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CONSTRUCTION CONSULTANTS

UNISON, EUSTON ROAD NORTH
Stability Works to Listed Building
(Former Elizabeth Garrett Anderson Hospital)

Scope and Specification
for Structural Works

January 2007

Ref: L051036

Revision 0

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CONSTRUCTION CONSULTANTS

Job: UNISON, Euston Road North
Ref: L051036 – Revision 0
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APPENDICES

Revision	Amendments	By	Checked	Date
0	First Issue	PL	PL	26/01/07

Job: UNISON, Euston Road North
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1.0 Introduction

1.1 This document outlines the scope and specification of the required structural works to stabilise the listed buildings at the former Elizabeth Garret Anderson Hospital. This document should be read in conjunction with all other relevant architectural information.

1.2 The former Elizabeth Garrett Anderson hospital located on the corner of Euston Road and Churchway has been purchased by the clients, Unison. The site is to be developed as their new head offices together with a residential block to the rear of the site. The original part of the hospital, an L-shaped building fronting Churchway and Euston Road constructed circa 1890, is listed. The listed building has suffered serious damage due to subsidence and is currently propped internally and propped externally by raking shores.

1.3 Prior to undertaking the main re-development of the site, it is intended to undertake urgent stability works to the listed building. These works are required to prevent the listed building deteriorating further. The works to be undertaken do not include the full renovation of the listed building.

2.0.0 Scope of Works

2.0.1 The Contractor shall fully inspect the site and the surrounding areas to fully understand the site logistics and the available working space. The structural works can be split into the following categories; site preparation and clearance; demolition and arch repair; piling and underpinning and temporary works.

2.0.1 Site Preparation and Clearance

2.0.2 In order to facilitate the works, specifically the underpinning, the contractor shall assess the available space around the building and available headroom access into the building, with respect to the piling rig to be utilised. Drawing number L051036/ LB-01 indicates the general site clearance requirements, however, the contractor shall assess the site and make due allowance for the following works.

2.0.3 The existing drainage runs shall be temporarily diverted to facilitate the piling (the drainage indicated on drawing number L050136/ LB-01 is indicative only). Further CAT scanning and investigation pits will be necessary to assess if any further services are located within the piling zone. The service engineer shall be consulted if any such services are located. **Upon completion of the works the drainage shall be re-instated.**

2.0.4 Drawing number L050136/ LB-01 indicates the existing railings and plinth to be removed to facilitate access for the piling rig. Details of the railings shall be carefully recorded prior to demolition and re-instated following completion of the works, all in accordance with the conservation architect's specifications. The contractor shall assess the need to extend the site hoarding into the public footpath and ensure that all necessary permissions are in-place.

2.0.5 The contractor shall allow for the removal of all other obstacles within the vicinity of the listed building to facilitate piling rig access. The contractor shall allow for all external ground levelling or the use of an external piling mat as required by the specialist piling sub-contractor.

2.0.6 The contractor shall adequately protect the listed building during all phases of the work.

2.1.0 Demolition and Arch Repair

2.1.1 The extent of demolition required is indicated on drawing numbers L051036/ LB-02 and L051036/ LB-03. It shall be noted that only demolition indicated as 'demolition to be undertaken as part of the emergency stability works' shall be undertaken as part of these works.

2.1.2 All demolition of parts of the listed building shall be undertaken strictly in accordance with the Conservation Architect's specification; all elements shall be fully recorded prior to demolition to allow accurate re-instatement.

2.1.3 Demolition shall commence from the top down, from fully scaffolded platforms around the raking shores. The second floor bay arch shall be repaired first by specialist brickwork contractors. To facilitate repair of the second floor arch, the feature bay window shall be removed in accordance with the Conservation Architect's details. All necessary temporary works shall be in place to fully support the upper arch. The repair of the brick arch shall commence with investigation works to the feature cornice. Removal of any part of the external brickwork shall only commence following the taking of detailed dimensional and photographic records. Wherever possible, the existing masonry shall be cleaned and re-used. Refer to drawing numbers L051036/ LB70 and L051036/ LB71.

2.1.4 Following repair of the second floor arch, the first floor arch shall be repaired in a similar manner (drawing number L051036/ LB-60).

2.1.5 The ground floor arch shall be demolished and replaced with steel support beams as indicated upon drawing numbers L051036/ LB-50 and L051036/ LB51.

2.1.6 The bay shall be demolished and recorded in accordance with the Conservation Architect's details and specifications.

2.2.0 Piling and Underpinning

2.2.1 The design of the pile length/ reinforcement and concrete is to be to contractor's design. The pile shall be of maximum diameter of 300mm and shall be installed through drilling. The contractor, and thereby the choice of piling rig, shall make due allowance for allowable headroom within the listed building. The drilling rig shall be capable of drilling through ground obstructions and the pile shall be sleeved over the depth of dessicated clay (for example; Fondedile).

2.2.2 Prior to undertaking piling, the contractor shall confirm the final setting out of the piles back to the engineer. The pile setting out is indicated upon drawing number L051036/ LB-10. Upon confirmation of the piling setting out details, the engineer shall complete the reinforcement designs and schedules for the ground beam pins and issue to the contractor.

2.2.3 The underpinning shall be undertaken in a sequence which shall ensure the stability of the building and be with respect to the contractor's method of working. The contractor shall submit, to the engineer, a detailed method statement, for approval, which shall outline the sequence of works.

2.2.4 The contractor shall have the opportunity of proposing an alternative method of underpinning the building. An example of an alternative method is indicated upon drawing number L051036/ LB-13; this drawing indicates the Pali Radice 'scissor piling' system (by Fondedile or others). Shall the contractor wish to undertake this method of underpinning, full specialist designs shall be submitted to the engineer for comment. The contractor shall make due allowance of the adjacent London Underground Tunnels (Circle Line).

2.3.0 Temporary Works

2.3.1 The contractor shall be responsible for the designs of any temporary works required to facilitate the works. Temporary works are likely to be required to undertake the repairs of the first and second floor arches and the replacement of the ground floor arch with supporting steels.

2.3.2 The contractor shall submit all temporary works designs and drawings to the engineer, together with any necessary method statements, for comment, prior to undertaking the works.

2.3.2 Upon completion of the works, a temporary waterproof wall, built in accordance with the architect's details shall be installed in the wall opening at first and second floors (at the demolished bay location).

AKSWard Ltd.

26th January 2007

Appendix A

Specifications

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C
Existing site/buildings/services

C41
Repairing/ renovating/ conserving masonry

C41 Repairing/ renovating/ conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

10 INFORMATION TO BE PROVIDED WITH TENDER
- Submit: Details of all specialist sub-contractors
  Details of method of working .

110 SCOPE OF WORK
- Repair of first and second floor arches to elevation fronting Churchway
  TO BE READ IN CONJUNCTION WITH CONSERVATION ARCHITECT'S SPECIFICATIONS AND DETAILS .

120 REVIEWING SCOPE OF THE WORK
- Inspection: Arrange before starting work. Confirm type and extent of work required.
- Marking: Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced.
- Identification of masonry units to be removed, replaced or repaired: Code number cross-referenced to drawings/ photographs.
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.

125 REDUNDANT FITTINGS/ FIXINGS
- Items to be removed: wood dowels and redundant fixings .
- Removal: Minimize disturbance to surfaces.

130 REMOVAL OF PLANT GROWTHS FROM MASONRY
- Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
- Removal of roots: Use dampened temporary wood wedges or other approved method to assist removal. Where growths cannot be removed completely without disturbing masonry seek instructions.
- Plants to remain in the ground: Cut out a section of stem as close to the ground as possible. Peel bark back from stump and apply herbicide paste. Leave stump to wither.

140 RECORD DRAWINGS
- General: Maintain accurate records of work carried out to masonry as follows: photographic and survey drawings marked up to show replacement brick/ stones, areas of re-pointing and repairs .
- Submission: At completion.
  - Copies: 3 .

WORKMANSHIP GENERALLY

150 POWER TOOLS FOR REMOVAL OF MORTAR
- Usage: Permitted only with prior approval .

155 PUTLOG SCAFFOLDING

- Usage: Not permitted .

160 PROTECTION

- Handling of masonry units: Prevent overstressing during transit, storage and fixing. Lift units at designed lifting points where provided.
- Storage of masonry units: On level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
- Protection of masonry: Suitable nonstaining slats, boards, etc. Remove at completion.
  - Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking.

165 STRUCTURAL STABILITY

- General: Maintain stability of masonry. Report defects, including signs of movement, that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY

- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

180 OPERATIVES

- General: Skilled and experienced with the materials and procedures required.
  - Evidence of training and previous experience: Provide on request.

185 ADVERSE WEATHER

- Frozen materials: Do not use. Do not lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint:
  - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising (unless mortar has a temperature of not less than 4°C when laid and the masonry is thoroughly protected).
  - In hydraulic lime:sand mortars when at or below 5°C and falling or unless it is at least 3°C and rising.
  - In nonhydraulic lime:sand mortars in cold weather without approval.
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain and snow: Protect masonry by covering during precipitation and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out too rapidly.
- New mortar damaged by frost: Rake out and replace.

190 CONTROL SAMPLES

- General: Obtain approval of the following before proceeding with the remainder: All replacement brick/ stones .
  Protection: Protect from adverse weather and damage.

195 SAND SAMPLES

- Approval: Before placing order, submit for approval representative samples of: Sands for mortar repairs .

MATERIAL/ PRODUCTION/ ACCESSORIES

215 SAMPLES

- Inspection: Make arrangements for the to inspection of samples of the following materials: Stone/ headers and stretchers/ red rubbers for arches .
- Samples: Representative of the range of variation in appearance for each type of material to be matched.
- Appearance: Obtain approval before placing orders with suppliers or proceeding with production.
- Approved samples : Keep at site . for reference purposes. Protect from damage.

220 RECORDING PROFILES

- Profiles: Take measurements from existing masonry units, as instructed, to allow replacements to be matched accurately.
- Recording in situ: If there are no suitable joints for inserts, seek instructions.
- Drawings and templates: Prepare as necessary, clearly and indelibly marked to identify use and location.

230 INSPECTION OF DRAWINGS/ TEMPLATES

- Give notice: Before commencing production of the following replacement masonry units: all replacement stone/ brick units .
  - Period of notice (minimum): One week .

235 INSPECTION OF MASONRY UNITS

- General: Before despatch to site, inspect and check completed units for:
  - Match with approved samples.
  - Compliance with drawings and specification.
- Give notice: At appropriate stages in production to allow inspection of masonry units before delivery to site.

245 REPLACEMENT STONE UNITS

- Minimum bed depths and agreed face lines in relation to existing work: Maintain. Make suitable allowances for any final finishing carried out in situ.
- Sizes and profiles: To match existing masonry; existing joint widths maintained.
- Sinkings for fixings and joggles: Accurately aligned and positioned in relation to existing masonry. Provide sinkings for lifting devices.
- Marking: Each block/ dressing clearly marked on a concealed face to indicate the natural bed and position in the finished work.

250 ORIENTATION OF STONE

- Natural bed:
  - In plain walling: Horizontal
  - In projecting stones and copyings: Vertical and at right angles to wall face.
  - In arches: At right angles to line of thrust.

255 ASHLAR BLOCKS/ DRESSINGS

- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

260 BRICKS

- Types: To conservation architect's requirements .
- Sizes/ Special shapes: to match existing .

265 SALVAGED/ SECOND HAND BRICKS

- Condition:
  - Free from matter such as mortar, plaster, paint, bituminous materials and organic growths. Sound, clean and reasonably free from cracks and chipped arrises.

281 FIXINGS FOR Replacement Stone

- Procurement: Selected by the specialist contractor/ supplier. Submit details of proposed fixings.
- Material: Wrought or continuously cast copper alloy, or austenitic stainless steel.
- Type, size, strength and number: As necessary to resist all loads likely to occur during the life of the building, and to prevent any lateral displacement or pulling apart of the construction.

DISMANTLING/ REBUILDING

310 DISMANTLING MASONRY FOR REUSE

- Masonry units to be reused: Remove carefully and in one piece.
- Identification: Where masonry is to be removed temporarily, identify each unit clearly and indelibly on concealed faces indicating their original positions in the walling can be readily identified.
- Old mortar, dirt and organic growths: Clean off and leave masonry in a suitable condition for rebuilding.

320 REBUILDING Brick Arches

- Replacement materials: Brick to match existing .
- Mortar: As section Z21.
  - Mix: Lime Mortar to match existing .
  - Sand source/ type: well graded crushed stone .
- Fixings: *none* .
- Rebuilding: To match previous face and joint lines, joint widths and bonding and adequately bonded to retained work and backing masonry, etc.
- Joint surfaces: Dampen to control suction as necessary.
- Laying: On a full bed of mortar, and all joints filled.
- Exposed faces: Keep clear of mortar and grout.
- Joints: To match existing .
- Other requirements: ALL PROPOSED REBUILDING DETAILS TO BE APPROVED BY CONSERVATION ARCHITECT .

REPLACEMENTS AND INSERTIONS

330 PREPARATION FOR REPLACEMENT MASONRY

- Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
- Existing metal fixings, frame members, etc: Report when exposed.
- Redundant metal fixings: Remove completely.
- Recesses: Thoroughly clean to remove loose material and leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather.

365 REPLACEMENT OF BRICKSBroken bricks

- Bricks: Clay to conservation architect's details as clause 260.
- *Mortar*: As section Z21.
  - Mix: lime mortar .
  - Sand source/ type: Well graded crushed stone to approval .
- Fixings: Not required .
- *Joints: to conservation architect's requirements* .
- Other requirements: None .

385 LAYING REPLACEMENT MASONRY

- Exposed faces of *new material*: Keep to approved face lines.
- Faces, angles and features: Accurately align. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

390 GROUTING JOINTS

- Grout mix: lime mortarto match existing .
- Joints that cannot be fully filled with bedding mortar:
  Grout thoroughly around replacement masonry units
- Grouting: Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material. Prevent grout staining exposed face.

D
Groundwork

D20
Excavating and filling

D20 Excavating and filling

4 SITE INVESTIGATION
- Report: Soils Consultants Ltd Report on Ground Investigation No 4097/OT/TSR dated 1st March 2006.

10 PREPARATORY WORK
- Trees, shrubs and hedges to be removed: Cut down, grub up main roots and fill voids.
- Clear site of rubbish and vegetation. Grub up large roots.
- Arisings: Remove from site.

20 STRIPPING TOPSOIL
- General: Excavate from areas where there will be regarding or construction work.
  Depth of removal: 150 mm.

27 ADJACENT EXCAVATIONS
- Timing of excavations in close proximity: Complete and backfill deepest excavation first.

30 OBSTRUCTIONS
- Recorded foundations, beds, drains, etc: Break out and seal off drain ends. Remove contaminated earth.
- Unrecorded foundations, beds, basements, filling, tanks, service pipes, drains, etc: Give notice.

35 EXCESS EXCAVATIONS
- Excavation taken wider than required: Backfill with well graded granular materia .
- Excavation taken deeper than required: Backfill with well graded granular material .

40A SURPLUS EXCAVATED MATERIAL
- Remaining material: Remove from site.

50 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS
- Generally: Do not import or use fill materials which would, either in themselves or in combination with other material or ground water, give rise to a health hazard, damage to building structures or instability in the filling.

53 WATER
General: Keep excavations free from water until foundations and below ground constructions are completed.

55 PLACING FILL GENERALLY
- Excavations and areas to be filled: Free from loose soil, rubbish and standing water.
- Freezing conditions: Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces.
- Fill against structures, membranes or buried services: Place and compact in a sequence and manner which will ensure stability and avoid damage.

60 BACKFILLING AROUND FOUNDATIONS

- Under oversite concrete and pavings: Hardcore.
- Under grassed or landscaped areas: Material excavated from the trench, laid and compacted in 300 mm layers.

62 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.17.
- Frost-susceptible fill: Use only within the external walls of buildings below spaces that will be heated. Protect from frost during construction.

65 HARDCORE

- Fill: Granular material, free from harmful matter and excessive dust or clay, well graded, all pieces less than 75 mm in any direction, and in any one layer only one of the following:
  - Crushed hard rock or quarry waste.
  - Crushed concrete, brick or tile, free from plaster.
  - Gravel or hoggin.
- Filling: Spread and level both backfilling and general filling in layers not exceeding 150 mm. Thoroughly compact each layer.

75 BLINDING TO HARDCORE

- Surfaces to receive sheet overlays or concrete: Blind with:
  - Concrete where shown on drawings; or
  - Sand, fine gravel, or other approved fine material applied to provide a closed smooth surface.
- Permissible deviation on surface level: +0 -25 mm.

D50
Underpinning

D50 Underpinning

To be read with Preliminaries/ General conditions.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit: A full description of underpinning proposals including:
  - Drawings: As necessary for understanding the proposals.
  - Method statement.

  Additional information: Programme showing sequence and resources.

GENERAL

110 UNDERPINNING - CONTRACTOR DESIGN

- Purpose: To found the building below the level of future ground movements.
- Extent: All external walls.
- Type: Piled.
- Features: Protection required against ground heave.
- Contractor's design: Piles.
- Standards:
  - Mass concrete underpinning to BS 8004;
  - Piling to BS 8004 and SPERW, sub-section 1.4, Option 1; and
  - Reinforced concrete to BS 8110-1.
- Requirement: Complete design of underpinning and construct to develop the ultimate bearing capacity necessary to support the specified loads without damage to or undue deflection of the supported structure:
  - Working loads: As drawing.
  - Load factor: To BS EN 1997-1 .
  - Settlement criteria for structure at working load: To be restricted to limit the possibility of future structural damage.
- Site investigation: Confirm as adequate or propose further investigation as considered necessary.

120 PILING SPECIFICATION

- Standard: Comply with the current edition of 'Specification for piling and embedded retaining walls' (SPERW) except where specified otherwise.
  - General requirements: To SPERW section 1.
  - Particular requirements: As pile clauses.
- *Substitution of British Standards for SPERW requirements:* None.
- Definitions: Interpret references in SPERW as follows:
  - Driven piles: Piles described in this section as displacement.
  - *Engineer: The person named in Preliminaries section A10 as administering the contract on behalf* of the employer.

122 PILING SPECIFICATION - ERRATA AND ADDENDA TO SPERW

- Table 1.2: In the penultimate line substitute 4.10 for 4.8.
- Clause 2.9.6(c): Substitute 20 for 21.

125 PILE PERFORMANCE TESTS
- Submit: Proposals for demonstrating: Integrity of pile shaft .

135 PILE WORKING PERFORMANCE
- Substandard performance: Give notice if the performance of any pile will be less than that specified.

137 PILE COMMENCING SURFACE
- Level: Existing ground level.

140 PILE LENGTH - PENETRATION
- Pile group designation: All.
- Toe level:
  - Stratum: to contractor's design.
  - Penetration of pile into stratum (minimum): to contractor's design.
- Pile cut-off level: As drawing.
  - Other requirements: Pile to be maximum 300mm diameter.

155 GROUND INVESTIGATION
- Report: Included in the tender documents.
- Datum for borehole logs: Ordnance (Newlyn) datum.

165 EXPLORATORY HOLES
- Requirement: Excavate holes to determine: The location of incoming services.
  - Timing: Before commencing excavation for underpinning.
- Findings: Submit details.
- Backfill:
  - Below foundation level: Lean mix concrete.
  - Above foundation level but below ground supported slabs: Compacted hard core.
  - Elsewhere: Compacted hard core.

170 DISCONNECTION OF SERVICES IN WORKING AREAS
- Disconnections required: refer to services engineer.
  - Timing: Before commencing underpinning works within the building.
- Reconnection: Ensure that services cannot be reinstated by site operatives without consent.

TYPES OF UNDERPINNING

240 PILE UNDERPINNING WITH REINFORCED CONCRETE SUPPORTING STRUCTURE
- Supporting structure: Needle beams.
- Wall beams: refer to drawings.
- Piles:
  - Type: Bored piles of maximum 300mm diameter.
  - Location: As drawings.
- Features: Heave protection .

TYPES OF PILING

310 PILES
- Permitted types: Contractor's choice- piles to be bored.
- Particular specification: Submit proposals to cover the requirements of SPERW listed under this heading for the pile type.
- Other requirements: Access to building through bay opening.

375 COVER TO PILE REINFORCEMENT
- Cover (nominal): 45 mm.
- Method of ensuring correct cover: Submit proposals.

ACCESSORIES FOR UNDERPINNING

430 HEAVE PROTECTION to concrete needles
- Location: Inside face of underpinning blocks.
- Type: As drawing .
- Thickness: as drawing.
- Features: None.

EXECUTION

COMPLETION

915 HEALTH AND SAFETY FILE - PILING
- Requirement: Collate and submit a full set of records for inclusion in the health and safety file.
  - Number of copies: Two.
- Content: For each pile record information listed in SPERW, table 1.2.
- Latest date for submission: Within 14 days of completion.

925 PILING GUARANTEE
- Type: Insurance backed. Administered by an independent insurance protection company.
  - Guarantee period (minimum): 12 years from completion.
- Documentation: Provide certificates/ guarantees at completion.

E
In situ concrete/Large precast concrete

E10
In situ concrete

E10 In situ concrete

15 SPECIFICATION

- Concrete generally: To BS 8500-2.
- Other requirements: For concrete in the ground, requirements for concrete quality in BRE Special Digest 1: 2005 take precedence over those in BS 8500-1.
- Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

20 DESIGNATED CONCRETEFor Concete ground beams and needles

- Designation: RC35.
- Embedded metal: Carbon steel reinforcement.
- Fibres: Not required.
- Aggregates:
  - Size (maximum): 20 mm.
  - Coarse recycled concrete aggregates (RCA): Contractor's choice.
  - Additional aggregate requirements: None.
- Special requirements for cement/ combinations: None.
- Consistence class: Contractor's choice.
- Chloride class: Normal.
- Admixtures: None.
- Additional mix requirements: None.

35 SUBSTITUTION OF STANDARDIZED PRESCRIBED FOR DESIGNATED CONCRETE

- General: Conform to BS 8500-2, clause 8.
- Substitution: In accordance with BS 8500-1, table A.7.
  - Proposals: Submit for each substitution, stating reasons.
- Site mixing: Conform to BS 8000-2.1, subsections 2, 3 and 4.
  - Restrictions: None.

45 PROPERTIES OF FRESH CONCRETE

- Adjustments to suit construction process: Determine with concrete producer. Maintain conformity to the specification.

50 PREMATURE WATER LOSS

- Requirement: Prevent water loss from concrete laid on absorbent substrates.
  - Underlay: Polyethylene sheet 250 micrometres thick.
  - Installation: Lap edges 150 mm.

60 PLACING AND COMPACTING

- Surfaces to receive concrete: Clean, with no debris, tying wire clippings, fastenings or free water.
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum). Do not place against frozen or frost covered surfaces.
- Compaction: Fully compact to full depth to remove entrapped air especially around reinforcement, cast-in accessories, into corners of formwork and at joints. Continue until air bubbles cease to appear on the top surface.
  - Methods of compaction: To suit consistence class and use of concrete.

70 CURING AND PROTECTING

- Evaporation from surfaces of concrete: Prevent throughout curing period.
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - Top surfaces: Cover immediately after placing and compacting. Replace cover immediately after any finishing operations.
- Curing periods:
  - Surfaces which in the finished building will be exposed to the elements, and wearing surfaces of floors and pavements: 10 days (minimum).
  - Other structural concrete surfaces: 5 days (minimum).
- Protection: Protect concrete from shock, indentation and physical damage.

E20
Formwork for in situ concrete

E20 Formwork for in situ concrete

60 BOARD SUBSTRUCTURE FORMWORK

- General: Lay tightly butted and fully supported on firm, even substrate. Restrain against movement during concrete placement. Seal joints to prevent penetration of concrete.
- Collapsible boards with cellular cardboard cores: Keep dry. Seal joints in polyethylene underlay/ overlay sheets and reseal cut polyethylene bags.

70 FORMWORK

- General: Accurately and robustly constructed to produce finished concrete to the required dimensions.
- Formed surfaces: Free from twist and bow with intersections, lines and angles square, plumb and true.
- Joints between forms and completed work: Prevent loss of grout and formation of steps.
- Holes and chases: Form with inserts or box out as required.

E30
Reinforcement for in situ concrete

E30 Reinforcement for in situ concrete

20 RIBBED BAR REINFORCEMENTto ground beams and needles

- Standard: To BS 4449.
  Strength grade: B500B.

30 FABRIC REINFORCEMENTto be confirmed

- Standard: To BS 4483.

40 CONDITION OF REINFORCEMENT

- At time of placing concrete: Free from corrosive pitting, loose millscale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

55 LAPS IN REINFORCEMENT

- Laps in bar reinforcement (minimum): 40 x bar diameter.
- Laps in fabric reinforcement (minimum): 40 x bar diameter.

70 FIXING REINFORCEMENT

- Standard: To BS 7973-1 and -2.
- Installation: Provide adequate support, tie securely and maintain the specified cover.
  - Tying wire: 16 gauge black annealed. Prevent intrusion into the concrete cover.

G
Structural/Carcassing metal/timber

G12
Isolated structural metal members

G12 Isolated structural metal members

10 FABRICATION OF MEMBERS

- Steel sections: To BS 4-1, BS EN 10055, BS EN 10056 or BS EN 10210, as appropriate.
  - Steel: To BS EN 10025-2, grade S275JR.
  - Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.
- Cuts and holes: Accurate and neat.
- Welding: Metal arc method to BS EN 1011-2.
  - Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
  - Site welding: Obtain approval.

20 SHOP PRIMINGto steel beams in ground floor arch

- Preparation: Loose scale and rust, burrs, fins, sharp edges and weld spatter removed; crevices cleaned out; surfaces thoroughly degreased, rinsed with clean water and allowed to dry.
- Primer: Zinc phosphate modified alkyd.
  - Application: One full coat within 8 hours of cleaning surfaces.

40 INSTALLATION

- Accuracy: Members positioned true to line and level using, if necessary, steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
- Fixing: Use washers under bolt heads and nuts.
  - Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

Appendix B

Issue Sheet of Structural Drawings

(Note: these drawings to be read in conjunction with all architect's/ conservation architect's documents)

Document Register & Issue

Project: **UNISON HQ. Euston Road North**

Project No: **L051036**

Sheet No: 1																						
	Day		01	01																		
	Month		02	02																		
	Year		07	07																		
Document Title	**Doc. No.**	**Size**	**Issue/Revision**																			
Site Clearance Drawing	**LB-01**		A	A																		
Demolition - Sheet 1	**LB-02**		A	A																		
Demolition - Sheet 2	**LB-03**		A	A																		
Underpinning Layout	**LB-10**		A	A																		
Pile Schedule & Details	**LB-11**		A	A																		
Trial Pit Details - Gnd Floor Levels	**LB-12**		A	A																		
Piling Option 2	**LB-13**		A	A																		
1st & 2nd Floor Plan (Wall Restraints)	LB-20		P1																			
Typical Crack Repair Details	**LB-25**		A	A																		
Floor Repair Detail	LB-26		✓																			
External Crack Location Drawing 1	LB-30		P1																			
External Crack Location Drawing 2	LB-31		P1																			
External Crack Location Drawing 3	LB-32		P1																			
Internal Crack Location Drawing 1	LB-33		P1																			
Internal Crack Location Drawing 2	LB-34		P1																			
Internal Crack Location Drawing 3	LB-35		P1																			
Internal Crack Location Drawing 4	LB-36		P1																			
Arch Repair Gnd. Internal View Sheet 1	**LB-50**		A	A																		
Arch Repair Gnd.Sheet 2	**LB-51**		✓	✓																		
Arch Repair 1st Floor Internal View	**LB-60**		A	A																		
Arch Repair 2nd Floor Internal View	**LB-70**		A	A																		
Arch Repair 2nd Floor Internal View	**LB-71**		A	A																		

TENDER DRAWINGS

Status I: Information P: Preliminary B: Building Control A: Approval T: Tender C: Construction R: Record Ar: Archive

Reason for Issue																						
Type of Issue																						
Paper	✓	✓																				
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