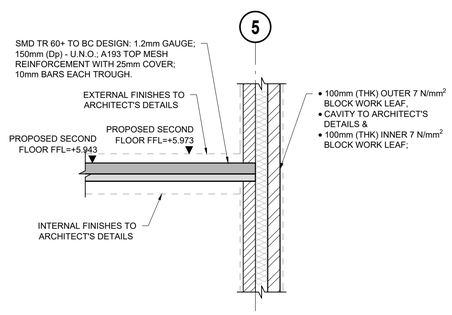
02.02 S-2003 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



02.03 S-2003 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



02.04 S-2003 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50



02.05 S-2003 **SECTION**
SCALE @ A1: 1:25
SCALE @ A3: 1:50

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE; GALVANIZED.

ISSUE	DATE	DESCRIPTION	DRN ORIG	P.E P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB SMd	SMd DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

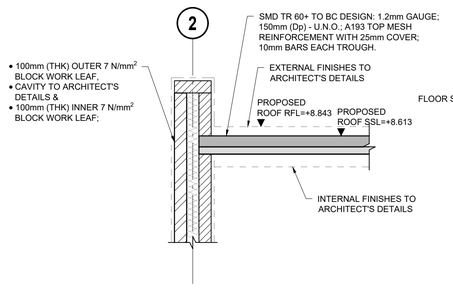
Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

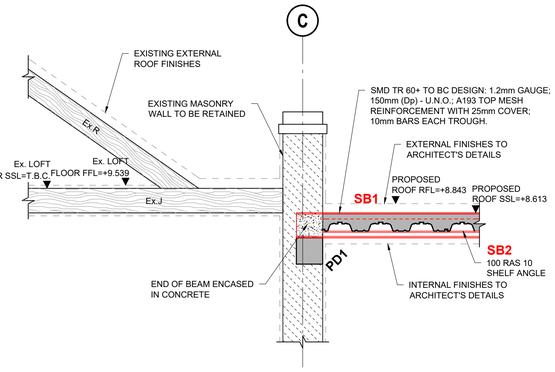
PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
SECTIONS SHEET 2 (ABOVE GROUND FLOOR LEVEL)

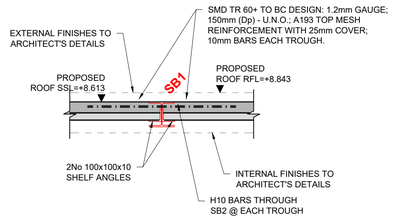
SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2100	P1



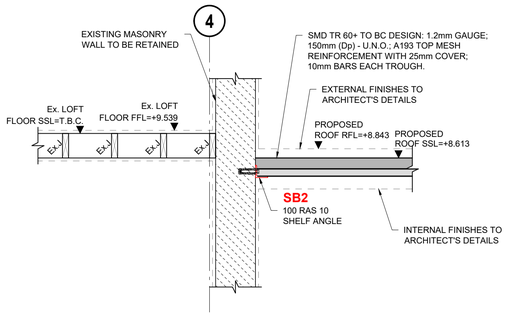
03.01 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



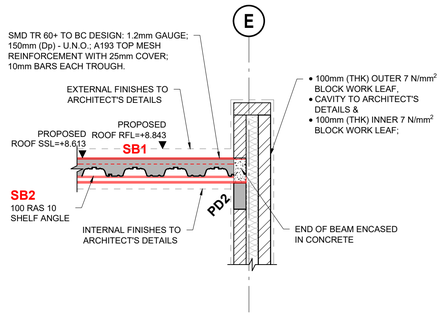
03.02 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



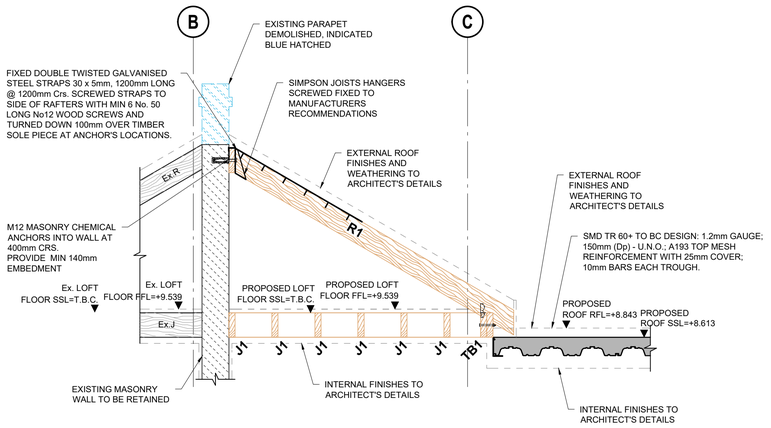
03.03 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



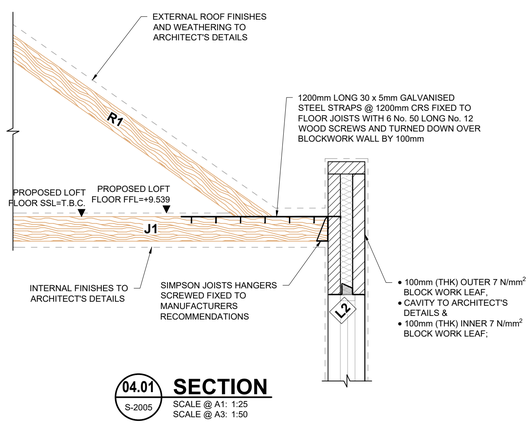
03.04 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



03.05 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



03.06 SECTION S-2004
SCALE @ A1: 1:25
SCALE @ A3: 1:50



04.01 SECTION S-2005
SCALE @ A1: 1:25
SCALE @ A3: 1:50

NOTE:
- ALL LEVELS APPROXIMATE ONLY TAKEN FROM ARCHITECT'S DRAWINGS. SSL AND FFL SUBJECT TO CONFIRMATION BY THE ARCHITECT.
- ALL DPC's AND WATERPROOFING TO ARCHITECT'S DETAILS.

PRELIMINARY

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

SCHEDULE OF NEW MEMBERS

SCHEDULE OF STEELWORK MEMBERS

REF.	SIZE	COMMENT
	STEEL BEAMS	
SB1	203 UC 46kg	-
SB2	100 RSA 10kg	-
SB3	254 UC 107kg	GALVANISED
	STEEL COLUMNS	
SC1	152 UC 37kg	-

SCHEDULE OF CONCRETE MEMBERS

REF.	SIZE	COMMENT
	CONCRETE WALLS	
W1	200 (THK) RC LINING WALL	C30/37
	CONCRETE FOOTINGS	
P1	450Ø PILE TO 20m (Dp)	(T.B.C. BY PILE DESIGNER)
CB1	725(W) x 500(Dp) RC CAPPING BEAM	C30/37
SF1	800mm (W) x 300mm (Dp) STRIP FOOTING WITH 1 LAYER OF A393 MESH	LEAN MIXED DOWN TO SUITABLE BEARING
	CONCRETE FLOOR SYSTEMS	
MD150	SMD TR 60+ TO BC DESIGN: 1.2mm GAUGE; GR. S350; 150mm (Dp) GR. C30/37 - U.N.O.; A193 TOP MESH REINFORCEMENT WITH 25mm COVER; 10mm BARS EACH TROUGH.	C30/37
	PAD STONES	
PD1	440(L) x 215(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED
PD2	440(L) x 100(W) x 215(Dp)	NAYLOR OR SIMILAR APPROVED

SCHEDULE OF TIMBER MEMBERS

REF.	SIZE	COMMENT
	TIMBER JOISTS	
J1	50(W) x 200(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER BEAMS	
TB1	2 No 50(W) x 200(Dp) C24 TIMBER JOISTS BOLTED WITH M12 BOLTS @ 900mm CRS	-
	TIMBER RAFTERS	
R1	50(W) x 150(Dp) C24 JOISTS @ 400 mm CRS	-
	TIMBER HIPS	
H1	75(W) x 225(Dp) C24 HIP BEAMS	-

SCHEDULE OF LINTELS

REF.	SIZE	COMMENT
L1	3 No ER7 (100(W) x 215(Dp)) NAYLOR LINTEL	NAYLOR OR SIMILAR APPROVED
L2	L 1/S 100 IG LINTEL	IG LINTEL
L3	L 10 IG SINGLE LEAF LINTEL	IG LINTEL

SBx* — DENOTES NEW STEEL BEAM WITH 10mm (THK) STEEL PLATE TO TOP FLANGE, TO CARRY MASONRY WALL ABOVE, GALVANIZED.

ISSUE	DATE	DESCRIPTION	DRN	CHKD	SM4	P.E.	P.D.
P1	29.04.20	ISSUED FOR COMMENT	BB		SM4		DB

ISSUE STATUS ☒ PRELIMINARY (P1, P2, P3 etc.,) ☐ PLANNING (PL1, PL2, PL3 etc.,) ☐ TENDER (T1,T2, T3 etc.,) ☐ CONSTRUCTION (O, 1, 2 etc.,)

Barden Chapman
Civil & Structural Design Consultants

CLIENT
JABONA LIMITED

PROJECT TITLE
No 228 BELSIZE ROAD, LONDON, NW6 4BT

DRAWING TITLE
SECTIONS SHEET 3 (ABOVE GROUND FLOOR LEVEL)

SCALE @ A1	JOB NO.	DRAWING NO.	ISSUE
AS SHOWN	19769	S-2101	P1

APPENDIX C – DESIGNERS RISK ASSESSMENT

Director:
David Barden, BEng (Hons), MSc, CEng, MIStructE, MIEI
Email: info@barden-chapman.co.uk

Barden Chapman Consulting Engineers
The Minister Building, 21 Mincing Lane,
London, EC3R 7AG
Web: www.barden-chapman.co.uk

Barden Ltd trading as Barden Chapman Consulting Engineers. Registered in England, No. 8051071.
Registered office: 2 Mountside, Manorside, Wallington SM6 0DT, United Kingdom

Barden Chapman
Civil & Structural Design Consultants

_01	Access / egress
_02	Access Control
_03	Adjacent structures
_04	Asbestos
_05	Moving vehicle /plant
_06	Moving machinery
_07	Clashes operations/trades
_08	Collapse
_09	Confined spaces
_10	Demolition
_11	Excavations
_12	Falls from height
_13	Falls - fragile materials
_14	Falling objects
_15	Fire / explosion
_16	Glass, windows, cladding
_17	Hazardous materials
_18	Manual Handling
_19	Highways/Railways
_20	Instability of excavations
_21	Noise / vibration
_22	Piling
_23	Pre-fabrication
_24	Radiation
_25	Services
_26	Slips and trips
_27	Spillage of materials
_28	Underground Structures
_29	Waterways
_30	0

Job No:	19769
Job Name:	19769 No 228 Belsize Road, London. NW6 4BT
Doc No:	19769-RA-01
Sheet No:	1 of 1

Engineer:	Shane McLoughlin
Director:	David Barden
Date:	30 April 2020

Notes:
1.Previous Ref refers to reference given to a hazard / risk in a previous stage assessment brought forward (See classification (F) below)
2.Describe / explain nature of hazard / risk
3.Describe why it is not feasible to eliminate risk or, if feasible, describe design changes to eliminate or mitigate it
4.Assessment: L= Low; M= Medium; H= High
5.Action normally by: Structural Engineer (SE); Contractor (C); Temporary Works Designer (T) or Maintenance Operatives (M)

HAZARD/RISK ASSESSMENT RECORD SHEET

No:	Previous Ref (F)	Ref Code	Risk Category	(a)y Hazards / Risks Identified (2) (PR = Particular Risk)	Design Intervention Feasible to Eliminate or Mitigate Risk (3)	Assessment (4) Likelihood L M H	Assessment (4) Severity L M H	Actions to Mitigate / Control Risks	Action by (5) C T M SE
01		_01	Access / egress	Are there any potential access or egress problems?	Yes. Access will be restricted due to the restriced nature of the site and the basement extending to the full site footprint.	H	L	The main contractor will need to provide a construction management plan to highlight access to and from site including location of delivery bays and collection of waste material.	(C)
02		_02	Access Control	Have you specified fencing or hoarding? (Ideally a site plan of any required hoarding should be forwarded to CDM)	Yes The proposed new basement will extend to the full site footprint and access restrictions will be required for both construction workers and the passing public.	H	M	Contractor to construct site hoarding with outlined managed safe entrance routes.	(C)
03		_03	Adjacent structures	Has adequate investigation been carried out with regard to adjacent structures and foundations?	Yes. Existing drawings of the neighbouring building have been retrieved from the Planning Portal. A condition survey will be carried of the neighbouring building and the adjoining footpath/roadway being retained.	L	H	Contractor will follow a site specific monitoring programme for the course of the works to ensure no adverse affects on neighbouring propoerty or infrastructure.	(C)
04		_04	Asbestos	Have adequate asbestos surveys been carried out?	Yes. An asbestos survey is currently being undertaken at the site.	L	L	Asbestos contractor to ensure safe removal of all asbestos material prior to any demolition works on site.	(C)
05		_05	Moving vehicle / plant	Can the site be planned to allow adequate access to all areas of the structure?	Yes. Although this is a restricted site, with appropriate planning a safe sequence of works will be implemeted to ensure safe access to all areas of the site.	L	L	Contractor to outline safe sequnce of works within proposed construction management plan.	(C)
06		_06	Moving machinery	Can equipment be isolated and accessed easily for maintenance?	Yes Due to the restricted site, plant required for excavation works will be rstricted in size and will allow access for maintence if required.	L	L	Contractor to ensure all plant has been maintained and inspected prior to site use and is kept maintained for the duration of the works.	(M)
07		_07	Clashes operations/trades	Does the design avoid return visits by trades as much as possible?	Yes. The design has been considered to use the minimum amount of trades required for H&S and ease of construction. Return visits will be kept to a minimum.	L	L	Proposed scheme designed with consideration to using minimum number of trades required.	(SE)
08		_08	Collapse	Have you adequately avoided designs that involve temporary instability during construction?	Yes. Where possible, permanent shuttering through the use of metal deck have been provided for the upper floor slabs. Due to the nature of the basement works some temporary propping cannot be avoided.	M	M	Proposed scheme designed with consideration to limit the amount of temporary works required.	(SE)
09		_08	Collapse	Have you specified an erection sequence including details of temporary support measures required?	Yes. A safe sequence of works has been outlined for the basement construction with consideration to the reuired temporary works	M	H	A safe sequence of works has been included within the proposed basement construction plan. The contractor to make note of and allow for same.	(T)
10		_10	Demolition	Have you avoided unnecessary demolition and the specification of complex or hazardous demolition sequences where possible?	Yes. The proposed demolition of the existing structure has been kept to a minimum.	L	L	Demolition has been considered during scheme proposals and restriced to demolishing a single storey lightweight side extension to the existing building.	(SE)
11		_11	Excavations	Have adequate investigations taken place? E.g. Location of services and contaminated ground.	Yes A ground contamination report has been received form the adjoining building to highlight any potential ground contaminents. The contractor is to familiarise themselves with all existing services on site prior to any demo or excavation works.	M	M	Contractor to familiarise themselves with the existing contamination ground reports and determine location of all existing services prior to site works through GPR survey or trial pits.	(C)
12		_11	Excavations	Have you avoided underground installations or deep excavations where possible?	No. The proposed scheme involves a basement extension which will require deep excavtion works. Appropriate measures are being undertaken to ensure a safe sequence of works is followed.	M	M	A safe sequence of works has been included within the proposed basement construction plan. The contractor to make note of and allow for same.	(C)
13		_12	Falls from height	Can edge protection and protection of people below the working area be managed easily?	Yes. Site hoarding and edge protection to be provided to the surround of all proposed basement works.	L	H	The contractor is to install suitable site hoarding and edge protection to the boundary of all proposed basment works.	(C)
14		_12	Falls from height	Can works be carried out at ground level or from permanent floor levels where possible?	Yes. The proposed scheme has allowed construction to take place on permanent shuttering/floors. High level works and external works will be commplete through the use of scaffolding.	L	H	The contractor is to provide suitable scaffolding and edge protection to high level works which cannot be accessed from permanent floor plates.	(C)
15		_13	Falls - fragile materials	Have you designed safe systems of access, edge protection, provisions for the attachment of safety equipment, etc, where necessary?	Yes. Site horading and edge protection will be erected around the perimiter of the proposed basement works and edge protection will provided to any required scaffolding works.	L	L	The contractor is to provide suitable scaffolding and edge protection to high level works.	(C)
16		_17	Hazardous materials	Have you avoided specifying or designing the need for site welding, cutting or hot working methods where possible?	Yes. Any steel fabrication to be complete off site with on site assembly through bolted connections.	L	L	No on site welding permitted.	(C)
17		_17	Hazardous materials	Has adequate surveys and testing been carried out to determine the presence of hazardous materials within the existing structure?	Yes. An Asbestos survey is currently being undertaken and a ground contamination report has been received for the adjoining building.	L	L	Asbestos contractor to ensure safe removal of all asbestos material prior to any demolition works on site.	(C)
18		_19	Highways/Railways	Does the project involve work on or adjacent to railway infrastructure? Contact the Rail Enforcing Authority and develop the design in accordance with their requirements.	Yes. The basement is to extend to the boundary of an adjoining road. An AIP has been submitted to the local council for approval	L	L	An Approval in Principle (AIP) is to be submitted to the local council for approval of proposed basement works.	(SE)
19		_20	Instability of excavations	Has an adequate soil investigation been carried out?	Not Yet A detailed existing soil investigation report of a neighbouring building is being used for the preliminary design with a site specific investigation to be carried out in coordination with the piling works.	L	L	Site specific SI to be completed in coordination with the piling works.	(C)
20		_21	Noise / vibration	Have you considered the surrounding premises and their occupants?	Yes Noise/vibration works will be limited where possible with all site works restricted to daytime working hours.The proposed piles will be installed using CFA piles as opposed to driven piles.	L	L	Contractor to follow daytime working hours for all proposed site work and limit noise/vibration works where possible. Piles to be installed using CFA piles.	(C)
21		_21	Noise / vibration	Have you specified procedures that reduce noise where possible? (E.g. avoiding vibratory tools or noisy equipment for surface preparation.)	Yes The proposed piles will be installed using CFA piles as opposed to driven piles.	L	L	Piles to be installed using CFA piles.	(C)
22		_22	Piling	Is there sufficient distance between piles and any existing structures (eg walls) to allow piling to be carried out without the necessity to removing guards from the piling rig?	Yes. Existing structure and proposed new piles have been set out on Structural GA Plans. Piles have been set back from existing walls under.	L	L	Proposed new piles have been set back from the existing structure. The piling contractor to review and ensure there are no clashes/implications with proposed rig and existing structure on site.	(C)
23		_28	Underground Structures	Are there any cellars, basements or other underground structures in the vicinity of the proposed works? Have investigations taken place to determine their maximum loading?	Yes There is an existing basement on site which is to be extended. The proposed new basement will be excavated to the same depth as the existing and will not exert any additional load to adjoining building.	L	M	Loading to existing adjoining basements avoided by excavating to same depth.	(SE)
24									
25									

APPENDIX D – EXISTING GROUND INVESTIGATION REPORT

Report On A Geotechnical Investigation

At

258-262 Belsize Road, London NW6.

For

Castle Trading Limited

SOILS LIMITED
NEWTON HOUSE
CROSS ROAD TADWORTH
SURREY KT20 5SR
ENGLAND
TELEPHONE 073 781 4221/2 FAX 073 781 2557

REPORT

Sept 1993

Report On A Geotechnical Investigation

At

258-286 Belsize Road, London NW6.

For

Castle Trading Limited

1.0 Introduction

1.1 General

This report presents the results of a geotechnical investigation of the sub-surface ground conditions at 258-262 Belsize Road, London NW6.

In the following sections, a summary of the local geology is presented together with a discussion on site conditions and general recommendations regarding the design of foundations for the proposed structure.

A description of the field work is presented in Appendix A, together with the borehole logs.

The results of the laboratory tests carried out on samples obtained from the boreholes are presented in Appendix B.

soils LIMITED

1.2 Location

The site was located at 258-262 Belsize Road, London NW6, at O.S. Grid Reference TQ 255 837. The general site location is given on Figure 1. The approximate location of the boreholes are shown on Figure 2, which is a reduced copy of the site plan supplied by R.T. James and Partners.

1.3 Proposed Development

It is proposed to develop the site with a four to five storey steel framed office accommodation with basements.

We understand that there are to be large spans between columns resulting in high foundation loads. At the time of the preparation of this report foundation loads for the proposed structures were not known by Soils Limited.

1.4 Scope of Work

The scope of work was as outlined by Castle Trading and R.T James and Partners.

Briefly, this was for a borehole site investigation, with two boreholes, both drilled to a depth of 25 metres below existing ground level. The drilling was carried out using a cable percussion shell and auger drilling rig.

The field investigation was performed in accordance with the recommended practices of B.S. 5930:1981 and B.S. 1377:1990:Part 9.

The laboratory testing was performed in accordance with the methods given in B.S. 1377:1975 and 1377:1990:Parts 1-8.

The engineering analyses, conclusions and recommendations relate to the proposed development at 258-262 Belsize Road, London NW6. Attention is drawn to the fact that these analyses are based on data obtained from the boreholes and associated

in-situ and laboratory testing. The possibility of variation in ground conditions around and between the boreholes should not be overlooked. Any opinion or diagram of a possible configuration of strata beyond the boreholes or extrapolated to greater depth is conjectural and given for guidance only. No liability can be accepted for such variations.

It should be noted that the investigation was made for the form of development described in Section 1.3 and may be inappropriate to another form of development or scheme.

---

soils LIMITED

2.0 Site Conditions

2.1 Local Geology

The 1:63360 Geological Survey of Great Britain (England and Wales), sheet number 256 of the North London area, showed the site to be located on the London Clay.

London Clay

London Clay comprises a stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The lowest part of the formation is a sandy beds with black rounded gravel and occasional layers of sandstone and is known as the Basement Beds.

2.2 Surface Condition

The site was situated to the north of Belsize Road, and comprised an area of flat level land formerly developed with a three to four storey Victorian terrace block.

At the time of the field works (September 1993), the whole of the former building had been demolished with the exception of the facade onto Belsize Road. At the time of preparing the report, we understand that the whole of the site has been cleared.

The surface of the site was covered partly with demolition debris and concrete hardstanding.

There was a basement on the south western portion of the site fronting onto Belsize Road. The basement was observed through a gap in a timber floor at site surface level and appeared to be approximately 3.0 metres deep.

The site was bounded to the north by a recently constructed brick built building; to the east and west by substantial three and four storey brick built buildings and to the south by Belsize Road.

Access to the site was off Kilburn Place located to the north of the site.

2.3 Ground Conditions

The ground conditions were as anticipated from the desk study, with the exception that a substantial thickness of Made Ground was found to overlie the London Clay in Borehole 2.

Made Ground was found to a maximum depth of 0.8 metres and 3.6 metres below existing ground level in Boreholes 1 and 2 respectively.

For detailed information regarding ground conditions, reference should be made to the borehole logs.

2.4 Ground Water

Ground water was encountered at a minimum strike depth of 7.7 metres below existing ground level in Borehole 1. A minimum standing groundwater depth of 7.6 metres was recorded in Borehole 1. The ground water is likely to represent a localised pocket of water within the area of a claystone. After drilling continued, the ground water ceased to ingress into the borehole.

Pockets of ground water may be found perched within the Made Ground

The speed of the drilling operation is such that there may be insufficient time for ground water to flow into the borehole and hence be detected, particularly within cohesive strata.

Ground water equilibrium conditions may only be conclusively established by means of a series of measurements made in a standpipe, or piezometer, installed in the ground after drilling. Changes in ground water level do occur for a number of reasons including seasonal effects and variations in drainage.

soils LIMITED

3.0 Discussion Of Test Results

3.1 Standard Penetration Test Results

The results of the S.P.T. Tests carried out in the Made Ground showed the soils tested to be in a loose to medium dense state of compaction

The results of the tests carried out in the London Clay indicate the soils to have a stiff to very stiff consistency (ref:Stroud and Butler) with a trend of increasing stiffness with depth.

The results are given on the borehole logs.

3.2 Triaxial Test Results

The results of the quick undrained single-stage triaxial tests made on 100mm diameter samples of the cohesive soils of the London Clay showed the soils tested to be generally of a stiff to very stiff consistency.

Low cohesions were established in some of the samples which has been attributed to the fissured fabric of the soil.

There was a general trend of increasing strength with depth.

Figure 3 is a plot of undrained cohesions vs the depth at which the were samples taken.

The test results are given in Tables 1-5, Appendix B.

3.3 Atterberg Limit Test Results

The tests made on samples of the London Clay showed the soils tested to fall into Class CV on the British Soil Classification System. These are fine grained soils of a very high plasticity and as such generally have moderate bearing and settlement char-

acteristics; are non-frost susceptible; have a very low permeability and have a high shrinkage potential with changes in moisture content, requiring special foundation precautions near trees.

The test results are given in Table 6, Appendix B.

3.4 Sulphate Analyses

The significance of the Sulphate Test results are discussed later in this report.

The test results are given in Table 7, Appendix B.

4.0 Foundation Design

4.1 General

Made Ground is, by the nature of its variable composition, usually unpredictable in terms of bearing capacity and settlement characteristics. Foundations should, therefore, be taken through any Made Ground and into or onto the underlying natural strata.

It is considered that due to the presence of basements and the anticipated high loadings of the proposed structure that a piled foundation should be adopted on this site.

4.2 Piled Foundations

The construction of a piled foundation is a specialist job, and the advice of a reputable contractor, familiar with the type of ground and ground water conditions encountered on this site, should be sought prior to finalising the foundation design, as the actual pile working load will depend on the particular type of pile and method of installation adopted.

Should a bored pile be used then it would be necessary to case or otherwise support the shaft of the pile passing through the Made Ground, to prevent necking of the pile shaft whilst the concrete was fresh or green.

In Figure 3, a plot is given of undrained cohesion versus the depth from which samples were taken in each of the boreholes.

In Table A, preliminary load capacities calculated for varying diameters and lengths of pile taken into the London Clay are presented, for vertical loaded piles. These values have been calculated for the ground conditions found in the boreholes and

are based on Figure 3, and should be used for preliminary design purposes only as the actual working load is dependent on the type of pile and the method of installation.

Table A
Preliminary Driven Pile Working Loads
(Vertical Loads In kN)

Depth (m)	Diameter (m) .3	.45	.6
4.0	20 00 20	40 00 40	80 00 80
7.0	20 40 60	50 70 120	100 90 190
10.0	30 90 120	60 150 210	110 200 310
13.0	30 150 180	70 240 310	130 320 450
16.0	40 220 260	80 340 420	140 460 600
19.0	40 290 330	90 450 540	150 610 760

Notes

40	Pile Base Working Load
290	Pile Shaft Working Load
330	Total Working Load

The depth of pile is measured from existing ground surface and the upper four metres of the pile shaft has been ignored in the calculation of pile shaft resistance to take account of the thickness of Made Ground.

The pile working loads given in Table A incorporate a factor of safety of 3.0 on both the ultimate base and ultimate skin frictional values. In the calculations for end bearing in the London Clay, a bearing capacity factor (Nc) of 9 was adopted. An adhesion value of 0.45 was adopted in the London Clay for the calculation of the skin friction value.

The factors are typical of those for the soils found, though it may be possible to justify an increase, depending on the results of pile loading tests made on site. To be of value such tests need to be carried out in advance of the main piling contract and this should be discussed with the piling contractor.

Generally a minimum pile spacing of at least three pile diameters should be adopted for vertically loaded piles. This can be reduced to a minimum pile spacing of one metre for small diameter piles.

The bearing values given in Table A are applicable to single piles. Where piles are to be constructed in groups the bearing value of each individual pile should be reduced by a factor of about 0.8 and a calculation made to check the factor of safety against block failure.

No allowance for negative skin friction has been made in the pile bearing values given in Table A. It is considered that a negative skin friction of 10kN/m^2 should be adopted in the Made Ground, should the Made Ground be subject to surcharge such as ground bearing slabs. This value should be subtracted from the pile working load and not subjected to a factor of safety.

4.3 Ground Floor Slabs

Slabs cast directly onto untreated Made Ground are likely to undergo both total and differential settlement. Loadings from ground bearing slabs would result in negative skin friction forces acting on the shafts of the piles, within the Made Ground, and this should be allowed for in the determination of the pile working loads.

4.4 Excavations

Excavations in the Made Ground are likely to be unstable requiring suitable support. There is a possibility that old concrete or brick footings and basement walls are present below the surface of the site, which may hamper trenches excavated by light excavating machinery.

Excavations in the London Clay should remain stable in the short term.

Overdig is anticipated in the Made Ground.

Normal safety precautions should be adopted if excavations should be entered.

4.5 Sulphates

The total sulphate concentration in the soil tested fell into Class 1 and in excess of Class 1 of the Building Research Establishment Digest 363. Determinations of water soluble sulphate concentrations measured in a 2:1 water:soil extract showed the soil samples tested to fall into Class 1 of the Digest.

The pH of the soil was near neutral.

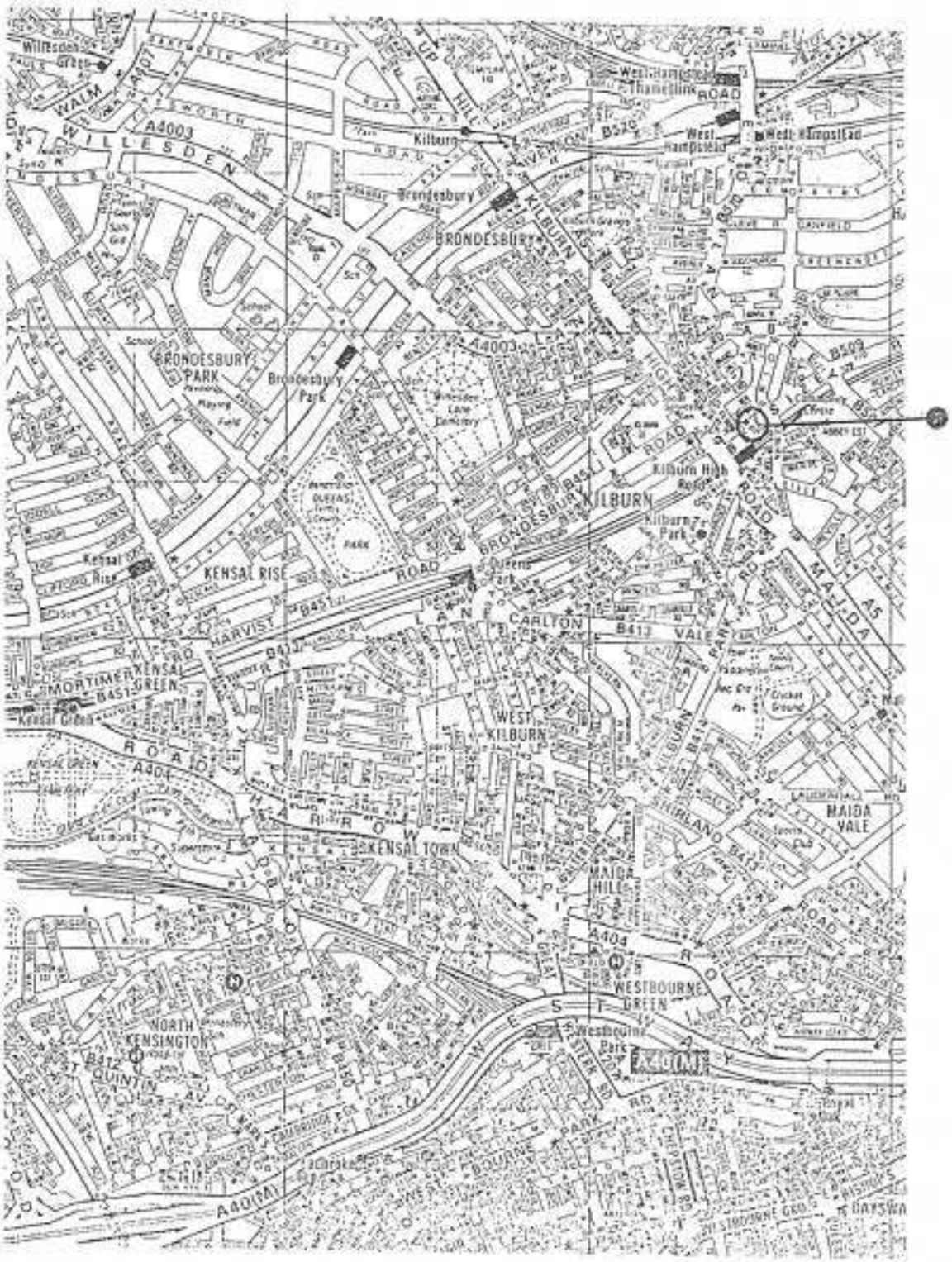
Concrete in contact with the soil or ground water should be designed in accordance with Class 1 of the B.R.E. Digest.

The following figures and appendices complete this report:

Figure 1	Site Location
Figure 2	Borehole Location
Figure 3	Cohesion vs. Depth
Appendix A	Field Work
Appendix B	Laboratory Testing

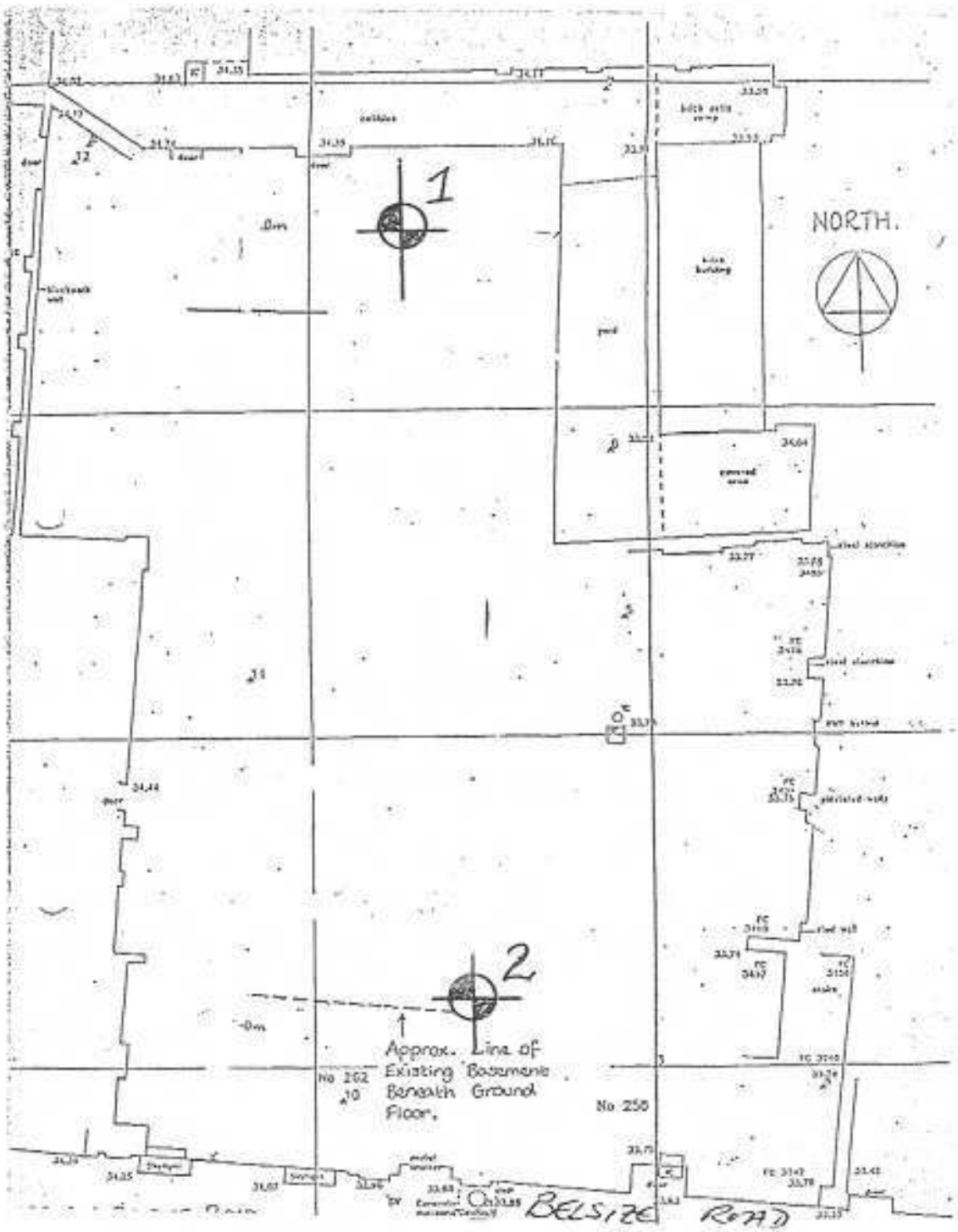
Eur Ing R. B. Higginson B.Sc.,PG.Dip.,C Eng.,MICE.,FGS.

G. Evans B.Sc, PG.Dip.,FGS.



PROJECT 258-262 Belsize Road, London NW6.	DATE Sept 1993	DIAM 150mm	
CLIENT R.T James and Partners	REF J3306		
Site Location	Fig 1	Engineer	Checked

soils LIMITED



PROJECT 256-262 Belsize Road, London NW6.	DATE Sept 1993	DIAM 150mm
CLIENT R.T James and Partners	REF J3306	
BH Location	Fig 2	Approx Position
	Engineer	Checked

soils LIMITED

COHESION DEPTH PLOT

Belloize Road, London NW6.
J3306

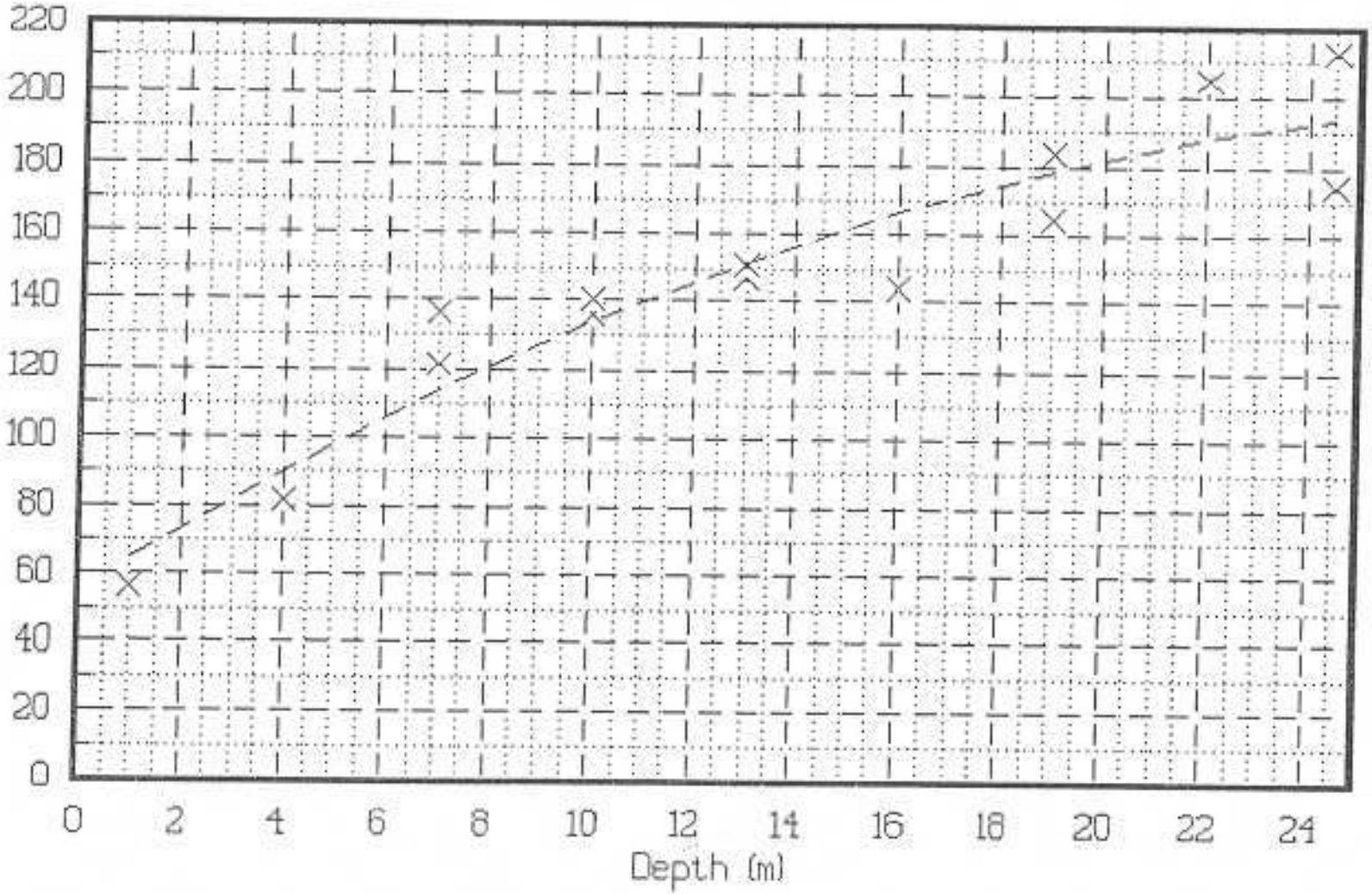


Fig 3

Cohesion (kPa)

Soils Limited

Appendix A
Site Testing

Excavation Method

The boreholes were drilled using hydraulic percussion window-sampling equipment.

Sampling

1. Disturbed Samples

Representative samples of the different strata encountered are taken from the hand auger holes and placed in jars with tight-fitting lids. These samples are examined for soil description.

2. Undisturbed Core Samples

Samples of cohesive soils are taken in 38mm diameter sample tubes driven into the ground by hand. The samples are thus obtained in a relatively undisturbed condition. The sample tubes are sealed with wax and capped to minimise moisture content changes prior to testing in the laboratory.

3. Bulk Samples

Bulk samples of cohesionless soils are taken, the amount being dependent on the grading of the soil. The samples are placed in stout plastic bags to prevent loss of the fine fraction.

The following plates are attached and complete this Appendix:

Key to Logs
Borehole Logs

Key to Legends on Logs
Composite soil types e.g. silty clay shown as combined legend

	shear surface	C	Cone Penetration Test Blows per 75mm inc
U	100mm thick-walled driven sampler. Blow counts shown under 'U'.	S	Standard Penetration Test Blows per 75mm inc
		100/200	Partial penetration Total Blow Counts over achieved penetration
J	Small disturbed sample		
B	Bulk disturbed sample		
W	Water sample		
V 210	Vane Test with cohesion (kPA)		
P 1.20	Pocket penetrometer reading approx. on 'C'		

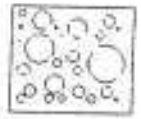

Siltstone

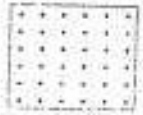

Void


Sand

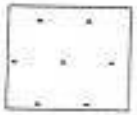

Mudstone


Shale


Gravel

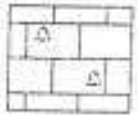

Sandstone


Conglomerate


Peat


Coal seam


Breccia

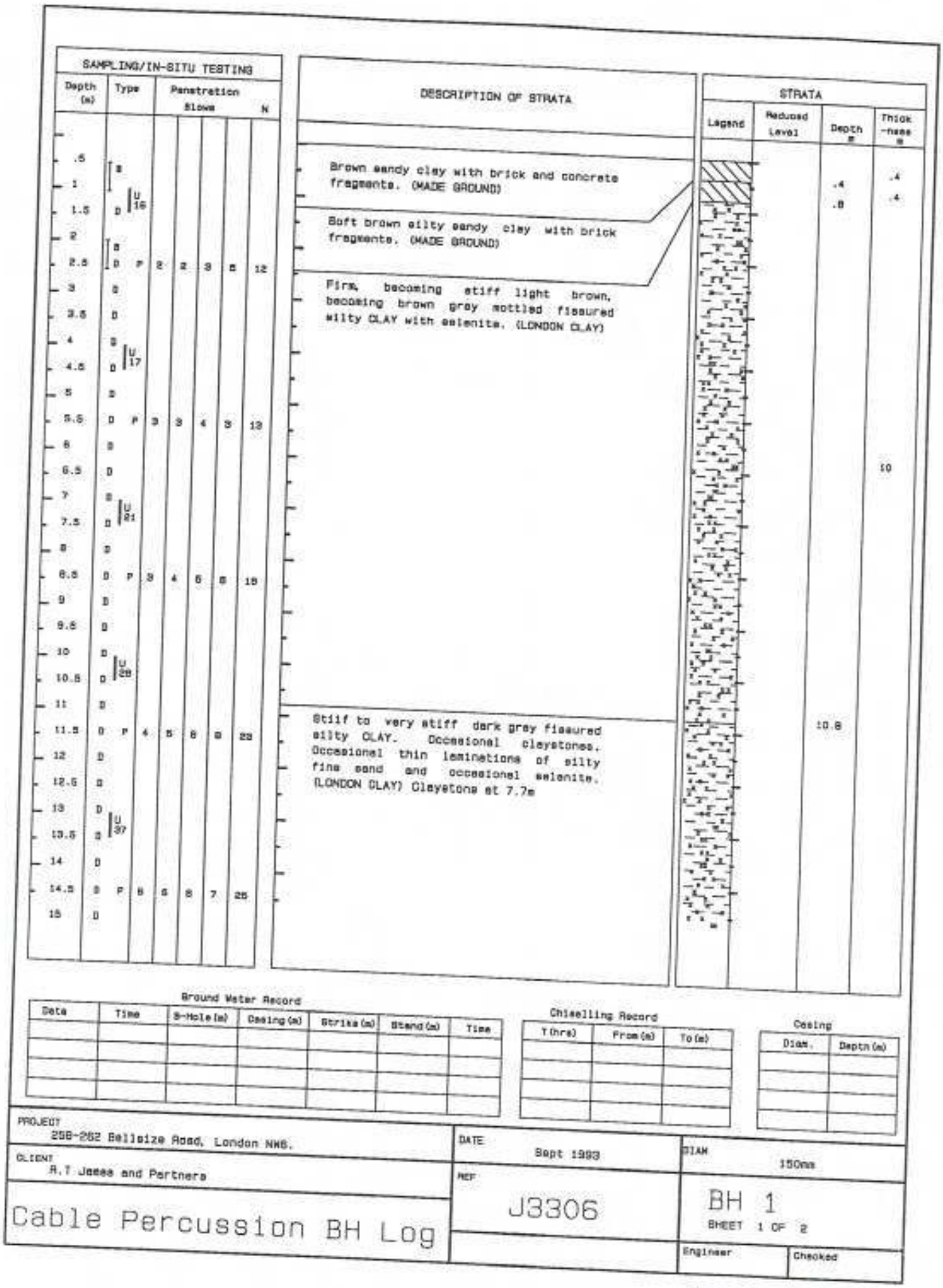

Chalk

Dwg Details

Borehole & Trial Pit Key

Date: As report			Site: General		
By: AY	Chk:	App:	Dwg Ref: Gen/SK1		

soils LIMITED


SAMPLING/IN-SITU TESTING
Depth (m)
Type
Penetration
Blows
N
DESCRIPTION OF STRATA
Brown sandy clay with brick and concrete fragments. (MADE GROUND)
Soft brown silty sandy clay with brick fragments. (MADE GROUND)
Firm becoming stiff light brown, becoming brown grey mottled fissured silty CLAY with selenite. (LONDON CLAY)
Stiff to very stiff dark grey fissured silty CLAY. Occasional claystones. Occasional thin laminations of silty fine sand and occasional selenite. (LONDON CLAY) Claystone at 7.7m
STRATA
Legend
Reduced Level
Depth m
Thick-ness m
.4
.8
10.8
10
Ground Water Record
Date
Time
B-Hole (m)
Casing (m)
Strike (m)
Stand (m)
Time
Chiselling Record
T (hrs)
From (m)
To (m)
Casing
Diam.
Depth (m)
PROJECT
258-262 Belsize Road, London NW6.
DATE
Sept 1993
DIAM
150mm
CLIENT
R.T Jones and Partners
REF
J3306
BH 1
SHEET 1 OF 2
Cable Percussion BH Log
Engineer
Checked
soils
LIMITED

SAMPLING/IN-SITU TESTING								DESCRIPTION OF STRATA	STRATA			
Depth (m)	Type		Penetration Blows				N		Legend	Reduced Level	Depth m	Thick -ness m
15.5	D											
16	D	U 52										
16.5	D											
17	D	P	8	8	10	11	39					
17.5	D											
18	D											14.2
18.5	D											
19	D	U 62										
19.5	D											
20	D											
20.5	D	P	10	13	17	19	69					
21	D											
21.5	D											
22	D	U 68										
22.5	D											
23	D											
23.5	D	P	12	15	28	28	69					
24	D											
24.5	D	U 60										
25	D							Borehole terminated at 25m.bgl			25	

Notes: Water strike localised from oleystone.

Ground Water Record

Date	Time	B-Hole (m)	Casing (m)	Strike (m)	Stand (m)	Time
02.09	pm	7.7	3.0	7.7	7.6	0.5hr

Chiselling Record

Thral	From (m)	To (m)

Casing

Diam.	Depth (m)
150mm	3.0

PROJECT
250-262 Belleize Road, London NW8.

DATE
Sept 1993

DIAM
150mm

CLIENT
R.T Jones and Partners

REF
J3306

BH 1
SHEET 2 OF 2

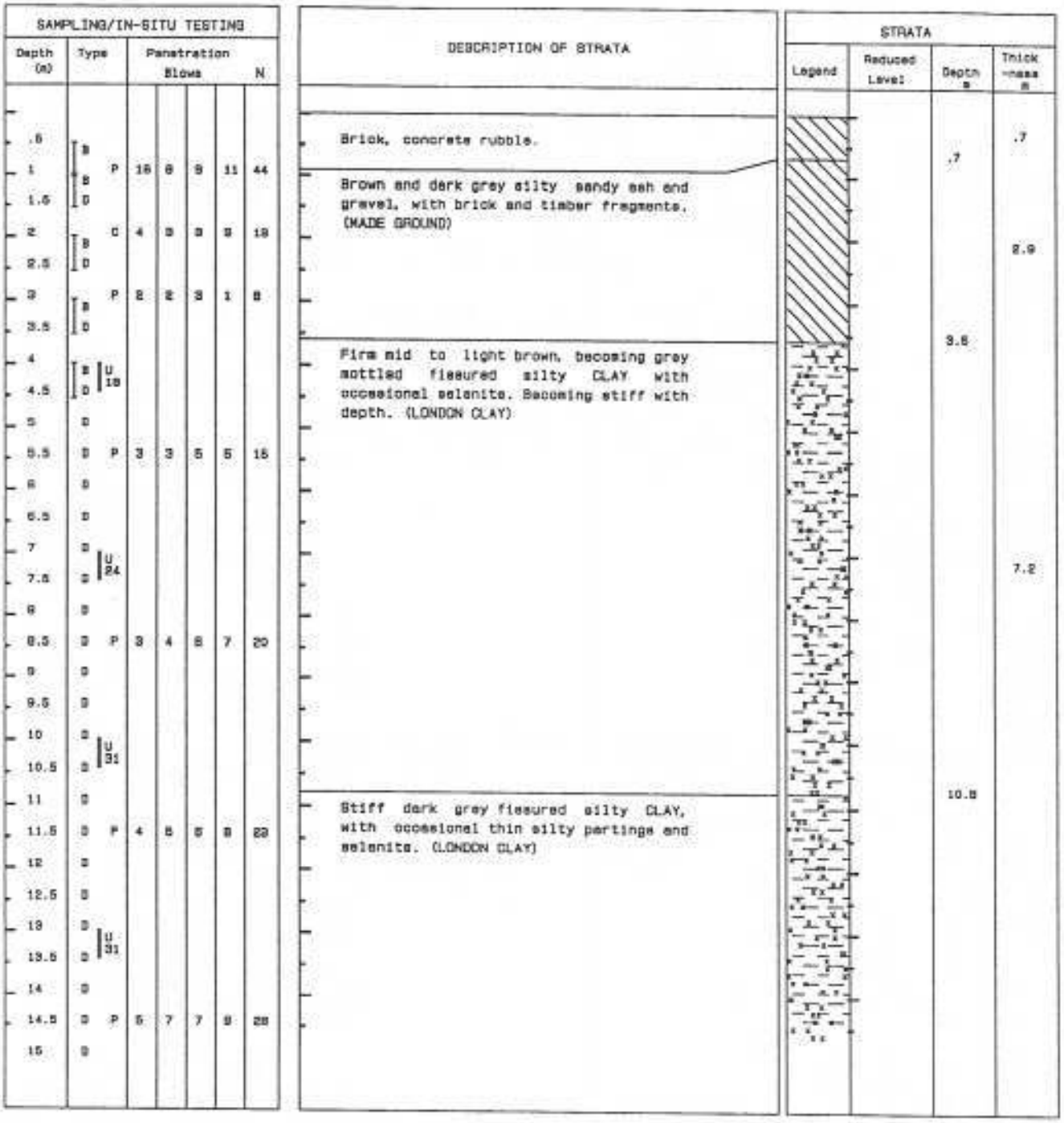
Cable Percussion BH Log

47J 2B 9U100 SEPT

Engineer

Checked

soils LIMITED



Ground Water Record

Date	Time	B-Hole (m)	Casing (m)	Strike (m)	Stand (m)	Time

Chiselling Record

T (hrs)	From (m)	To (m)

Casing

Diam.	Depth (m)

PROJECT
268-282 Belsize Road, London NW6.

DATE
Sept 1993

DIAM
150mm

CLIENT
R.T James and Partners

REF
J3306

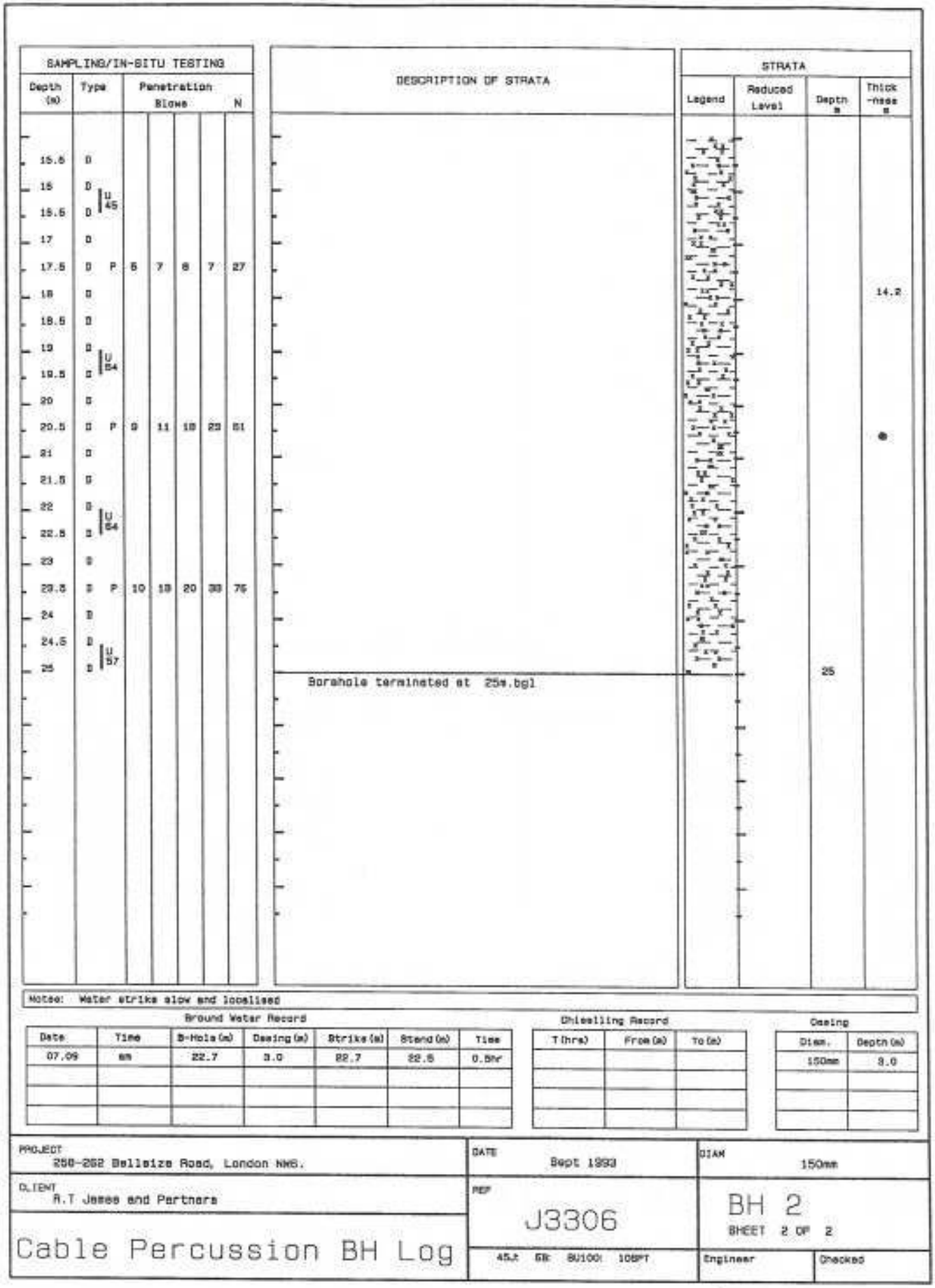
BH 2
SHEET 1 OF 2

Cable Percussion BH Log

Engineer

Checked

soils LIMITED



Notes: Water strike slow and localised

Ground Water Record

Date	Time	B-Hole (m)	Casing (m)	Strike (m)	Stand (m)	Time
07.09	am	22.7	3.0	22.7	22.5	0.5hr

Chiselling Record

T (hrs)	From (m)	To (m)

Casing

Diam.	Depth (m)
150mm	3.0

PROJECT: 250-252 Belsize Road, London NW6.	DATE: Sept 1993	DIAM: 150mm
CLIENT: R.T James and Partners	REF: J3306	BH 2 SHEET 2 OF 2
Cable Percussion BH Log	45t GR: BU100: 10BPT	Engineer / Checked

soils LIMITED

APPENDIX B
LABORATORY TESTING

Sample Preparation

Samples for laboratory testing were prepared to the requirements of B.S. 1377:Part 1:1990.

Triaxial Compression Tests

The test were quick undrained tests in accordance with B.S. 1377:Part 7:1990 Test 8.

The samples used were either 38 millimetres or 100 millimetres in diameter and 76 or 200 millimetres in length. The sample was sealed in a rubber membrane to prevent changes in moisture content during testing and compressed at a constant rate of strain (2% per minute) whilst being subjected to a constant lateral pressure. Loading was continued until the sample fails. The compressive stress is the axial load at failure divided by the cross-sectional area of the sample.

Sulphate Test

The sulphates present in the soil or ground water are determined in accordance with B.S. 1377:Part 3 Test 5. Where high total sulphate concentrations are measured the soluble sulphate concentrations is determined using a 2:1 water:soil extract.

The pH values of the soil or ground water are determined in accordance with B.S. 1377:Part 3:1990 Test 9.

Plasticity Indices

The plasticity indices was obtained in accordance with Test 4 and Test 5: BS 1377:Part 2:1990. A representative sample of cohesive soil is tested at three different moisture contents using a cone penetrometer and the liquid limit established, which is defined as the point at which the soil changes from a plastic solid to a fluid. The plastic limit which is defined as the point at which the soil changes from a plastic to a brittle solid is also determined. The results are presented as the natural moisture content the liquid limit, the plastic limit and the plasticity index.

Grading Analyses

The test were carried out in accordance with Test 8: BS1377:Part 2:1990. The bulk sample is sub-divided by riffling to attain a suitable representative sample. If the sample contains little or no fines, it is dried and passed through a series of sieves of succeedingly finer mesh in order to obtain the proportion of different sized particles. If fines are present within the sample, these are removed by washing through a 63 micron sieve and the remaining soil dried and sieved as described previously.

The following plates are attached and complete this Appendix:

Laboratory Test Results

TEST RESULTS

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		1.0	
Description			
Light brown mottled fissured silty CLAY.			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
20	112	1.93	34
Undrained Cohesion	56 kN/m^2	ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		4.0	
Description			
Red brown mottled fissured silty CLAY with occasional selenite			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
80	165	1.92	31
Undrained Cohesion	82 kN/m^2	ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		7.0	
Description			
Brown fissured silty CLAY with occasional selenite			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
140	275	1.90	31
Undrained Cohesion	137 kN/m^2	ϕ	degrees

TEST RESULTS

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		10.0	
Description			
Brown orange mottled fissured silty CLAY with abundant silt pockets and partings and occasional selenite			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
200	272	1.92	30
Undrained Cohesion 136 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		13.0	
Description			
Dark brown fissured very silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
260	294	1.93	30
Undrained Cohesion 147 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		16.0	
Description			
Dark brown fissured very silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
320	289	1.98	26
Undrained Cohesion 144 kN/m^2		ϕ	degrees

TEST RESULTS

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		19.0	
Description			
Dark brown fissured silty CLAY with silt pockets and partings			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
380	369	1.97	27
Undrained Cohesion 184 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		22.0	
Description			
Dark brown fissured silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
440	410	1.99	25
Undrained Cohesion 205 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
1		24.5	
Description			
Dark brown fissured silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
490	427	1.99	25
Undrained Cohesion 213 kN/m^2		ϕ	degrees

TEST RESULTS

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		7.0	
Description			
Brown fissured silty CLAY with orange staining on fissure faces and occasional selenite and shell fragments			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
200	243	1.89	21
Undrained Cohesion 121 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		10.0	
Description			
Brown fissured silty CLAY with orange staining on fissure faces and occasional selenite and shell fragments			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
200	280	1.89	21
Undrained Cohesion 140 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		13.0	
Description			
Dark brown fissured very silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
260	302	1.96	27
Undrained Cohesion 151 kN/m^2		ϕ	degrees

TEST RESULTS

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		16.0	
Description			
Dark gre brown fissured silty CLAY with silt pockets			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
360	101	1.90	27
Undrained Cohesion 50 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		19.0	
Description			
Dark grey brown fissured silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
380	330	1.98	25
Undrained Cohesion 165 kN/m^2		ϕ	degrees

TRIAXIAL TEST RESULTS			
BOREHOLE		DEPTH (m)	
2		24.5	
Description			
Dark brown fissured silty CLAY			
Test Type: U100 Single stage			
Cell kN/m^2	Compressive kN/m^2	Density Mg/m^3	M/C %
490	348	1.90	26
Undrained Cohesion 174 kN/m^2		ϕ	degrees

TEST RESULTS

ATTERBERG LIMIT TEST RESULTS				
BOREHOLE		DEPTH (m)		
1		4.0		
Description				
Red brown mottled silty CLAY with occasional selenite				
LL %	PL %	PI %	M/C %	CLASS
75	29	46	31	CV

ATTERBERG LIMIT TEST RESULTS				
BOREHOLE		DEPTH (m)		
1		19.0		
Description				
Dark brown silty CLAY with silt pockets				
LL %	PL %	PI %	M/C %	CLASS
71	29	42	27	CV

ATTERBERG LIMIT TEST RESULTS				
BOREHOLE		DEPTH (m)		
2		16.0		
Description				
Dark brown silty CLAY with silt pockets				
LL %	PL %	PI %	M/C %	CLASS
72	30	42	27	CV

TEST RESULTS

SULPHATE TEST RESULTS			
BOREHOLE	DEPTH (m)		
1	4.0		
Description			
Soil			
TOTAL CONCENTRATION	SOLUBLE CONCENTRATION	DESIGN CLASS	pH
2.056%	0.528g/l	1	6.60

SULPHATE TEST RESULTS			
BOREHOLE	DEPTH (m)		
1	19.0		
Description			
Soil			
TOTAL CONCENTRATION	SOLUBLE CONCENTRATION	DESIGN CLASS	pH
0.239%	0.178g/l	1	7.27

SULPHATE TEST RESULTS			
BOREHOLE	DEPTH (m)		
2	13.0		
Description			
Soil			
TOTAL CONCENTRATION	SOLUBLE CONCENTRATION	DESIGN CLASS	pH
0.239%	0.192g/l	1	7.17

SULPHATE TEST RESULTS			
BOREHOLE	DEPTH (m)		
2	16.0		
Description			
Soil			
TOTAL CONCENTRATION	SOLUBLE CONCENTRATION	DESIGN CLASS	pH
0.239%	0.178g/l		

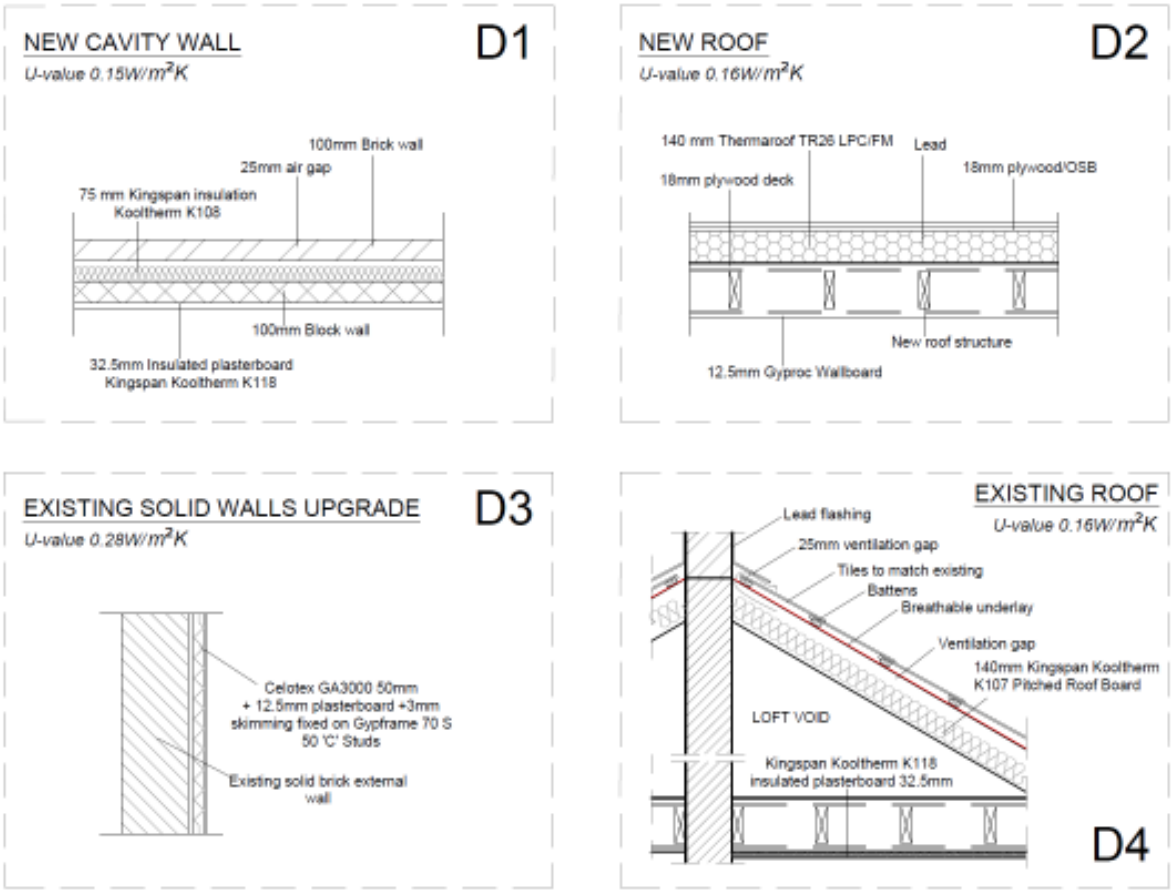
APPENDIX E – SUSTAINIBILITY STATEMENT

Condition 6 : Sustainability Statement

1. ENERGY and CO2 EMISSIONS

a. Materials

The fabric elements of the new side extension will be better than the U-values specified in Approved Document L1A, table 2, as per below. The existing building elements will be upgraded with details to meet regulations for new-build as well.



All windows will be replaced with new timber 24mm double glazed windows, with a structure of 4mm/16mm/4mm argon filled and Low-E, that will have a U-value of maximum 1.8W/m2K. The windows will be made of sustainable timber.

b. Heating

The new units will be heated with gas condensing boilers and energy efficient radiators. New pressurized system with energy efficient water cylinder will be used in each unit for the supply of hot water.

c. Lighting and ventilation

All main rooms of all flats will have natural light and ventilation. Cross ventilation is achieved on all the flats, and all windows will be fitted with trickle ventilation. Direct solar gain is possible for the main living areas of all flats throughout the year, and on the bedrooms in part of the year. Fitted blinds will provide shading to the users.

LED low-consumption lamps will be fitted in all flats, as well as the communal areas and any external of the building.

d. White goods

The white goods used will be have an energy label of A+ or more.

e. Transport

Six spaces of cycle parking is provided on site, urging the users to make use of bicycles for their transport. Good public transport links and proximity to the local amenities make the need for a private car unnecessary.

2. WATER

Low consumption white goods will be used in the new flats. The new plumbing fixings and sanitary ware will achieve a maximum internal water use of 105 litres/person/day. Details of this will be submitted and approved prior to occupation as per Condtion 7 of the planning permission.

3. WASTE

Adequate arrangements for the separate storage of general refuse and recycling has been provided on site, with 1No x 770l eurobins for each. The flats internally will be fitted with separate bins for general refuse and recycling in the kitchens as well.

4. MANAGEMENT

During construction the site will be hoarded on both sides and all the relevant Health and Safety measures will be taken. The site will operate withing the approved working hours of 8am to 6pm on weekdays and 8am to 1pm on Saturdays. Any damages in the public realm caused by deliveries / construction will be rectified immediately. At the end of each day the pavement around the site will be properly cleaned.

London Office
25 Sackville Street
London
W1S 2AX

+44(0) 7765 948 685

www.bardenchapman.co.uk
info@bardenchapman.co.uk

BardenChapman
Civil & Structural Design Consultants