OSBORNE EDWARDS

CONSULTING STRUCTURAL ENGINEERS

39-41 NORTH ROAD
LONDON
N7 9DP

TELEPHONE 020 7226 2444

STRUCTURAL SPECIFICATION

FOR

GARDEN FLAT

16 FROGNAL LANE

LONDON NW3

JOB NO: 14084/JO

April 2015

OSBORNE EDWARDS LTD
DIRECTORS JACQUI OSBORNE BSC CENG MISTRUCTE
JOHN EDWARDS GRAD DIPL CONS (AA)

REGISTERED IN ENGLAND 4173590

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1.0 GENERAL.

1.1 This specification is to be read in conjunction with the Preliminaries and General Conditions.

1.2 Do not scale from the drawings. The contractor is to check all dimensions on site before carrying out the work.

1.3 This specification together with the Structural Engineers drawings are to be read in conjunction with the Architects drawings, all other Consultants drawings and the specifications. These should be used to verify layout, setting out, finishes etc and any discrepancies reported to the Architect or Architects Representative before proceeding with the works.

1.4 Nothing included or omitted in this specification relieves the Contractor of the duty to carry out the works in accordance with current standards of safety and good building practice.

1.5 The Contractor must ensure the Architect has agreed all necessary party wall notices prior to carrying out works under or adjacent to the party wall.

1.6 Setting-out details are shown on the Architects drawings unless noted otherwise on the drawings.

1.7 The Contractor is to inform the Architect and Structural Engineer if the existing fabric, including foundations is opened up and found to be inadequate, unsuitable to support the proposed works, or at variance with the drawings.

1.8 Items on the drawings noted " to be verified on site" are to be exposed by the Contractor for inspection by the Structural Engineer at the earliest opportunity.

1.9 Holes or chases must not be cut through any structural members without the written consent of the Structural Engineer.

1.10 The Contractor is to ensure the Building Control Officer is notified to carry out inspections prior to all works and that works are not covered up before the inspections are made.

1.11 Fixings designed by others are to be installed in accordance with manufacturers details and specifications.

2.0 TOLERANCES

2.1 All tolerances are to be agreed with the Architect and the Contractor will be responsible for ensuring that sufficient tolerances are provided and integrated into all elements of the works.

2.2 The Contractor is to take account of tolerances detailed elsewhere in the drawings, appended specifications, and British Standards when complying with the above clause.

3.0 MATERIALS AND WORKMANSHIP

3.1 All articles, materials and goods shall be new, of good quality and suitable for the purpose for which they are required. They shall conform to appropriate British Standards.

4.0 TEMPORARY WORKS AND STABILITY

4.1 The Contractor is entirely responsible for maintaining the stability of all the existing buildings and structures, within and adjacent to the works, and of all the works from possession of the site until practical completion.

4.2 The Contractor shall design, install and maintain all necessary temporary works and shall advise both the Architect and Structural Engineer of the proposals at least 10 working days before commencing the works. The proposals shall include temporary works supports and a sequence of construction and shall be supported by calculations that have been carried out by a competent person if requested.

Under no circumstances shall structural alterations be made unless comments have been received from the structural engineer.

4.3 When assessing the loads on the temporary works due regard shall be given to both vertical load and lateral stability.

4.4 The Contractor is to be sufficiently aware of the nature and magnitude of the loads to be supported. Details of design loads may be obtained from the Structural Engineer.

4.5 Particular care is to be taken to ensure that temporary props remain adequately seated and tightened so that supports to the structure do not yield during building operations.

4.6 The Contractor is to ensure that temporarily propped structure is adequately pinned, wedged or packed off the permanent works before removing the temporary works.

4.7 The Contractor shall ensure that any completed or partially completed structural element is not overloaded.

4.8 All temporary works to the side of excavations for new foundations shall be designed in accordance with BS 8000 Part 1: 1989 and any other approved documents.

5.0 DEMOLITION

5.1 Demolition is to be carried out to and in accordance with BS 6187: 1982, Health and Safety Executive guidance note GS 29/1 paragraph 32 and any other relevant statutory undertakings or regulations.

5.2 Demolition is to be undertaken in reverse order of construction. No part of the structure is to be left in an unsupported condition over night or for long periods of time.

5.3 Demolition is to be undertaken in a manner that avoids excessive noise, dust and nuisance. All work is to be well watered to minimise dust. All material is to be carted away from site as soon as practicable.

6.0 EXCAVATING AND FILLING

6.1 A limited site investigation of trial holes has been carried out and the information has been issued with the tender information.

6.2 Inspect all available drawings and make enquiries about existing services on the site and verify their depth and position and depth before commencing work. Services that are to be retained are to be protected.

6.3 Workmanship for excavating and filling is to be carried out in accordance with BS 8000 Part 1 sections 3.1, 3.2 and 3.3.

6.4 Where an excavation encroaches a below a line drawn at an angle of 45° from the horizontal from the nearest formation level of another higher foundation, the lower excavation shall be excavated backfilled and all work completed before the higher excavation is made.

6.5 Make advanced arrangements with Building Control for the inspection of foundations and trenches at the beginning of the works. Notify the Contract Administrator 7 days in advance of any inspections being made.

6.6 Remove 150mm from the excavations just before inspection. Trim excavations to the required profiles, and remove all loose materials. Unless otherwise instructed seal formations with concrete or other specified backfill within 4 hours of the instruction.

6.7 Any excavation for foundations that is taken deeper than required is to be back filled with lean mix concrete. Excavations other than for foundations are to be back filled with hardcore or well-graded granular material.

6.8 Hardcore is to be granular material, free from harmful matter and passing a 75mm BS sieve. It is to be selected from one of the following:

- Crushed gravel, brick or tile and free from plaster.
- - Gravel

Spread and level in layers not exceeding 150mm and thoroughly compact each layer with a vibratory roller, vibrating plate compactor, vibro-tamper, power rammer or other suitable means of equipment appropriate to the area being worked.

6.9 Under ground bearing slabs hardcore is to be used and not less than 150mm thick unless noted otherwise on the drawings.

6.10 Surfaces over hardcore are to be receive sheet overlays or are to be blinded with a minimum of 50mm concrete, sand or fine gravel to fill interstices and provide a close smooth surface.

7.0 FOUNDATIONS.

7.1 Foundations are to be cast to the profiles indicated on the drawings and are to be cast symmetrically about piers, stanchions or walls unless noted otherwise on the drawings.

7.2 New foundations have been designed to impose a safe bearing pressure onto natural ground of 100 KN/m². The Contractor is to ensure that all new foundations bear a minimum of 150mm into natural ground. If poor ground conditions are encountered or the Building Control Officer requests amendments the Structural Engineer is to be notified immediately.

7.3 If tree roots are encountered the Contractor is to notify the Structural Engineer.

8.0 INSITU CONCRETE

8.1 Materials and workmanship are to comply with BS 8110.

8.2 Concrete for reinforced structures, including slabs is to be designated mix RC35 to BS 5328.

8.3 Concrete for padstones and for the encasement of steel beams is to be GEN 3 to BS 5328 with 10mm maximum aggregate and 260 kg/m of cement.

8.4 Ready mixed concrete is to be used unless otherwise agreed with the Structural Engineer. This must be obtained from a plant that holds a current Certificate of Accreditation under the Quality Scheme for Ready Mix Concrete. Details of the mix or mixes to be used are to be submitted to the Structural Engineer for approval prior to ordering any concrete.

8.5 The use of site mixed concrete or structural elements may be used only with the agreement of the Structural Engineer. Batching and mixing equipment will need to comply with BS 1305 and BS 4251.

8.6 The Contractor is responsible for the design and installation of all formwork. It is to comply with BS 8110.

8.7 Do not place concrete when the ambient temperature is less than or likely to fall below 2°C. A minimum/maximum thermometer must be available on site to show whether the temperature is rising or falling. The thermometer must be located externally in shade.

8.8 All holes and inserts shall be formed at the time of pouring of the concrete. No part of the concrete works shall be drilled or cut away without agreement from the Structural Engineer.

8.9 Reinforcement shall be:

Plain bars to BS 4449, grade 250 mild steel, prefix R on the drawings and schedule.

Deformed bars to BS 4449 or BS 4461, grade 460 high yield type 2, prefix T on the drawings.

Mesh to BS 4483.

8.10 Reinforcement shall be adequately fixed with tying wire or steel clips. Concrete cover is to be as shown on the drawings. Chairs and spacers are to be provided by the Contractor as necessary to maintain the specified cover.

8.11 Unless otherwise noted on the drawings the reinforcement is to be lapped 50d, where d is the diameter of the smaller bar.

8.12 A rate of sampling for compressive testing of concrete is to be agreed with the Structural Engineer.

8.13 Use mechanical vibration to fully compact concrete for structural elements. Compact concrete to full depth until air bubbles cease to appear on the top surface, especially around reinforcement, cast in accessories, the corners of formwork and at joints.

9.0 MASONRY

9.1 Workmanship is to be in accordance with BS 5628 Parts 1 and 3. Brickwork is to be to BS 3921 and Blockwork to BS 6073.

9.2 New brickwork above DPC level is to be of clay bricks, with a compressive strength of 20 N/mm² minimum set in 1:1:6 mortar.

9.3 New Blockwork above DPC level is to have a minimum compressive strength of 3.5N/mm² set in 1:1:6 mortar.

9.4 Brickwork and Blockwork is to be properly laid and bonded as agreed with the Architect and fully toothed and bonded into the existing work unless otherwise specified on the drawings.

9.5 Do not lay bricks when the ambient temperature is less than 5°C.

9.6 Where pinning up soffits is required, completely fill the joint at the top of the wall with dry pack mortar of 1:3 cement to sharp sand well rammed into position using temporary shuttering.

9.7 Carry up no portion of a wall, or section of a wall more than 1.2m above another at any one time, raking back between levels. Do not carry up work more than 1.5m in one day.

9.8 Wall ties to brick/block cavity construction are to be either stainless steel or polypropylene and chosen to suit the cavity width. Ties shall be placed at 450mm centres vertically and 900mm centres horizontally (staggered). Around door and window openings and at control joints in masonry ties shall be at 225mm centres vertically.

10.0 STRUCTURAL TIMBER

10.1 New structural timber is to be selected structural grade timber not inferior to European Redwood or Whitewood and grade C16 to BS 5628 Part 2, or as noted on the drawings.

10.2 New timber in the works is to be vacuum impregnated with preservative to BS 5268 Part 5 and the manufacturer's recommendations. Cut ends are to be treated with brush applied coats of appropriate preservative before fixing. All preservatives are to be agreed by the Architect.

10.3 Structural timbers up to 250mm in depth may be notched or drilled for services as follows:

Notches in joists are to be located at the top and located between 0.1 0.20 of the length of the span from the support. Notches cannot be deeper than 0.15 of the depth of the joist.

Holes in the joists are to be along the centre line in a zone between 0.25 and 0.4 of the length of the span from the support, with a maximum diameter of 0.25 of the depth of the joist.

All notches and holes must be separated by at least 100mm measured on the centre line of the joist.

Any other holes or notches are to be agreed with the Structural Engineer.

10.4 Sizes of all new timbers noted on the drawings are sawn sizes.

10.5 All screws, nails, timber connectors, joist hangers and straps are to be galvanised and shall be purpose made and of the performance and /or manufacturer stated. All such items are to be fixed in accordance with the manufacturer's recommendations unless noted otherwise on the drawings.

10.6 All existing timber is to be inspected at the beginning of the works by a specialist for rot and infestation. Details of replacing or strengthening any defective timbers recommended by the specialist are to be agreed on site.

10.7 Noggins are to be provided along lines of support and at within the span as follows:

For spans less than 4.5m: one row of 50mm wide noggins at mid span.
For spans greater than 4.5m: two rows of noggins, one placed at 1/3 span and one at 2/3 span.

This applies to new and existing floors unless noted otherwise on the drawings.

10.8 Trimmers to openings in floors and ceilings to be fixed to the trimming joists with joist hangers.

10.9 Double up joists under new partitions running parallel to the joist span. Doubled joists are to be bolted together with M12 bolts at 600mm centres. Washers are to be placed under the bolt head and nut.

10.10 Under new partitions running perpendicular to the span provide noggins skew nailed between joists.

10.11 New load bearing stud partitions are to be constructed using 50X100 timbers placed at 400 centres with 100X50dp head and sole plates and solid noggins at 1.0m centres vertically.

11.0 STRUCTURAL STEELWORK

11.1 All workmanship is to comply with BS 5950 Part 2.

11.2 All structural steelwork sections are to be grade 43A to BS 4360, unless noted otherwise on the drawings.

11.3 All bolts are to be grade 8.8 Precision bolts to BS 3692. Bolts are to have a sherardised finish to BS 4921.

11.4 All welding shall be carried out by a qualified welder and is to comply with BS 5135. Site welding is not permitted unless agreement is received from the Structural Engineer and the welder produces proof of a current qualification.

11.5 All welds are to be 6mm fillet welds or full penetration butt welds unless noted otherwise on the drawings.

11.6 The steel fabricator is to obtain dimensions from site. Setting-out dimensions are to be obtained from the Architect or the Architect's drawings.

11.7 Special connections between steel members will be detailed by the Structural Engineer. Connections not shown on the drawings should be detailed by the fabricators in accordance with good practice and using no less than 2No M16 bolts per connection. Design loads for the connections will be shown on the drawings but the Contractor should confirm these with the Engineer prior to fabrication.

11.8 All new internal steelwork is to be thoroughly power brushed clean down to bright steel to remove all mill scale, rust, oil, grease etc, and painted with two coats of alkyd based high build zinc phosphate before erection.

Ends of beams built into cavity walls or solid masonry are to be painted with an additional coat of non-drip water-quality bitumen paint (e.g. Jetrone B760 by Leighs Paints) to a dry film thickness of 175 microns.

The Contractor is to ensure that all coatings used are recommended for the exposure conditions and surface for which it is employed and that all coatings are compatible with each other.

11.9 Fire protection to steelwork is to the Architects details.

11.10 Ensure that the inside of hollow sections is dry and clear of debris prior to sealing openings and ends.

11.11 The finish of any steelwork that is to remain visible must be agreed with the Architect and all welds assumed ground smooth unless agreed otherwise.

12.0 LINTELS

12.1 Precast concrete lintels are to be to BS 5977 by Bourncrete Limited or equivalent. Sizes and types are indicated on the drawings. End bearings are to be 150mm minimum unless noted otherwise on the drawings.

12.2 Galvanised steel lintels are to be to BS 5977 by IG Limited or equivalent. . Sizes and types are indicated on the drawings. End bearings are to be 150mm minimum unless noted otherwise on the drawings.