COCHRANE
CONSTRUCTION
CONSULTANTS

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## DRAWING ISSUE SHEET

| Project No | Page |
|---|---|
| S 2930 | 1 |

**Project**: 161 Arlington Road, Camden NW1 7ET

| Date | Rev | By |
|---|---|---|
| Feb-24 | | BC |

DATE OF ISSUE (WITH REVISION AS SHOWN)

| DWG. No. | DRAWING TITLE | SIZE | ORIG. | 23/02/2024 | 08/04/2024 |
|---|---|---|---|---|---|
| | **Proposed Structure** | | | | |
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| DISTRIBUTION LIST | | |
|---|---|---|
| **CLIENT:** | | |
| **ARCHITECT:** Kubilay Karginoglu | 1 | 1 |
| **PROJECT MANAGER:** | | |
| **M&E** | | |
| | | |
| **CONTRACTOR:** | | |
| | | |
| | | |
| **MEDIA TYPE:** | E | E |
| **ISSUE STATUS:** | P | P |

**PURPOSE OF ISSUE:- P - Preliminary, A - Approval, T - Tender, C - Construction, I - Information, R - Record**
**MEDIA TYPE: P - Print, E - Electronic, D - Disk**

GENERAL

1. ALL COCHRANE CONSTRUCTION CONSULTING (CCC) DRAWINGS ARE TO BE READ IN CONJUNCTION WITH STRUCTURAL SPECIFICATION, ARCHITECT'S AND SPECIALIST DRAWINGS AND SPECIFICATIONS.
2. THE EXISTING STRUCTURE SHOWN ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY/ON BEHALF OF OUR CLIENT OR OBTAINED FROM LIMITED SITE INSPECTION. THE NATURE OF THE EXISTING STRUCTURE SHOULD BE CONFIRMED BY THE CONTRACTOR PRIOR TO STARTING ANY WORKS.
3. THE INFORMATION ON THE PROPOSED WORKS INDICATED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY/ON BEHALF OF OUR CLIENT AND IS SHOWN FOR INFORMATION ONLY AND NO RELIANCE SHOULD BE PLACED UPON IT WITHOUT CHECKING WITH THE ISSUING PARTY.
4. IT HAS BEEN ASSUMED THAT THERE ARE NO LIVE SERVICES IN THE AREA OF PROPOSED WORKS EXCEPT AS INDICATED INDICATED, THE CONTRACTOR IS TO INFORM CCC IF THIS IS NOT THE CASE. ALL WORKS ASSOCIATED WITH THE IDENTIFICATION, ALTERATION OR TERMINATION OF SERVICES ARE TO BE CARRIED OUT BY OTHERS AND NOT INCLUDED IN CCC WORKS.
5. 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.
6. ALL WATER AND DAMP PROOFING WORKS TO BE TO ARCHITECT'S DETAILS. WHERE THIS DRAWING SHOWS WATERPROOF OR DAMP PROOF MEMBRANES, THEY ARE SIMPLY INTENDED TO INDICATE THEIR POSITION IN RELATION TO THE STRUCTURE. THE MEMBRANES HAVE BEEN DESIGNED, SPECIFIED AND DETAILED BY THE ARCHITECT OR THE MANUFACTURERS AND ARE TO BE INSTALLED AS SHOWN ON THEIR DRAWINGS.
7. ALL FIRE PROTECTION WORKS ARE TO THE ARCHITECT'S DETAILS UNLESS SPECIFICALLY NOTED OTHERWISE.
8. ALL FLOOR SEPARATION DETAILS AND ACOUSTIC ISOLATION ARE TO THE ARCHITECT'S DETAILS.
9. ALL EXTERNAL WORKS, LANDSCAPING, PAVING ETC. ARE TO THE ARCHITECT'S DETAILS.
10. TYPICALLY, ALL NON-LOADBEARING PARTITIONS ARE OMITTED FOR CLARITY. REFER TO THE ARCHITECT'S DRAWINGS FOR DETAILS.

STRUCTURAL STEELWORK NOTES

11. ALL MATERIALS, FABRICATION, WORKMANSHIP AND ERECTION OF STEELWORK SHALL BE IN ACCORDANCE WITH THE NATIONAL STEELWORK SPECIFICATION FOR BUILDING CONSTRUCTION, 5TH EDITION AS PUBLISHED BY THE BRITISH CONSTRUCTIONAL STEELWORK ASSOCIATION.
12. STEELWORK CONNECTIONS SHALL COMPRISE NOT LESS THAN
    4 NO. M12 DIA. GR. 8.8 BOLTS FOR ALL OTHER MEMBERS, EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS. WHERE CONNECTION LOADS ARE PROVIDED BY THE ENGINEER, THE STEELWORK CONTRACTOR SHALL DESIGN CONNECTIONS WHICH WILL BE SUBJECT TO COMMENT BY THE ENGINEER.
13. STEEL BEAMS SHALL AT LEAST HAVE THE MINIMUM BEARINGS ON MASONRY WALLS AS SHOWN ON THE DRAWINGS. WHERE NO DETAILS OF BEARINGS ARE SHOWN PROVIDE BEARINGS TO THE FULL WIDTH OF THE SUPPORTING LEAF, PADSTONE OR 150MM WHICHEVER IS GREATER.
14. STEEL COLUMNS SHALL BE RAISED OR LOWERED TO THE CORRECT LEVELS OFF FOUNDATIONS/MASONRY SUPPORTS USING SAWN STEEL PACKS NOT LESS THAN 75MM SQUARE. ALLOWANCE SHALL BE MADE FOR NOMINAL 15MM THICKNESS OF GROUT BETWEEN COLUMN BASEPLATES AND FOUNDATIONS/MASONRY SUPPORTS. GROUT SHALL TAKE THE FORM OF NEAT CEMENT SLURRY WITH A NON SHRINK ADDITIVE AND SHOULD BE JUST FLUID ENOUGH TO POUR.
15. SITE MODIFICATIONS TO STRUCTURAL STEELWORK SHALL NOT BE CARRIED OUT UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE ENGINEER
16. ALL STRUCTURAL STEELWORK SHALL BE BLAST CLEANED TO B.S.7079 : PART A1, PREPARATION GRADE SA2 ½ AND, EXCEPT WHERE SPECIFIED AS GALVANISED, SHALL BE PAINTED WITH A SUITABLE GOOD QUALITY HIGH BUILD EPOXY ZINC PHOSPHATE PRIMER TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 75 MICRONS. A PRE-FABRICATION PRIMER MAY BE USED AT THE FABRICATORS DISCRETION. THE CONTRACTOR SHALL ENSURE THAT THE PRIMER USED IS COMPATIBLE WITH SUBSEQUENT COATINGS SPECIFIED BY OTHERS. (E.G. INTUMESCENT PAINT).
17. AS NOTED DRAWINGS IN CONTACT WITH EXTERNAL WALLS ARE TO RECEIVED 2 COATS OF MIO
18. STEELWORK SPECIFIED AS GALVANISED SHALL BE BLAST CLEANED AS ABOVE & HOT DIP GALVANISED TO B.S.729 MINIMUM COATING THICKNESS 85 MICRONS.
19. ALL STEELWORK BELOW DPC LEVEL OR BUILT WITHIN THE MASONRY WALL CAVITY SHALL BE SITE PAINTED WITH A COMPATIBLE HIGH BUILD EPOXY ZINC PHOSPHATE PRIMER TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 125 MICRONS, TO ACHIEVE AN OVERALL PRIMER COATING OF 200 MICRONS. I.E. LEIGHS PAINTS EPIGRIP C400 ZINC PHOSPHATE PRIMER/BUILDCOAT OR EQUAL. STEELWORK BELOW DPC SHALL ALSO BE ENCASED IN NOT LESS THAN 100MM OF CONCRETE NOT WEAKER THAN SPECIFIED ON THE DRAWINGS.
20. STEELWORK CONTRACTOR TO CO-ORDINATE WITH MAIN CONTRACTOR AND CLADDING CONTRACTOR TO PROVIDE ALL NECESSARY SECONDARY STEELWORK, TRIMMING ETC. AS REQUIRED AROUND ALL DOORS, WINDOWS AND THE LIKE.
21. STEELWORK CONTRACTOR TO CO-ORDINATE WITH MAIN CONTRACTOR TO PROVIDE ADEQUATE TEMPORARY BRACING DURING THE SEQUENCE OF ERECTION.

TIMBER FLOOR CONSTRUCTION NOTES

22. ALL STRUCTURAL TIMBER FLOOR MEMBERS TO BE OF MINIMUM SIZE AS SHOWN ON THE DETAIL DRAWINGS. SIZES SHOWN ARE NOMINAL TIMBER SIZES EXCEPT AS NOTED ON THE DRAWINGS AND WILL BE SUBJECT TO REDUCTIONS IN FINISHED SIZE TO B.S.4471
23. TIMBER FLOOR JOIST SHALL HAVE MINIMUM BEARINGS OF 100MM ON MASONRY AND 75MM ON STEEL BEAMS OR TIMBER PLATES EXCEPT AS NOTED ON THE DRAWINGS. TIMBER FLOOR JOISTS SHALL NOT BE BUILT INTO PARTY WALL CONSTRUCTIONS BUT SHALL BE SUPPORTED ON PROPRIETARY JOIST HANGERS AT SUCH LOCATIONS. RESTRAINT TYPE JOIST HANGERS CAPABLE OF RESISTING TENSILE FORCES, IN ACCORDANCE WITH BS 5628-1 APPENDIX C TO BE USED. ALTERNATIVELY, PROVIDE RESTRAINT STRAPS AT NOT MORE THAN 2.0M CENTRES USING 30MM X 5MM GALVANISED STRAPS WITH A TURN DOWN LENGTH OF 100MM AND STRAIGHT LENGTH OF 600MM. STRAPS FIXED TO FLOOR JOISTS WITH 50MM, NO.10 SCREWS AT NOT MORE THAN 110MM CENTRES AND A MINIMUM OF 4 FIXINGS.
24. DOUBLE JOISTS SHALL BE PROVIDED UNDER NON-LOAD BEARING STUDWORK PARTITIONS RUNNING PARALLEL WITH JOIST SPANS, UNDER BATHS AND UNDER AIRING CUPBOARD
25. ALL MEMBERS SUPPORTED ON PROPRIETARY HANGERS SHALL BE ACCURATELY CUT TO PROVIDE A FULL CONTACT WITH THE BASE OF THE HANGER AND SHALL BE FIXED IN ACCORDANCE WITH THE HANGER MANUFACTURER'S INSTRUCTIONS. JOISTS SHALL BE REBATED TO LIE FLUSH WITH UNDERSIDE OF HANGERS.
26. ALL MEMBERS FITTED INTO STEEL BEAMS SHALL PROVIDE A GOOD FIT TO THE WEB OF THE BEAM AND SHALL BE NOTCHED THE MINIMUM AMOUNT REQUIRED TO CLEAR THE BEAM FLANGES. WHERE STEEL BEAMS ARE SPECIFIED WITHIN THE FLOOR DEPTH, THE UNDERSIDE OF JOISTS SHALL BE 5MM BELOW THE UNDERSIDE OF THE BEAMS.
27. EXTERNAL AND PARTY WALLS PARALLEL WITH JOISTS SPANS SHALL BE RESTRAINED AT TOP OF FLOOR JOIST LEVEL AT NOT MORE THAN 2.0M CENTRES WITH GALVANISED 30 X 5.0MM STRAPS EXTENDING OVER A MINIMUM OF 3 JOISTS. NOGGINS NOT LESS THEN 75% OF JOIST DEPTH AND TIMBER BLOCKING ADJACENT TO WALLS SHALL BE FIXED BETWEEN JOISTS AT ALL STRAP LOCATIONS. STRAPS SHALL BE FIXED TO MEMBERS/NOGGINS WITH NOT LESS THAN 4 NO. 32 X 3.5MM GALVANISED OR SHERARDISED SQUARE TWISTED NAILS.
28. END JOISTS SHALL BE POSITIONED APPROXIMATELY 50MM FROM MASONRY WALLS. JOIST CENTRES GENERALLY SHALL BE EQUAL AND SHALL NOT EXCEED THE DESIGN CENTRES SHOWN ON THE DRAWING. MULTIPLE JOISTS, WHERE SHOWN ON THE DRAWINGS SHALL BE SECURELY NAILED TOGETHER AT NOT MORE THAN 600MM CENTRES.
29. UNLESS SPECIFIED OTHERWISE, SECURELY FIX STRUTTING BETWEEN JOISTS AT CENTRES AS FOLLOWS:
    JOIST SPAN OF 2.5M TO 4.5M: - ONE ROW AT CENTRE OF SPAN.
    JOIST SPAN OVER 4.5M: - TWO ROWS EQUALLY SPACED

    STRUTTING SHALL TAKE THE FORM OF ONE OF THE FOLLOWING.
    38mm X 38mm SOFTWOOD HERRINGBONE STRUTTING LOCATED BETWEEN 5 & 25MM CLEAR OF TOP AND BOTTOM EDGES OF JOIST.
    PROPRIETARY GALVANISED METAL STRUTTING FIXED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
    SOLID SOFTWOOD STRUTTING NOT LESS THAN 38MM THICK AT LEAST THREE QUARTERS OF THE DEPTH OF THE JOIST.

STRUCTURAL UNDERPINNING NOTES

30. TO BE READ IN CONJUNCTION WITH THE PRELIMINARIES AND GENERAL CONDITIONS.
31. WORKMANSHIP: THE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE ENGINEER'S DRAWINGS AND INSTRUCTIONS AND TO THE APPROVAL OF THE ARCHITECT AND THE BUILDING CONTROL OFFICER.
32. ANY OTHER SEQUENCE OF OPERATIONS OR METHOD OF WORKING PROPOSED BY THE CONTRACTOR IS TO BE SUBMITTED TO THE ARCHITECT AND COPIED TO THE ENGINEER AND AGREED IN WRITING A MINIMUM OF 14 DAYS BEFORE WORK IS TO BE COMMENCED ON S
33. CONTRACTORS RESPONSIBILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE UNDERPINNED STRUCTURE AND PROVIDE ALL NECESSARY SHORING, STRUTTING AND BRACING TO ENSURE ITS SAFETY AND STABILITY AT ALL TIMES.
34. SERVICES: THE CONTRACTOR IS ALSO TO CARRY OUT A SURVEY OF THE PROPERTY AND ADJACENT AREA TO ESTABLISH THE LOCATION OF OBSTRUCTIONS SUCH AS SERVICE RUNS OR DRAINS. ANY OBSTRUCTION FOUND IS TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT / ENGINEER.THE CONTRACTOR IS TO ALLOW FOR ANY TEMPORARY SUPPORT TO THE SERVICES OR OBSTRUCTIONS DURING THE UNDERPINNING.

CONSTRUCTION SEQUENCE: THE UNDERPINNING IS TO BE UNDERTAKEN IN SHORT SECTIONS NOT EXCEEDING 1 METRE IN LENGTH. THE UNDERPINNING IS TO BE UNDERTAKEN ON A 'HIT AND MISS' SEQUENCE.

UNDERPINNING CONTD

35. NO ADJACENT PIN IS TO BE EXCAVATED UNTIL A MINIMUM 48 HOURS AFTER THE ADJACENT PIN HAS BEEN CAST AND PACKED UP.
36. THE CONTRACTOR IS TO PROVIDE DRAWINGS MARKED UP TO SHOW THE PROPOSED SEQUENCE OF UNDERPINNING A MINIMUM OF 14 DAYS BEFORE WORK IS COMMENCED.
37. EXCAVATIONS: EXCAVATION SHALL BE TO THE DEPTH AND WIDTH SHOWN ON THE DRAWINGS. HOWEVER,WHERE TREE ROOTS ARE ENCOUNTERED NEW UNDERPINS ARE TO EXTEND 600MM BELOW THE LAST TRACE OF ANY ROOT ACTIVITY. THE SIDES OF THE EXCAVATIONS SHALL BE ADEQUATELY SHORED AND PROPPED TO PREVENT SUBSIDENCE OR SLIP OF THE SOIL. SOIL FACES BEHIND THE PIN AND AT THE FORMATION LEVEL SHALL BE UNDISTURBED.
38. ALL VOIDS BEHIND ANY SACRIFICIAL BACK SHUTTER TO BE FILLED WITH GROUT OR WEAK MIX CONCRETE PRIOR TO POURING THE STEM OF THE UNDERPIN. ALL EXCAVATIONS ARE TO BE INSPECTED BY THE ENGINEER AND/OR THE BUILDING CONTROL OFFICER. MINIMUM NOTICE OF 24 HOURS IS TO BE GIVEN WHEN EXCAVATIONS ARE READY FOR INSPECTION.
39. THE SOFFIT OF THE EXISTING FOOTINGS IS TO BE LEVELED OFF AND CLEANED OF ALL LOOSE OR DETRIMENTAL MATERIAL.
40. NO PROJECTING PORTIONS OF THE EXISTING FOOTINGS ARE TO BE TRIMMED EXCEPT AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER.
41. ANTI-HEAVE PRECAUTIONS: BEFORE CARRYING OUT CONCRETING INTRODUCE ANTI-HEAVE PRECAUTIONS IN THE FORM OF CLAY MASTER AS DIRECTED BY THE ENGINEER TO THE FACES OF THE EXCAVATION.
42. PLACING CONCRETE: THE CONCRETE FOR THE UNDERPINNING IS TO BE RC35 CONCRETE AND POURED CONTINUOUSLY TO 75MM BELOW THE SOFFIT OF THE EXISTING FOOTING. THE CONCRETE IS TO BE FULLY COMPACTED USING A MECHANICAL VIBRATOR.
43. THE TOP 75MM OF THE PIN IS TO BE FILLED TO THE FULL DEPTH AND WIDTH OF THE VOID WITH A 3:1 SHARP SAND:CEMENT MIX DRY PACK MIXED HAND DAMP AND RAMMED IN WELL SOLID.

STRUCTURAL MASONRY NOTES

44. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATION FOR MASONRY REQUIREMENTS IN RESPECT OF ACOUSTIC, THERMAL INSULATION AND DURABILITY REQUIREMENTS. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF THIS CONFLICTS WITH STRUCTURAL REQUIREMENTS.
45. BLOCKWORK TO HAVE A MINIMUM COMPRESSIVE STRENGTH AS SPECIFIED ON THE DRAWINGS. ALL BLOCKWORK TO BE SOLID UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS AND IS TO COMPLY WITH BS5628, TABLE 4, REQUIREMENTS FOR SPECIAL CATEGORY OF MANUFACTURE. THE MAXIMUM WEIGHT OF AN INDIVIDUAL MASONRY UNIT MUST NOT EXCEED 20KG. BLOCKWORK SHOULD BE ADEQUATELY PROTECTED ON SITE TO AVOID SATURATION AND POSSIBLE INCREASE IN LIFTING WEIGHT. REFERENCE SHALL BE MADE TO THE PROJECT ARCHITECT/ACOUSTIC CONSULTANT FOR COMPLIANCE WITH PART E OF THE BUILDING REGULATION - SOUND TRANSMISSION.
46. BLOCKWORK BELOW DPC TO BE OF FOUNDATION QUALITY (REFER TO MANUFACTURERS GUIDELINES) AND TO BE OF AT LEAST EQUAL MINIMUM COMPRESSIVE STRENGTH TO THAT INDICATED BETWEEN GROUND AND FIRST FLOOR AND IN NO CASE LESS THAN 7N/MM².
47. BRICKWORK TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20N/MM² AND IS TO COMPLY WITH BS5628 REQUIREMENTS FOR SPECIAL CATEGORY OF MANUFACTURE.
48. MORTAR DESIGNATION AS FOLLOWS:
    ABOVE DPC MORTAR DESIGNATION III
    BELOW DPC MORTAR DESIGNATION II
49. REFER TO THE ARCHITECTS DRAWINGS FOR DETAILS OF DPC'S, DPM'S, WATERPROOFING AND INSULATION.
50. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE WORKS DURING CONSTRUCTION.
51. LINTELS
    EXTERNAL WALLS: PROVIDE PROPRIETARY LINTELS AS SPECIFIED ON THE DRAWINGS OR EQUIVALENT APPROVED BY ALTERNATIVE MANUFACTURER.
    INTERNAL WALLS: PROVIDE PROPRIETARY IG BOX LINTELS TO LOADBEARING INTERNAL WALLS AS SPECIFIED ON THE DRAWINGS OR EQUIVALENT APPROVED BY ALTERNATIVE MANUFACTURER.

    PROVIDE PROPRIETARY IG INTERNAL LINTEL TO SMALL OPENINGS IN NON LOADBEARING BLOCKWORK WALLS OR EQUIVALENT APPROVED BY ALTERNATIVE MANUFACTURER.
    ALL STEEL LINTELS TO BE FULLY GALVANISED AND HAVE A MINIMUM 150MM BEARING TO EACH END UNLESS NOTED OTHERWISE.

CONCRETE

52. CONCRETE TO BE IN ACCORDANCE WITH THE SPECIFICATION, BS 8500: PART 2 AND BS EN 206.
    BLINDING - GRADE GEN1
    MASS CONCRETE - GRADE GEN3
    REINFORCED CONCRETE - GRADE RC40
53. FOR NOTES RELATING TO REINFORCEMENT, COVER ETC. REFER TO THE REINFORCEMENT DRAWINGS.
54. CONCRETE FINISHES TO BE AS FOLLOWS:
    ALL FORMED SURFACES TO BE TYPE A FINISH TO CLAUSE 6.2.7.3 OF BS 8110.
55. ALL CONCRETE TO BE NORMAL WEIGHT, STRENGTH GRADE C28/35 TO PROVIDE A MINIMUM CUBE COMPRESSIVE STRENGTH OF 35N/mm² AT 28 DAYS.
56. ALL CONCRETE BELOW GROUND LEVEL (SLABS, WALLS & FOUNDATIONS) TO BE DESIGNED FOR A DESIGN SULPHATE CLASS OF DS-2.
57. UNDER NO CIRCUMSTANCES IS CONCRETE TO BE POURED IF EXPECTED TEMPERATURE WITHIN THE FOLLOWING 24 HOUR PERIOD IS EXPECTED TO BE 5° C OR LESS.
58. NO ADMIXTURES OF ANY FORM TO BE ADDED TO THE CONCRETE WITHOUT THE WRITTEN PERMISSION OF THE STRUCTURAL ENGINEER. IT IS STRICTLY FORBIDDEN TO ADD WATER TO CONCRETE ON SITE.

STEEL SCHEDULE

| REF | DESCRIPTION | SECTION | REACTIONS (max) kN | | NOTES | CORROSION | END CONDITONS | |
|---|---|---|---|---|---|---|---|---|
| | | | SLS DEAD | SLS LIVE | | | END 1 | END 2 |
| *BEAMS* | | | | | | | | |
| B1 | Extension - grd floor | 203x133UB25 | 15.0 | 21.7 | Picks up change in level | Beam unpainted, to be concrete encased | concrete wall | concrete wall |
| B2 | *Omitted* | | | | | | | |
| B3 | *Omitted* | | | | | | | |
| B4 | Extension - roof rear | 152UC23 | 3.9 | 5.7 | | Type 2 | Conc Padstone 440x150x100 | Conc Padstone 440x150x100 |
| B5 | Extension - roof middle | 152UC23 | 7.2 | 10.7 | | Type 2 | Conc Padstone 440x150x100 | Conc Padstone 440x150x100 |
| B6 | First floor - spine beam (HL grd) | 152UC37 | 19.9 | 30.0 | Beam to be set within floor, fire protection to architects detail | Type 1 | Conc Padstone 330x150x100 | Conc Padstone 330x150x100 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | CORROSION NOTES | | | | | | | |
| TYPE 1 | Steel to be blast cleaned to Sa2.5, and shop painted with 2 coats zinc phosphate primer, total dry thickness 70 µm | | | | | | | |
| TYPE 2 | As type 1, with additional 2 coats MIO (micaceous iron oxide) shop applied, total dry thickness 90 µm | | | | | | | |

General Notes

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|---|---|---|
| -- | *Planning Issue -* | 08/04/2024 |


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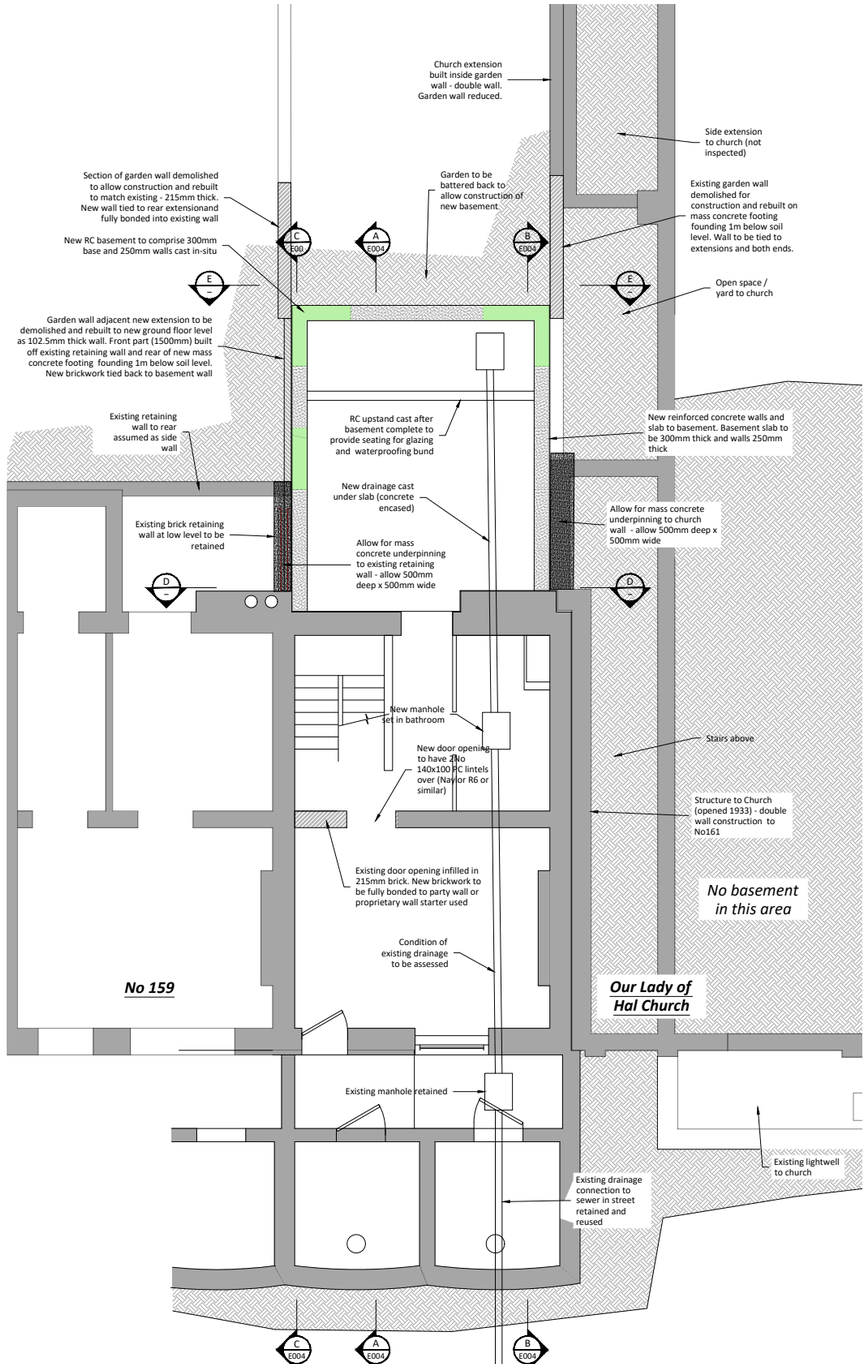
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

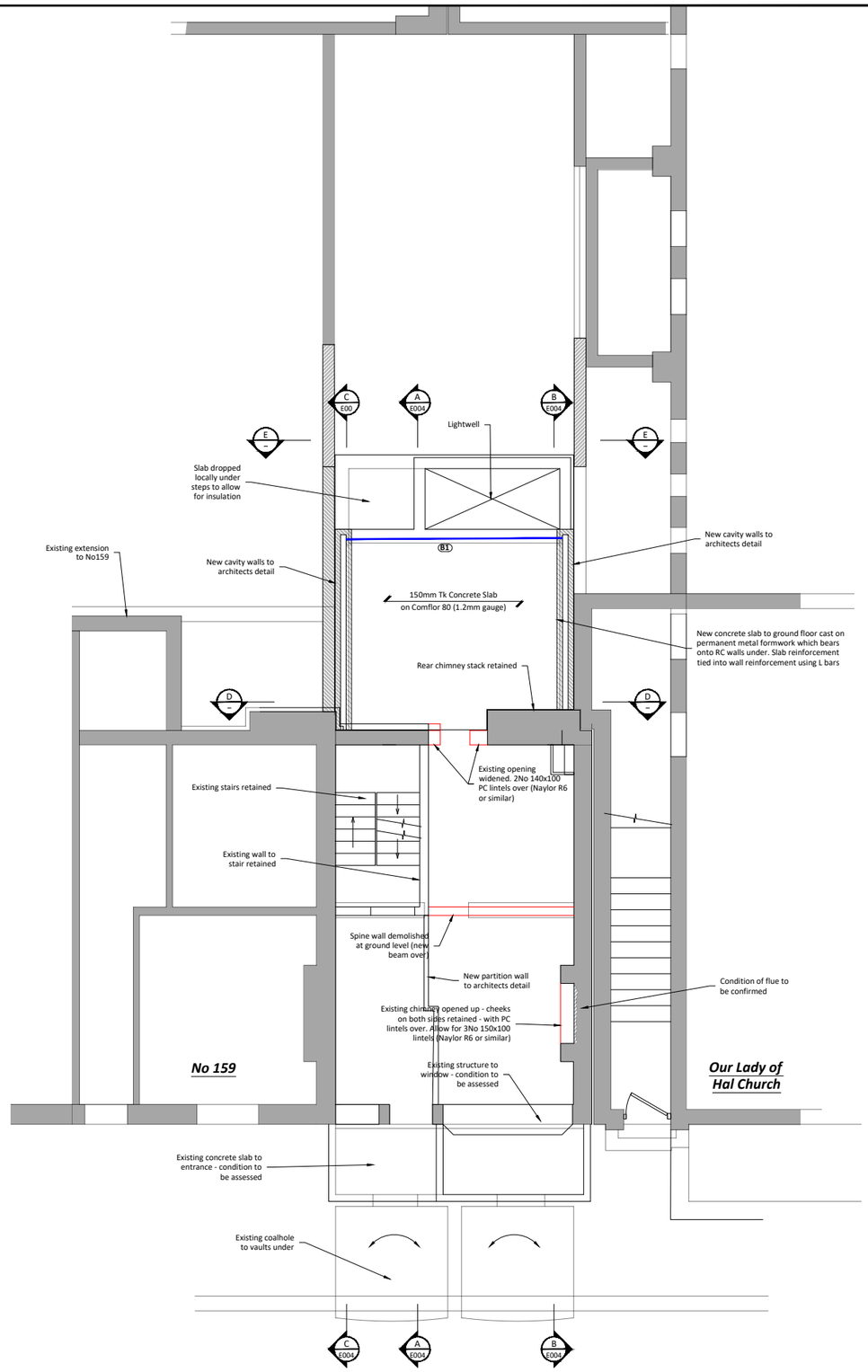
Proposed Structure
Specification Notes &
Beam Schedule

| | |
|---|---|
| Drawn: BC | Project: S 2930 |
| Date: 20.01.2024 | Sheet: S SCH |
| Scale: 1:50 @ A1, 1:100 @ A3 | Rev: -- |




## PROPOSED - BASEMENT

Scale: 1:50




## PROPOSED - GROUND FLOOR

Scale: 1:50

### General Notes

| No. | Revision/Issue | Date |
|---|---|---|
| A | ***Planning Issue*** - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
| -- | ***Preliminary Issue*** - Pre Planning App Advice Submission | 23/02/2024 |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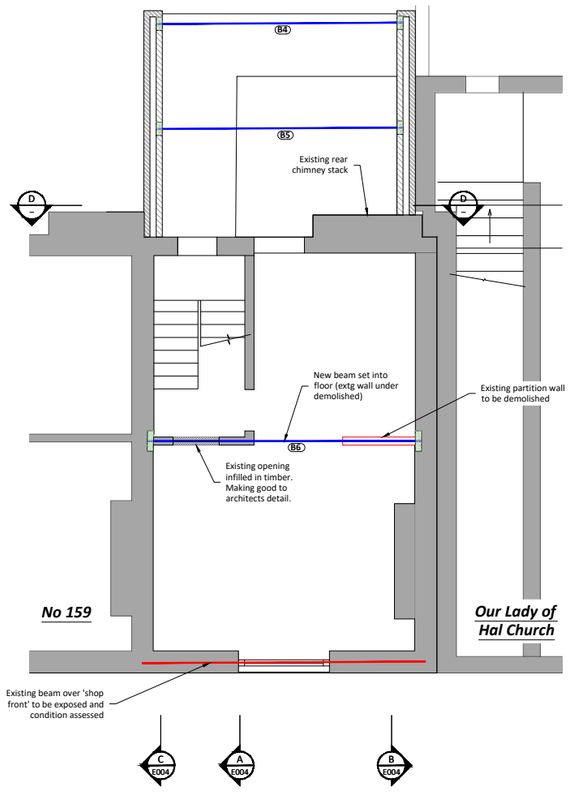
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

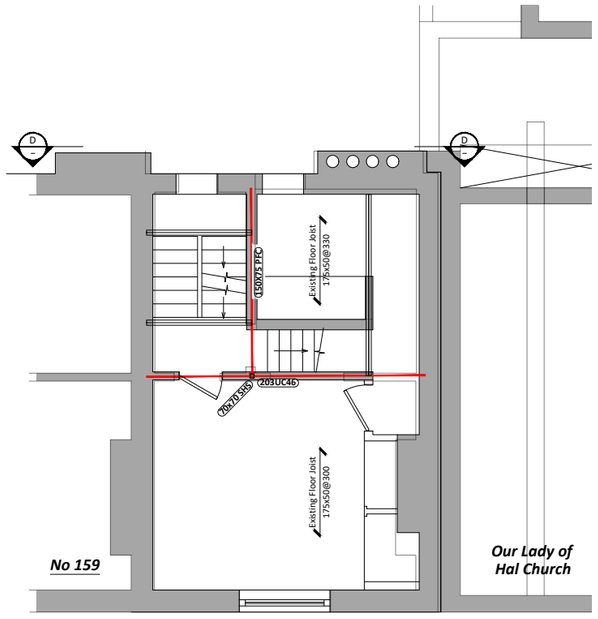
Proposed Structure
Floor Plans
Basement & Ground Floor

| | |
|---|---|
| Drawn | BC |
| Date | 20.01.2024 |
| Scale | 1:50 @ A1<br>1:100 @ A3 |
| Project | S 2930 |
| Sheet | S 001 |
| Rev | A |




PROPOSED - FIRST FLOOR

Scale: 1:50




EXISTING - SECOND FLOOR

Scale: 1:50

General Notes

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|---|---|---|
| A | ***Planning Issue*** - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
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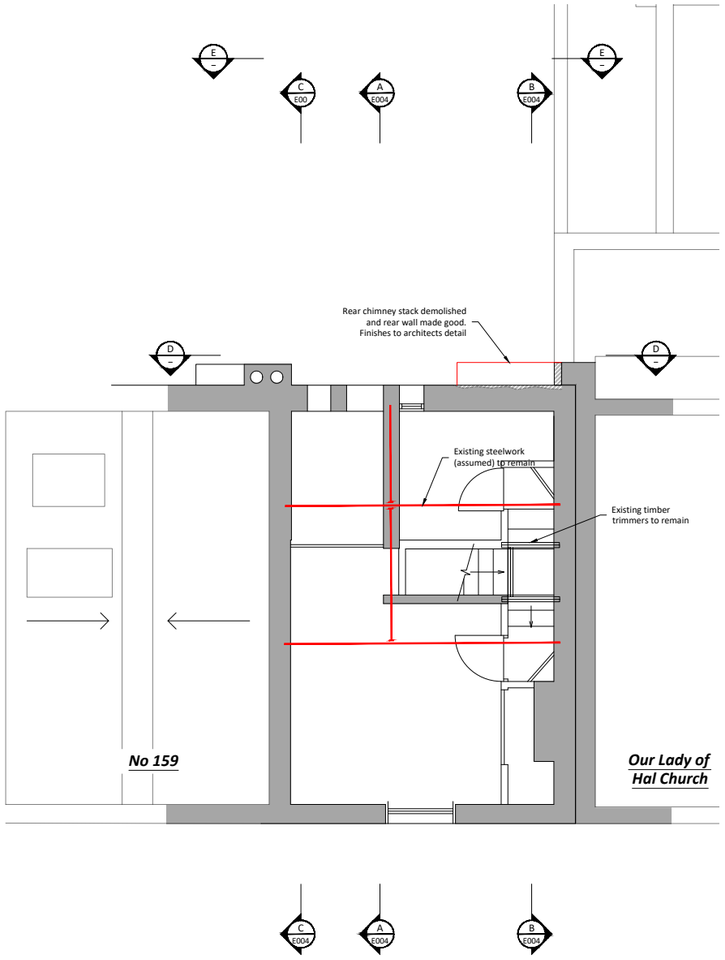
Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

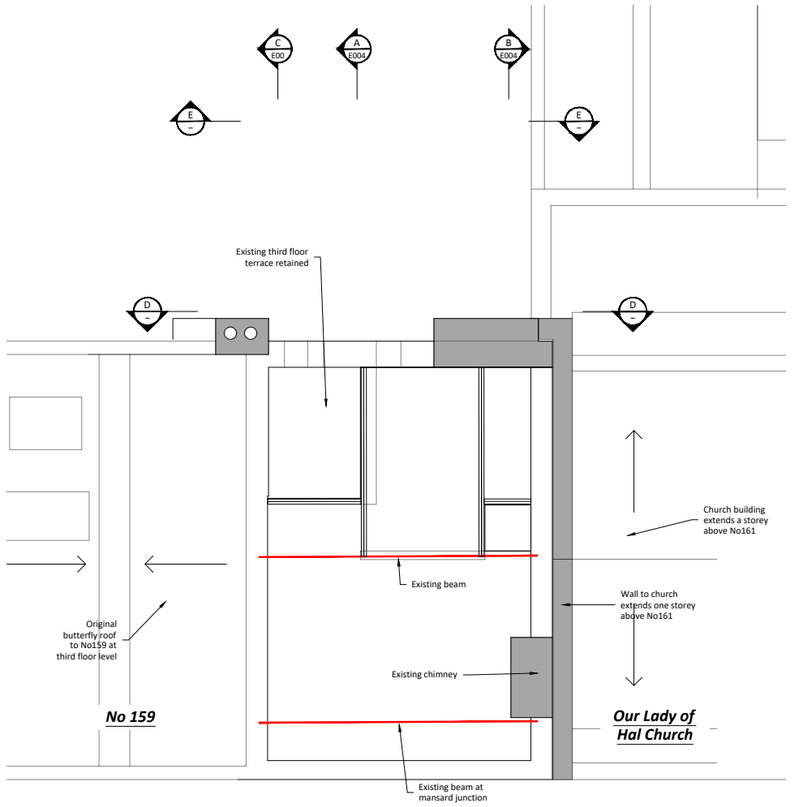
Proposed Structure
Floor Plans
First & Second Floor

| | |
|---|---|
| Drawn | BC |
| Date | 20.01.2024 |
| Scale | 1:50 @ A1<br>1:100 @ A3 |
| Project | S 2930 |
| Sheet | S 002 |
| Rev | A |




## PROPOSED - THIRD FLOOR

Scale: 1:50




## PROPOSED - ROOF PLAN

Scale: 1:50

General Notes

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|---|---|---|
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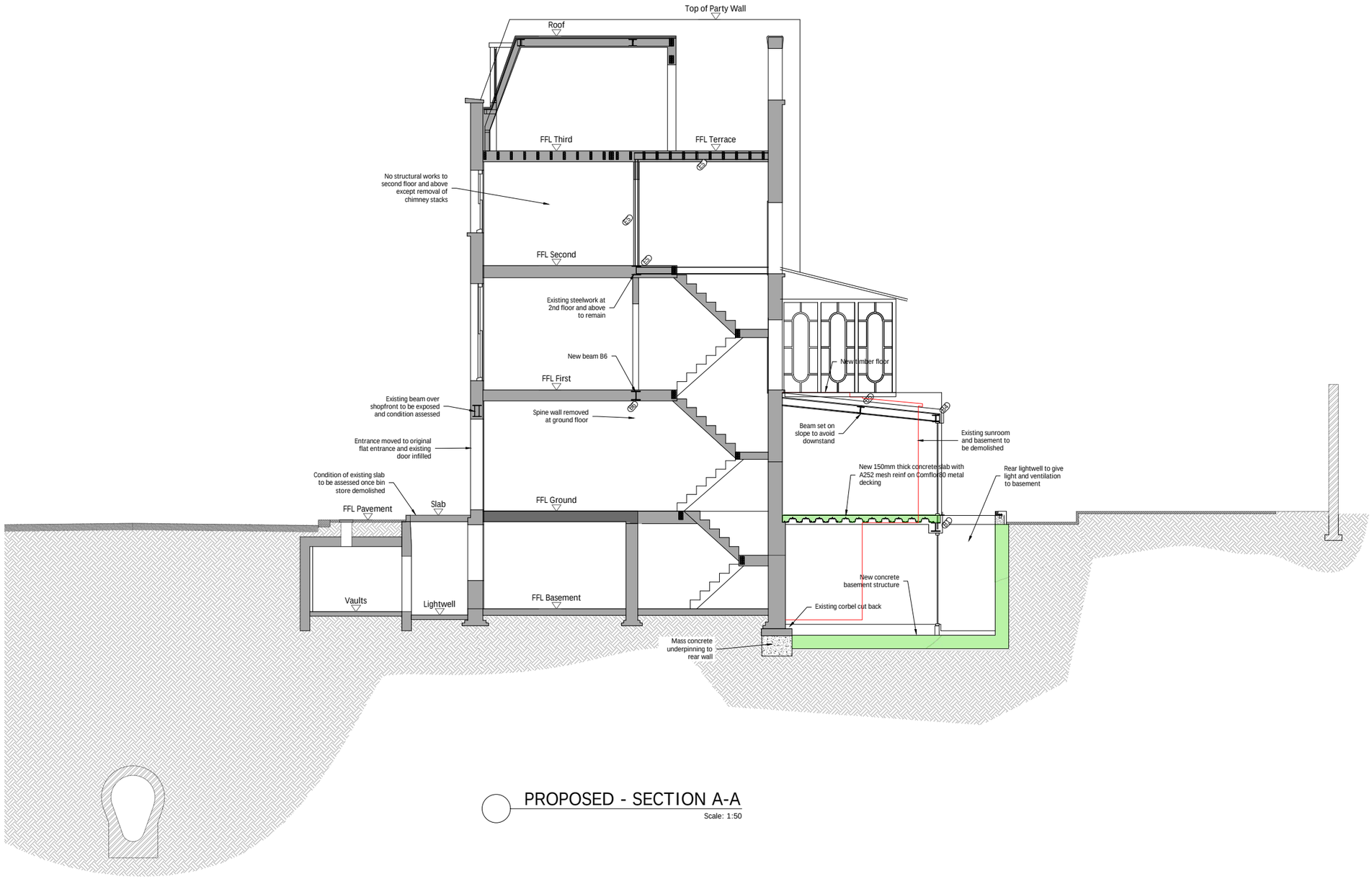
Proposed Structure
Floor Plans
Third Floor & Roof

| | |
|---|---|
| Drawn: BC | Project: S 2930 |
| Date: 20.01.2024 | Sheet: S 003 |
| Scale: 1:50 @ A1, 1:100 @ A3 | Rev: A |




## PROPOSED - SECTION A-A

Scale: 1:50

General Notes

| No. | Revision/Issue | Date |
|---|---|---|
| A | *Planning Issue* - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
| – | *Preliminary Issue* - Pre Planning App Advice Submission | 23/02/2024 |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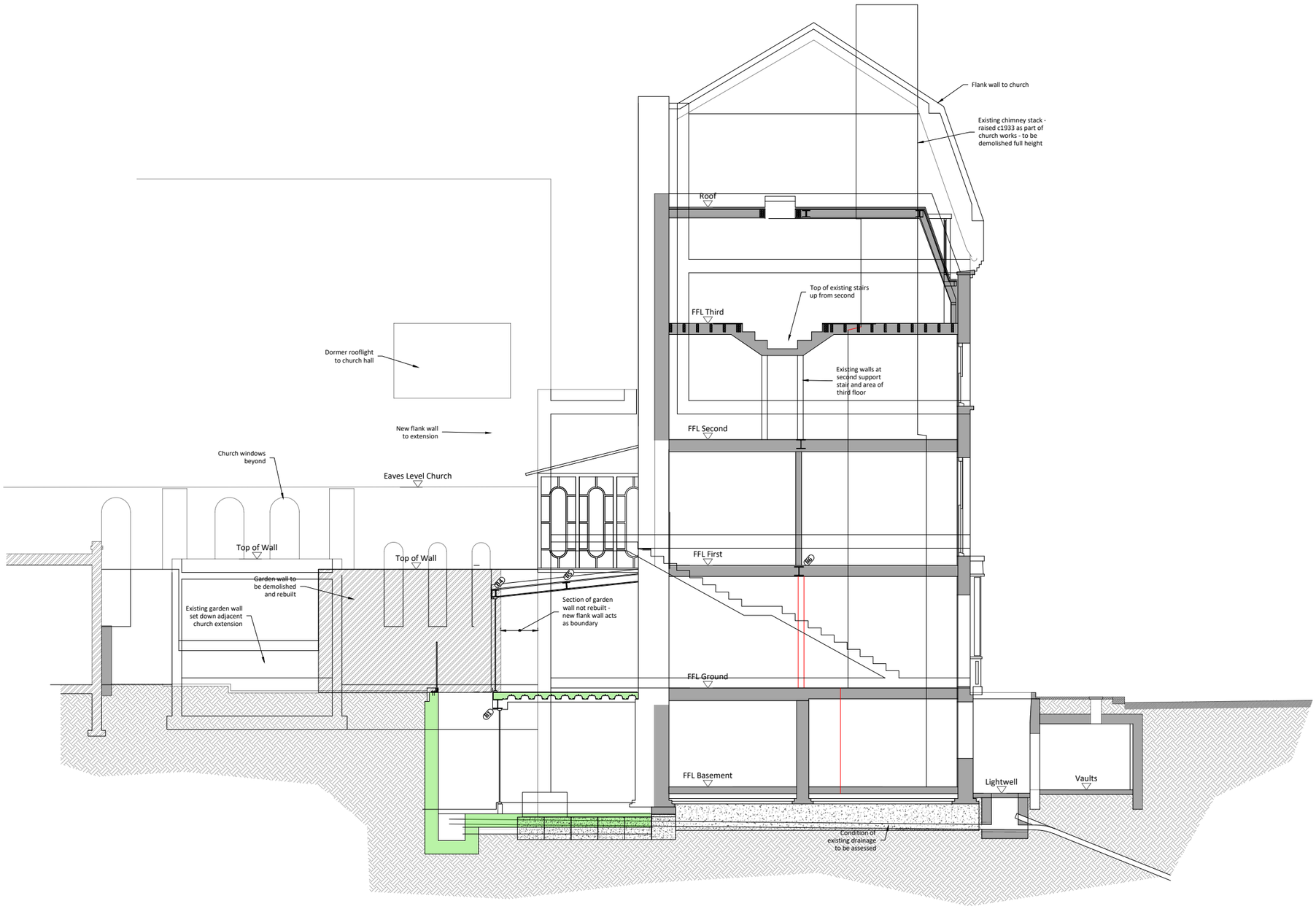
Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Proposed Structure
Section A-A

| | |
|---|---|
| Drawn: BC | Project: S 2930 |
| Date: 20.01.2024 | Sheet: S 005 |
| Scale: 1:50 @ A1, 1:100 @ A3 | Rev: A |




## PROPOSED - ELEVATION B-B

Scale: 1:50

General Notes

| No. | Revision/Issue | Date |
|---|---|---|
| A | ***Planning Issue*** - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
| -- | ***Preliminary Issue*** - Pre Planning App Advice Submission | 23/02/2024 |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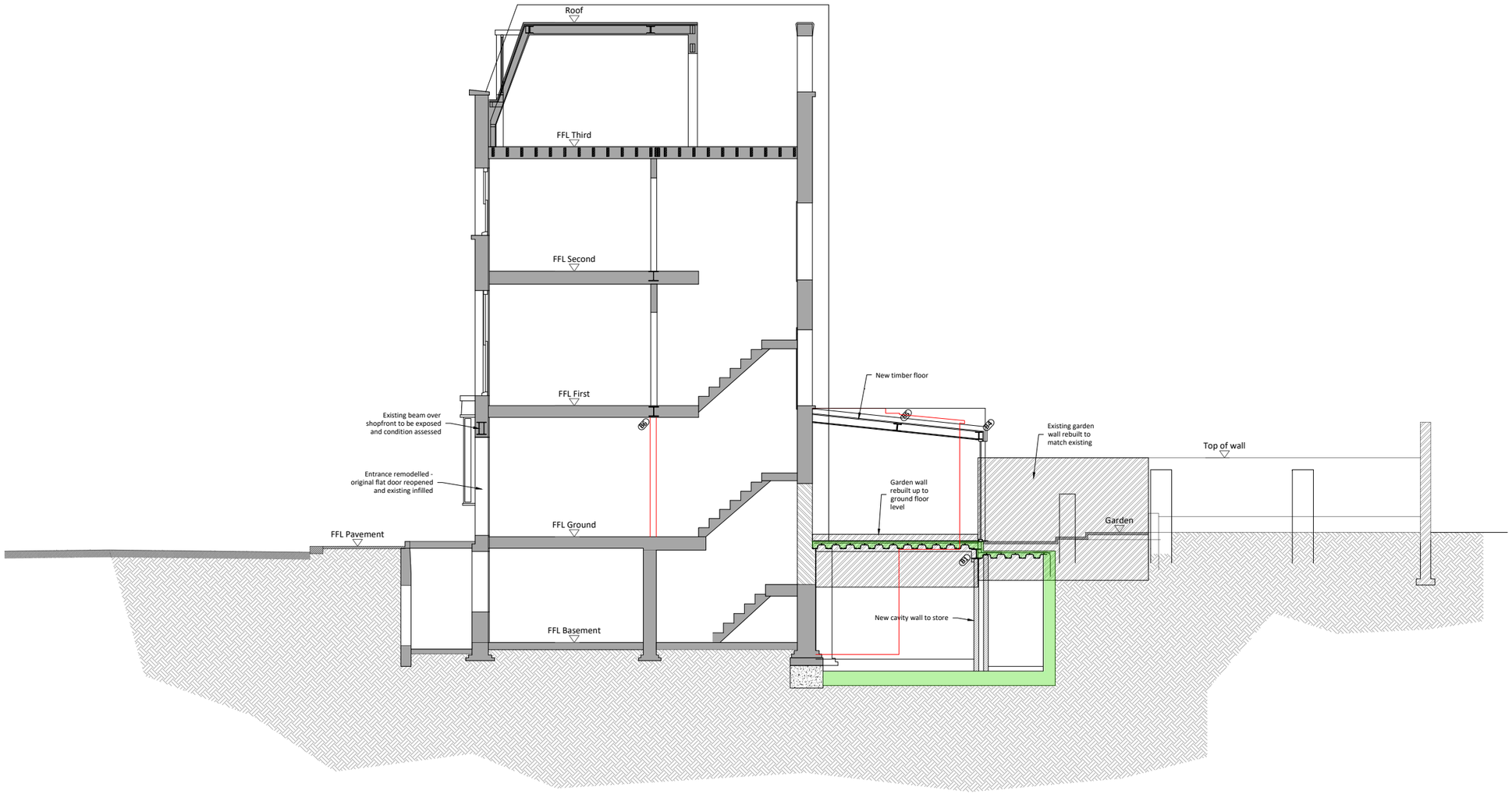
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Proposed Structure
Elevation B-B - Church Party Wall

| | |
|---|---|
| Drawn | BC |
| Date | 20.01.2024 |
| Scale | 1:50 @ A1<br>1:100 @ A3 |
| Project | S 2930 |
| Sheet | S 006 |
| Rev | A |




## PROPOSED - ELEVATION C-C

Scale: 1:50

General Notes

| No. | Revision/Issue | Date |
|---|---|---|
| A | ***Planning Issue*** - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
| -- | ***Preliminary Issue*** - Pre Planning App Advice Submission | 23/02/2024 |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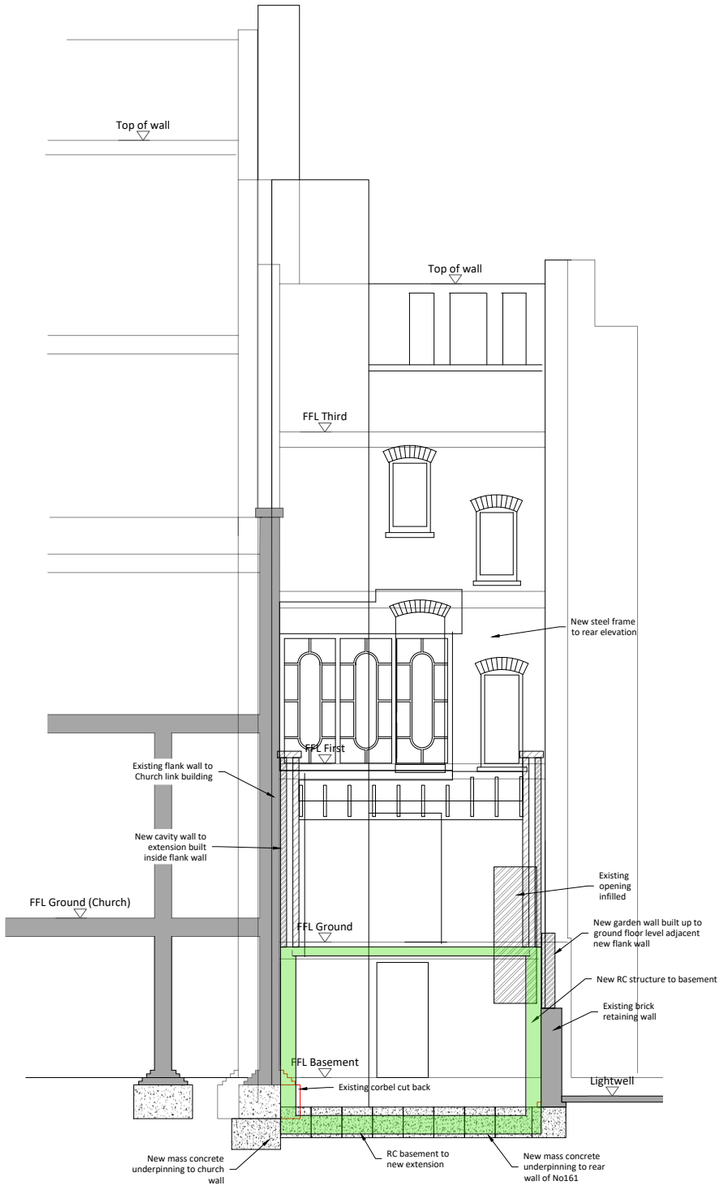
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

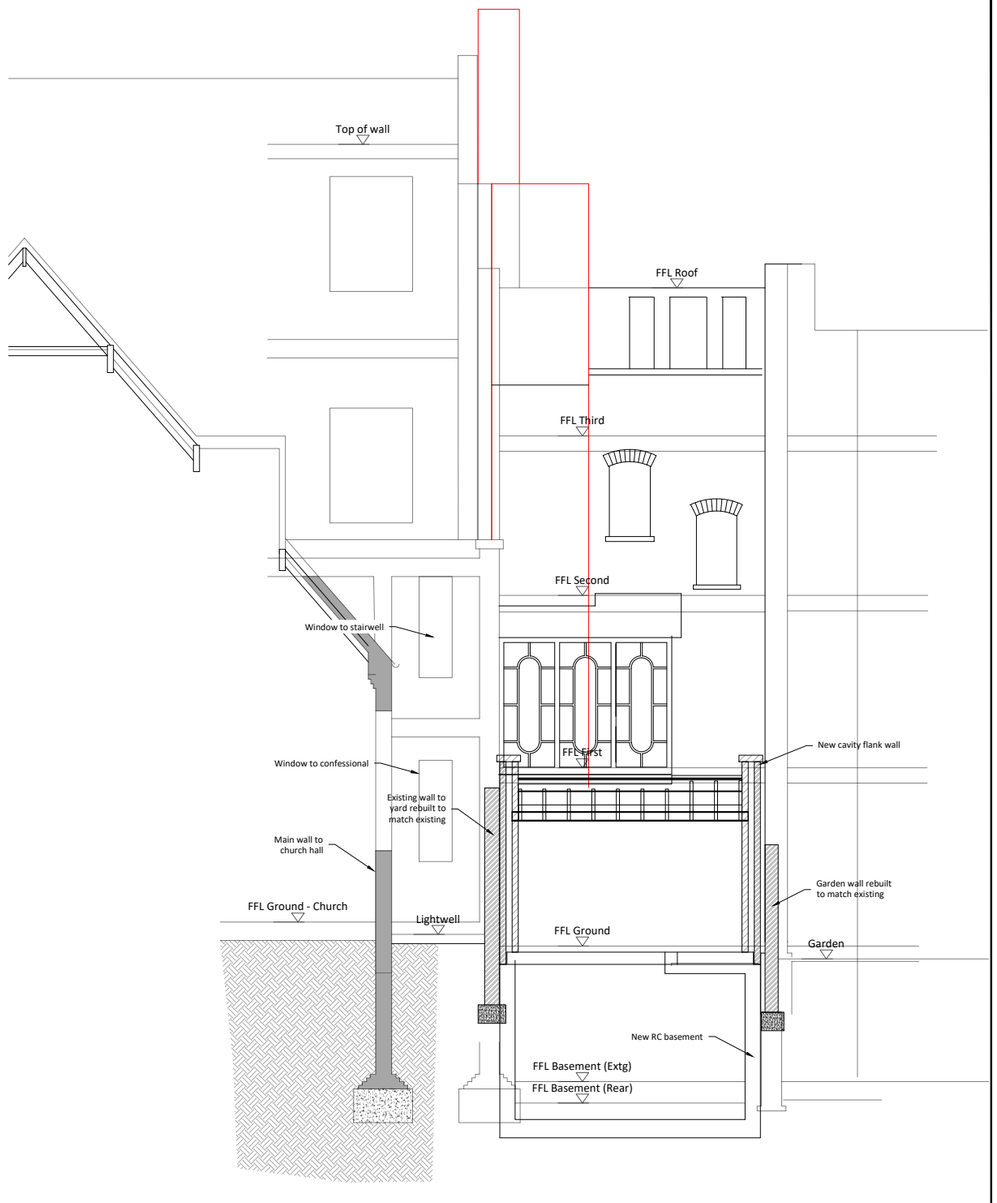
Proposed Structure
Elevation C-C - No159 Party Wall

| | |
|---|---|
| Drawn: BC | Project: S 2930 |
| Date: 20.01.2024 | Sheet: S 007 |
| Scale: 1:50 @ A1, 1:100 @ A3 | Rev: A |




## PROPOSED - REAR ELEVATION D-D

Scale: 1:50




## 2 PROPOSED - SECTION E-E

Scale: 1:50

General Notes

| No. | Revision/Issue | Date |
|---|---|---|
| A | ***Planning Issue*** - Rear extension reduced by one storey, works revised to suit client changes | 08/04/2024 |
| -- | ***Preliminary Issue*** - Pre Planning App Advice Submission | 23/02/2024 |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Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Proposed Structure
Rear Elevation D-D and
Section E-E

| | |
|---|---|
| Drawn: BC | Project: S 2930 |
| Date: 20.01.2024 | Sheet: S 008 |
| Scale: 1:50 @ A1, 1:100 @ A3 | Rev: A |

# APPENDIX C – STRUCTURAL CALCULATIONS (& SETTLEMNT ASSESSMENT)

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# 161 ARLINGTON ROAD,
# LONDON NW1 7ET

*Structural Calculations for Proposed Refurbishment of 161 Arlington Road*

| | |
|---|---|
| **Project Ref:** | **S-2930** |
| **Date:** | **Feb-24** |
| **Revision:** | **0** |
| **By:** | **BC** |

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| Project No: | Calc By: |
|---|---|
| S-2930 | BC |
| **Project:** | |
| 161 ARLINGTON ROAD,LONDON NW1 7ET | |
| **Date:** | **Rev:** |
| 01 February 2024 | 0 |

**Document:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road

**Contents & Intro**

## CONTENTS





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| Project No: | Calc By: |
|---|---|
| S-2930 | BC |
| **Project:** | |
| 161 ARLINGTON ROAD,LONDON NW1 7ET | |
| **Date:** | **Rev:** |
| 01 February 2024 | 0 |

**Document:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road

**Contents & Intro**

## INTRODUCTION

The proposed works to 161 Arlington Road include the following structural works:
- Demolition and rebuilding the rear extension, extending the basement to full footprint of the floor extension at ground floor.
- Removing the spine wall at ground foor (new beam over required)
- Removing the spine wall at first floor (no beam required as existing beam c1982 over)

The new basement under the rear extension is outside the footprint of the original buildings and does not have any direct impact on the foundations of the adjacent buildings.
The basement design is considered in the sections 3, 4, 5 and 6.

161 Arlington Road was origonally built in the 1830s as part of a terrace (running 155-169), with the northern part of the terrace demolished to allow construction of the adjacent church buildings.

Historically No161 was a shop with flat over until its conversion into a single residence c1982. The existing rear extension and mansard extension were added c1992.

From investigation the 1982 works replaced the internal structure completely with new.

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| **Project:** | |
| 161 ARLINGTON ROAD,LONDON NW1 7ET | |
| **Date:** | **Rev:** |
| 01 February 2024 | 0 |

**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road

**Section 1** Unit Loading

| **Dead Loads** | kN/m2 **Dead** | kN/m2 **Live** | |
|---|---|---|---|
| *Floor - modern construction c1987* | **0.67** | **1.50** | **Typical Floor** |
| Finishes, allow 15mm engineered boards | 0.12 | | kN/m2 |
| Decking - 19mm boards assumed | 0.15 | | Dead 0.67 |
| Joists - 50x175@300c/cs | 0.23 | | Live 1.50 |
| Ceiling - 12mm plasterboard | 0.12 | | |
| Insulation & services | 0.05 | | |
| Domestic Loading | | 1.50 | |
| *Existing partition Walls* | 0.44 | | **Partition Wall** |
| Plasterboard both faces - assumed 12mm plasterboard | 0.24 | | kN/m2 |
| Timber stud - assume 50x100@400c/c | 0.10 | | Dead 0.44 |
| Noggings and services | 0.10 | | |

*Ground Floor - Rear Extension*

Use concrete slab on metal decking to provide restraint to basement walls, clear span 3700mm

ComFlor® 80 / Bar Fire Method / Unpropped

**Single span deck, single span slab (m)** - Normal weight concrete - Eurocode - Beam width 152mm
(Note: Single span deck with single span slab is only permitted using Bar Fire Method.)

| Props | Fire period | Slab depth (mm) | Mesh 0.2% min. reqd.* | Total applied load (kN/m²) 5.00 | 7.50 | 10.00 | 5.00 | 7.50 | 10.00 | 5.00 | 7.50 | 10.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.90mm | | | 1.00mm | | | 1.20mm | | |
| None | 60 minutes | 140 | A142 | 3.70 (10) | 3.70 (12) | 3.69 (16) | 4.07 (10) | 4.06 (12) | 3.91 (16) | 4.33 (12) | 4.32 (16) | 3.92 (16) |
| | | 150 | A142 | 3.60 (10) | 3.60 (10) | 3.60 (12) | 3.96 (10) | 3.95 (12) | 3.94 (16) | 4.25 (12) | 4.25 (12) | 4.19 (16) |
| | | 160 | A193 | 3.51 (10) | 3.51 (10) | 3.50 (12) | 3.86 (10) | 3.85 (12) | 3.85 (12) | 4.17 (10) | 4.17 (12) | 4.16 (16) |
| | | 170 | A193 | 3.49 (10) | 3.49 (10) | 3.49 (12) | 3.76 (10) | 3.76 (10) | 3.76 (12) | 4.10 (10) | 4.10 (12) | 4.10 (16) |
| | | 180 | A252 | 3.45 (8) | 3.44 (10) | 3.44 (12) | 3.68 (10) | 3.68 (10) | 3.67 (12) | 4.04 (10) | 4.04 (12) | 4.04 (12) |
| | | 190 | A252 | 3.36 (8) | 3.36 (10) | 3.36 (10) | 3.60 (10) | 3.60 (10) | 3.59 (12) | 3.98 (10) | 3.98 (12) | 3.98 (12) |
| | | 200 | A252 | 3.29 (8) | 3.29 (10) | 3.29 (10) | 3.53 (8) | 3.52 (10) | 3.52 (12) | 3.91 (10) | 3.91 (10) | 3.91 (12) |

***Use Comflor 80 x 1.2 gauge x 150mm deep NWC slab with A193***

| | **3.95** | **1.50** | |
|---|---|---|---|
| Finishes - allow 50mm screed | 0.95 | | **Grd - Rear Ext** |
| Deck - 150 comflor NWC slab. Man tables gives 2.63+0.15 | 2.78 | | kN/m2 |
| Ceiling - 12mm plasterboard | 0.12 | | Dead 3.95 |
| Insulation & Services | 0.10 | | Live 1.50 |
| Domestic Loading | | 1.50 | |
| | | | **New Roof** |
| *New Roof - Rear Extension* | **0.90** | **1.50** | kN/m2 |
| Finishes - allow asphalt | 0.45 | | Dead 0.90 |
| Deck - 50x175 sw rafters @ 300c/cs | 0.23 | | Live 1.50 |
| Ceiling - 12mm plasterboard | 0.12 | | |
| Insulation & Services | 0.10 | | |



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| **Project:** | |
| 161 ARLINGTON ROAD,LONDON NW1 7ET | |
| **Date:** | **Rev:** |
| 01 February 2024 | 0 |

**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road

**Section 1** Unit Loading

| | | | |
|---|---|---|---|
| Imposed Loading - maintenance / snow (increased to allow for future solar panels) | | 1.50 | |
| **New Terrace** | | | |
| Floor Deck. Assume timber decking on joists | **0.40** | **1.50** | **Terrace floor** |
| Deck - 19mm boarding | 0.15 | | kN/m2 |
| Joists - 50x 75 @ 300 c/cs | 0.10 | | Dead 0.40 |
| Insulation + services | 0.05 | | Love 1.50 |
| Soffit board - assume 12mm ply | 0.10 | | |
| Imposed loading - residential | | 1.50 | |
| Façade - assume double glazing with metal framing | **0.68** | | **Terrace façade** |
| glazing - 2 layers 4mm glass, 2.2m high | 0.46 | | kN/m |
| metalwork - allow 0.1kN/m2 | 0.22 | | Dead 0.68 |
| Roof - assume roof as rear extension roof | | | **Terrace Roof** |
| | | | kN/m2 |
| | | | Dead 0.898 |
| | | | Live 1.5 |

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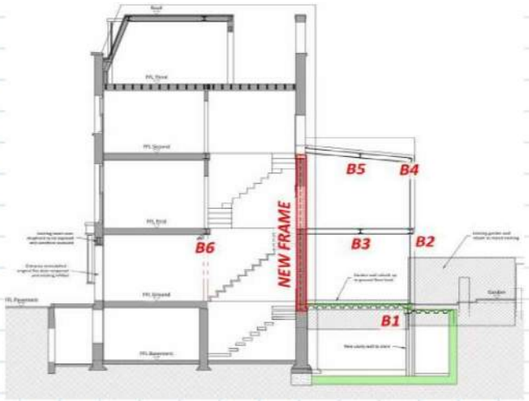
**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road
**Section 2** New Steel beams

## New Beams




Structure at second floor and above appears independent of structure below.
Existing spine beam at second floor supports second floor and part of third floor - post in spine wall carries rear channels.
Third floor spans between part walls
Mansard spans betwen party walls

***Beam loading*** (Analysis below)

| | | | | Unit Ld | W / Ht | Dead | Live | Total | |
|---|---|---|---|---|---|---|---|---|---|
| **B1** - rear ext @ grd, rear | Span | 4.1 | m | | | **5.59** | **1.50** | | |
| | Width act | 0.5 | m | | | | | | |
| Glazing - allow 3m ht x triple 6mm glass | | | | 0.50 | 3.00 | 1.51 | | | ***Beam 203x133UB25*** |
| Grd floor slab - unit load | | | | 3.95 | 0.50 | 1.98 | | | |
| | | | | 1.50 | 1.00 | | 1.50 | | |
| Concrete encasement - allow 250x350 | | | | | | 2.1 | | | |
| **B2** - rear ext @ first, rear | Span | 4.1 | m | | | **2.18** | **1.50** | | |
| | Width act | 1 | m | | | | | | ***Beam 152UC23*** |
| Glazing - as grd | | | | 0.50 | 3.00 | 1.51 | | | |
| Floor - typical timber floor unit ld | | | | 0.67 | 1.00 | 0.67 | | | |
| Domestic floor loading | | | | 1.50 | 1.00 | | 1.50 | | |
| **B3** - rear ext @ first, middle | Span | 4.1 | m | | | **1.33** | **3.00** | | |
| | Width act | 2 | m | | | | | | ***Beam 152UC23*** |
| Floor - typical timber floor unit ld | | | | 0.67 | 2.00 | 1.33 | | | |
| | | | | 1.50 | 2.00 | | 3.00 | | |
| **B4** - rear ext @ roof, rear | Span | 4.1 | m | | | **2.41** | **1.50** | | ***Beam 152UC23 (see section 7 - deflection of wind posts)*** |
| | Width act | 1 | m | | | | | | |
| Glazing - as grd | | | | 0.50 | 3.00 | 1.51 | | | |
| Roof - typ unit load | | | | 0.90 | 1.00 | 0.90 | | | |
| | | | | 1.50 | 1.00 | | 1.50 | | |



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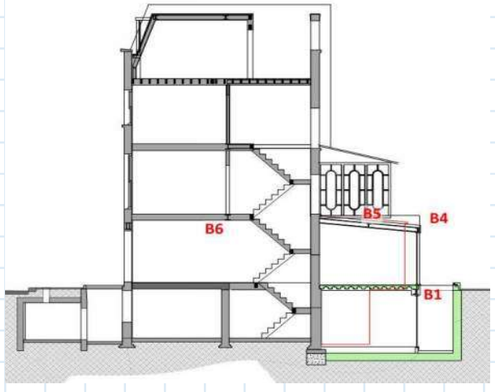
| 01 February 2024 | 0 |

**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road
**Section 2** New Steel beams

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **B5** - rear ext @ roof, middle | Span | 4.1 | m | | | **1.80** | **3.00** | |
| | Width act | 2 | m | | | | | ***Beam 152UC23*** |
| Roof - typ unit load | | | | 0.90 | 2 | 1.80 | | |
| | | | | 1.5 | 2 | | 3 | |
| **B6** - spine beam @ first | Span | 4.4 | m | | | **3.51** | **4.95** | |
| | Width act | 3.3 | m | | | | | ***Beam 152UC37*** |
| Floor - typ floor unit load | | | | 0.67 | 3.3 | 2.20 | | |
| | | | | 1.50 | 3.3 | | 4.95 | |
| Partition wall @ first (extg bm @ 2nd) | | | | 0.44 | 3 | 1.31 | | |

***Beam Summary***




***Beams B2 & B3 omitted***

| | | Section | Reactions kN SLS | Reactions kN ULS | Padstone (Section 7) | |
|---|---|---|---|---|---|---|
| B1 | | 203x133UB25 or 152UC30 | 15.04 | 21.67 | | |
| ~~B2~~ | | ~~152UC23~~ | ~~8.05~~ | ~~11.89~~ | | |
| ~~B3~~ | | ~~152UC23~~ | ~~9.34~~ | ~~14.31~~ | | |
| B4 | | 152x89UB16 | 3.85 | 5.70 | | |
| B4 | (UC) | 152 UC 23 | | | | Use UC to suit windpost to parapet |
| B5 | | 152UC23 | 7.23 | 10.74 | | |
| B6 | | 152UC37 | 19.85 | 30.02 | | |

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**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road
**Section 2** New Steel beams

## *Beam B1 - Analysis*

| Span (m) | 4.100 |
|---|---|

Choose steel section: 203x133x25

UB / UC / RSJ / PFC

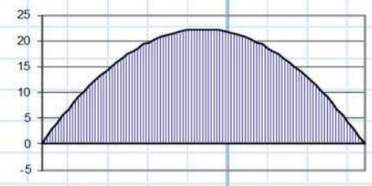
| Load Factors | |
|---|---|
| Dead | 1.4 |
| Imposed | 1.6 |

| | |
|---|---|
| E (N/mm²) | 205000 |
| Ix (cm⁴) | 2340 |

Simply supported beam

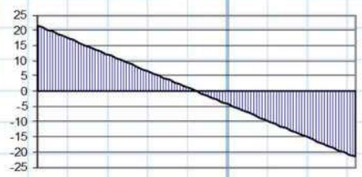
| Design Status | | capacity ratio |
|---|---|---|
| Vertical shear | PASS | 0.11 |
| Moment | PASS | 0.31 |
| Buckling | PASS | 0.94 |
| Deflection | PASS | 0.69 |

| LOADING | Dead kN | Imposed kN | Position m | Length m |
|---|---|---|---|---|
| UDL | 5.59 | 1.5 | | - |
| Point load | | | | |
| Point load | | | | - |
| Point load | | | | |
| Point load | | | | - |
| Partial UDL | | | | |
| Partial UDL | | | | |

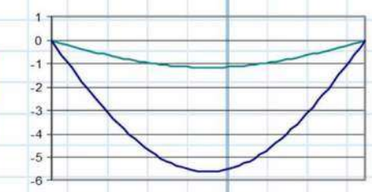



Bending Moment Diagram

| RESULTS | | | | REACTIONS (UNFACTORED) | | |
|---|---|---|---|---|---|---|
| M max | $F_V$ max | Max. deflection (mm) Imposed only | Total load | | Dead kN | Imposed kN |
| kNm | kN | | | LHS | 11.96 | 3.08 |
| 22.21 | -21.67 | -1.15 | -5.63 | RHS | -11.96 | -3.08 |




Shear Force Diagram




Deflection Diagram

## Design

| Design Strength | |
|---|---|
| $p_y$ N/mm² | 275 |

Steel grade: grade S275 / grade S355

| section classification |
|---|
| Compact |

| Shear Capacity | |
|---|---|
| Area $A_v$ mm² | capacity $P_v$ kN |
| 1158.2 | 191.11 |

cl. 4.2.3

| Moment Capacity | Position m | Moment kNm | Fv kN | $M_{cx}$ kNm | Unity Factor |
|---|---|---|---|---|---|
| Maximum Moment | 2.050 | 22.21 | 0.00 | 70.95 | 0.31 |
| Critical section | 2.050 | 22.21 | 0.00 | 70.95 | 0.31 |

* low shear

Lateral torsional buckling

| Equivalent Uniform Moment | | kNm |
|---|---|---|
| Maximum moment | $M_A$ | 22.21 |
| Uniform factor | m | 1.00 |
| Buckling moment | $M_{bar}$ | 22.21 |

cl. 4.3.7.2

| $Z_x$ (cm³) | 230 |
|---|---|
| $S_x$ (cm³) | 258 |

| Slenderness Ratio | | | | | |
|---|---|---|---|---|---|
| Effective length L m | factor | $L_E$ m | radius of gyration $r_y$ (cm) | slenderness $\lambda$ | |
| 4.100 | 1.4L+2D | 6.146 | 3.1 | 198.27 | cl. 4.3.7.5 |

Deflection

| Deflection Limits span/deflection ratios | | Allowable mm | Actual mm |
|---|---|---|---|
| Imposed Loads | 500 | 8.2 | 1.2 |
| Total Loads | 500 | 8.2 | 5.6 |

| | | | |
|---|---|---|---|
| cl. B.2.4 | limiting slenderness | $\lambda_{Lo}$ | 34.31 |
| cl. 4.3.7.6 | correction factor | n | **1.00** |
| | buckling parameter | u | 0.877 |
| | torsional index | x | 25.6 |
| cl. B.2.5(d) | slenderness factor | v | 0.707 |
| cl. B.2.5 | equivalent slenderness | $\lambda_{LT}$ | 122.96 |
| cl. B.2.3 | Perry coefficient | $\eta_{LT}$ | 0.621 |
| | Plastic moment capacity | $M_p$ | 70.95 |
| cl. B.2.2 | Elastic critical moment | $M_E$ | 34.53 |
| | Buckling index | $\phi_B$ | 63.45 |
| cl. B.2.1 | **Buckling capacity** | $M_b$ | 23.75 |

| Section used: | UB | 203x133x25 |
|---|---|---|



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| **Date:** | **Rev:** |
| 01 February 2024 | 0 |

**Title:** Structural Calculations for Proposed Refurbishment of 161 Arlington Road
**Section 2** New Steel beams

## *Beam B1 - Analysis (UC option)*

| Span (m) | 4.100 |
|---|---|

Choose steel section: 152x152x30

UB / UC / RSJ / PFC

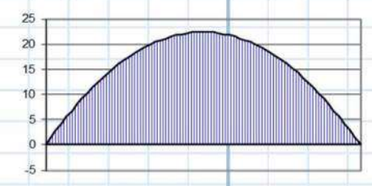
| Load Factors | |
|---|---|
| Dead | 1.4 |
| Imposed | 1.6 |

| | |
|---|---|
| E (N/mm²) | 205000 |
| Ix (cm⁴) | 1748 |

Simply supported beam

| Design Status | | capacity ratio |
|---|---|---|
| Vertical shear | PASS | 0.13 |
| Moment | PASS | 0.33 |
| Buckling | PASS | 0.60 |
| Deflection | PASS | 0.92 |

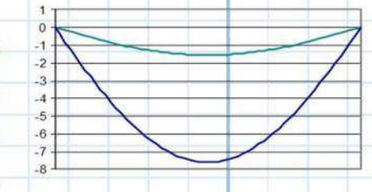
| LOADING | Dead kN | Imposed kN | Position m | Length m |
|---|---|---|---|---|
| UDL | 5.59 | 1.5 | | - |
| Point load | | | | |
| Point load | | | | - |
| Point load | | | | |
| Point load | | | | - |
| Partial UDL | | | | |
| Partial UDL | | | | |




Bending Moment Diagram

| RESULTS | | | | REACTIONS (UNFACTORED) | | |
|---|---|---|---|---|---|---|
| M max | $F_V$ max | Max. deflection (mm) Imposed only | Total load | | Dead kN | Imposed kN |
| kNm | kN | | | LHS | 12.06 | 3.08 |
| 22.35 | -21.81 | -1.54 | -7.58 | RHS | -12.06 | -3.08 |


Shear Force Diagram




Deflection Diagram

## Design

| Design Strength | |
|---|---|
| $p_y$ N/mm² | 275 |

Steel grade: grade S275 / grade S355

| section classification |
|---|
| Plastic |

| Shear Capacity | |
|---|---|
| Area $A_v$ mm² | capacity $P_v$ kN |
| 1024.4 | 169.03 |

cl. 4.2.3

| Moment Capacity | Position m | Moment kNm | Fv kN | $M_{cx}$ kNm | Unity Factor |
|---|---|---|---|---|---|
| Maximum Moment | 2.050 | 22.35 | 0.00 | 68.20 | 0.33 |
| Critical section | 2.050 | 22.35 | 0.00 | 68.20 | 0.33 |

* low shear

Lateral torsional buckling

| Equivalent Uniform Moment | | kNm |
|---|---|---|
| Maximum moment | $M_A$ | 22.35 |
| Uniform factor | m | 1.00 |
| Buckling moment | $M_{bar}$ | 22.35 |

cl. 4.3.7.2

| $Z_x$ (cm³) | 222 |
|---|---|
| $S_x$ (cm³) | 248 |

| Slenderness Ratio | | | | | |
|---|---|---|---|---|---|
| Effective length L m | factor | $L_E$ m | radius of gyration $r_y$ (cm) | slenderness $\lambda$ | |
| 4.100 | 1.4L+2D | 6.055 | 3.83 | 158.10 | cl. 4.3.7.5 |

Deflection

| Deflection Limits span/deflection ratios | | Allowable mm | Actual mm |
|---|---|---|---|
| Imposed Loads | 500 | 8.2 | 1.5 |
| Total Loads | 500 | 8.2 | 7.6 |

| | | | |
|---|---|---|---|
| cl. B.2.4 | limiting slenderness | $\lambda_{Lo}$ | 34.31 |
| cl. 4.3.7.6 | correction factor | n | **1.00** |
| | buckling parameter | u | 0.849 |
| | torsional index | x | 16 |
| cl. B.2.5(d) | slenderness factor | v | 0.642 |
| cl. B.2.5 | equivalent slenderness | $\lambda_{LT}$ | 86.19 |
| cl. B.2.3 | Perry coefficient | $\eta_{LT}$ | 0.363 |
| | Plastic moment capacity | $M_p$ | 68.20 |
| cl. B.2.2 | Elastic critical moment | $M_E$ | 67.54 |
| | Buckling index | $\phi_B$ | 80.14 |
| cl. B.2.1 | **Buckling capacity** | $M_b$ | 37.53 |

| Section used: | UC | 152x152x30 |
|---|---|---|