Structural Inspection Report

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Project:	**80 Guilford Street, London WC1**
Ref:	**5333.0006**
Date:	**01st August 2013**
Issued by:	**M J Edwards**
To:	**Ben Richardson, APM Services** **Hossein Abedinzadeh, MHA Associates** **Nicholas Mulholland, AWW Architects**

1.0 INTRODUCTION

1.1 A visit to carry out a visual inspection of the existing third floor structure at the above property was undertaken by Martin Edwards of **kirksaunders** on 01st August 2013.

1.2 At the time of the inspection, all internal floor and wall structure was exposed.

2.0 OBSERVATIONS

2.1 The existing floor structure consists of traditional timber construction, typically with timber joists spanning onto loadbearing masonry walls, timber beams and partitions.

2.2 The timber structure was generally in poor condition with excessive deflections visible to joists and the existing timber beams.

2.3 The timber beam toward the rear of the property (see photos in appendices) is of particular concern, with deflection far in excess of allowable limits. The beam is approximately 225mm square spanning circa 3.6m between external walls.

2.4 The beam is in poor condition with signs of section loss due to general deterioration and decay over time. The beam also appears to have been notched at mid span.

2.5 Timber joists are also in a generally poor condition with signs of excessive notching, overcutting and general deterioration over time.

2.6 Existing joists are spanning circa 1.8m onto an existing timber beam, and then circa 4.5m onto a loadbearing timber stud wall below.

2.7 The existing joists are poorly connected into the existing beam. In some instances it appears that the joists are not bearing directly onto the beam but are connected via thin timber fin plates.

2.8 Existing joists are typically 175x50mm at circa 400mm centres.

3.0 RECOMMENDATIONS

3.1 We have undertaken calculations based on the timber beam supporting domestic imposed loads, with and without the notch.

3.2 Both options show that the beam is overstressed by up to 2.5 times the permissible stress based upon properties of C16 timber.

3.3 The beam deflection is up to 3.4 times the acceptable limit.

3.4 We would therefore recommend that the timber beam be removed and replaced with new support structure, typically a steel beam.

3.5 The steel beam will need to be 152 UC 30 Grade S275 (see Sketch 5333-SK-005-P2).

3.6 We have also undertaken calculations for new timber floor joists, which would replace the existing. These calculations take no account of the existing joist capacity due the variable conditions.

3.7 We recommend new joist sizes of 200x50mm at 300mm centres, grade C16. These should be positioned between existing joists wherever possible to ensure restraint to the external wall is maintained (but see 3.9 below).

3.8 Note that discussions regarding dropping the existing third floor level are ongoing to allow greater headroom at this level. If this option is taken, we would recommend that the new floor be built under the existing before it is removed, again to ensure restraint is maintained to external walls.

PHOTOS

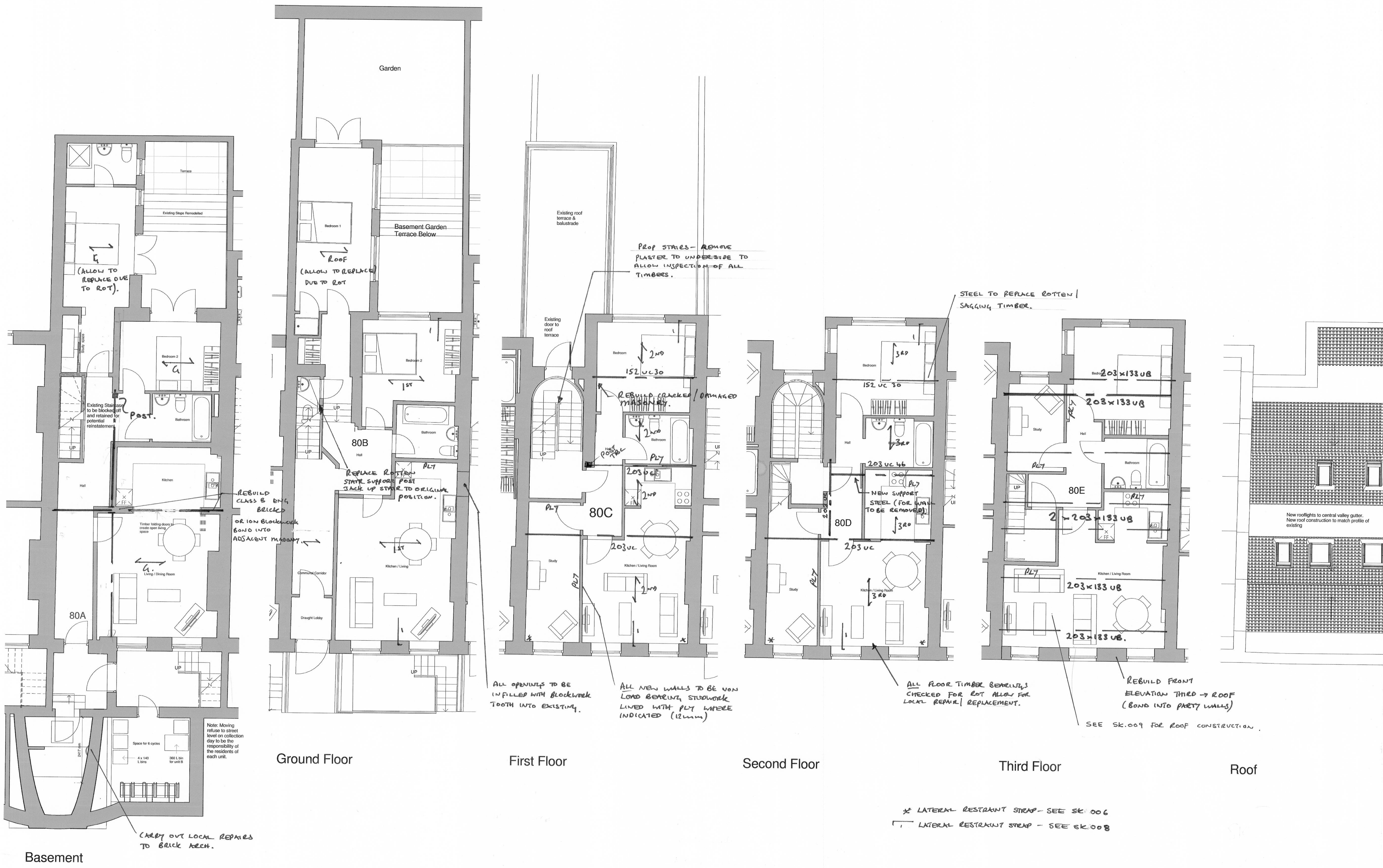
Existing beam propped temporarily

Existing joists poorly connected to existing beam

Existing joists over-notched

View of existing beam

View to underside of 3rd floor showing excessive floor deflection



Garden
Terrace
Existing Steps Remodelled
Basement Garden Terrace Below
Existing roof terrace & balustrade
Existing door to roof terrace
(ALLOW TO REPLACE DUE TO ROT).
ROOF (ALLOW TO REPLACE) DUE TO ROT
Existing Staircase to be blocked off and retained for potential reinstatement
POST.
80A
80B
80C
80D
80E
REBUILD CLASS B ENG BRICKS OR 10N BLOCKWORK BOND INTO ADJACENT MASONRY
REPLACE ROTTEN STAIR SUPPORT POST JACK UP STAIR TO ORIGINAL POSITION.
PROP STAIRS - REMOVE PLASTER TO UNDERSIDE TO ALLOW INSPECTION OF ALL TIMBERS.
REBUILD CRACKED / DAMAGED MASONRY.
STEEL TO REPLACE ROTTEN / SAGGING TIMBER.
152 UC 30
203 UC
203 UC 46
NEW SUPPORT STEEL (FOR WALL TO BE REMOVED).
203x133 UB
2 - 203x133 UB
PLY
Note: Moving refuse to street level on collection day to be the responsibility of the residents of each unit.
Space for 6 cycles
CARRY OUT LOCAL REPAIRS TO BRICK ARCH.
ALL OPENINGS TO BE INFILLED WITH BLOCKWORK TOOTH INTO EXISTING.
ALL NEW WALLS TO BE NON LOAD BEARING STUDWORK LINED WITH PLY WHERE INDICATED (12mm)
ALL FLOOR TIMBER BEARINGS CHECKED FOR ROT ALLOW FOR LOCAL REPAIR / REPLACEMENT.
REBUILD FRONT ELEVATION THIRD → ROOF (BOND INTO PARTY WALLS)
SEE SK.009 FOR ROOF CONSTRUCTION.
New rooflights to central valley gutter. New roof construction to match profile of existing
Basement
Ground Floor
First Floor
Second Floor
Third Floor
Roof

✱ LATERAL RESTRAINT STRAP - SEE SK.006

⌐ LATERAL RESTRAINT STRAP - SEE SK.008

New Construction

Existing

Original features to be retained in accordance with Schedule of Works

FIRST ISSUE				
Rev:	Description:	Drn:	Chk:	Date:

Status: **PRELIMINARY**

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Client: MHA ASSOCIATES

Architect: A.W.W

Project: 80 GUILFORD ST. WC1N 1DF

Drawing title: INITIAL SCHEME DESIGN

Drawn:	Chkd/Appd:	Date:	Sheet size:	Scale/s:
DCO	DCO	DEC 13	A2	1:100

Drawing Number:	Revision:
5333-SK.005	P2

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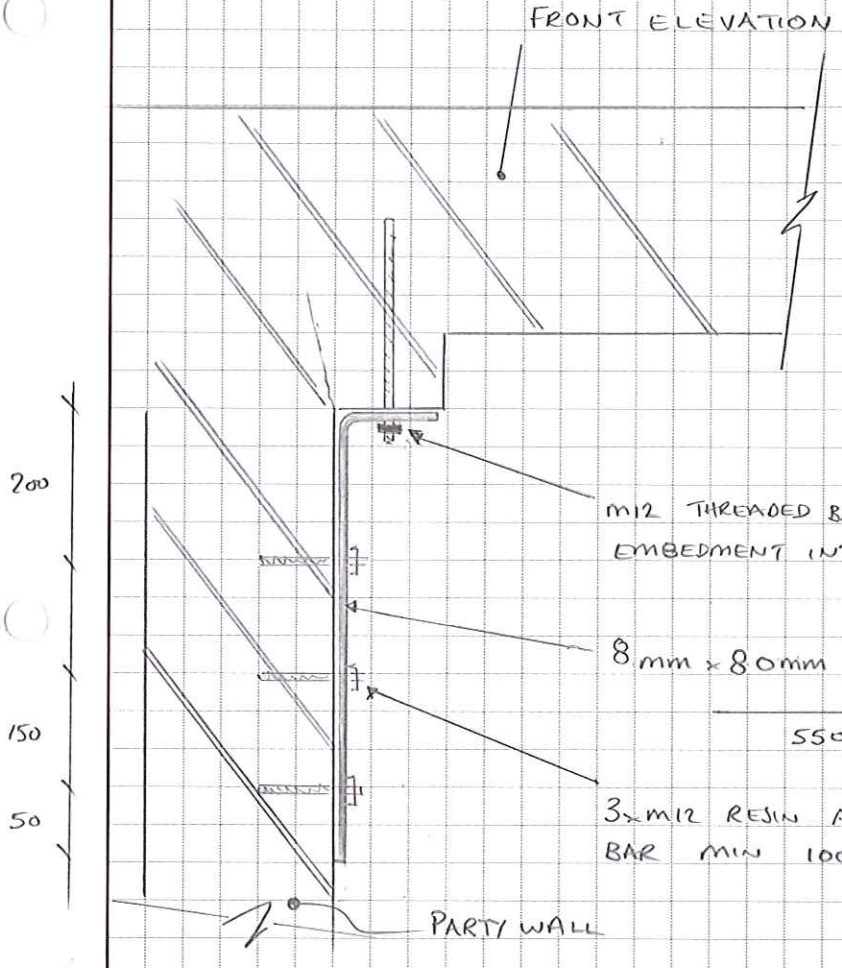
Project Title:	80 GUILFORD STREET		
Project No:	5333		
Compiled By:	DES	Sheet No:	SK.005
Date:	NOV 13	Revision:	C2

Calculation	Output

SK.005 STRAPPING DETAIL

TO BE USED WHERE FRONT ELEVATION HAS BECOME DISLOCATED FROM PARTY WALLS, INSTALL STRAPS AT 300mm VERTICAL CENTRES.



USE RAWL R-KF2 KEMFAST RESIN FOR SECURING BOLTS/THREADED BAR. ENSURE FIXINGS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURES GUIDELINES. STRAPS PAINTED WITH 80MICRON ZINC PHOSPHATE PRIMER.

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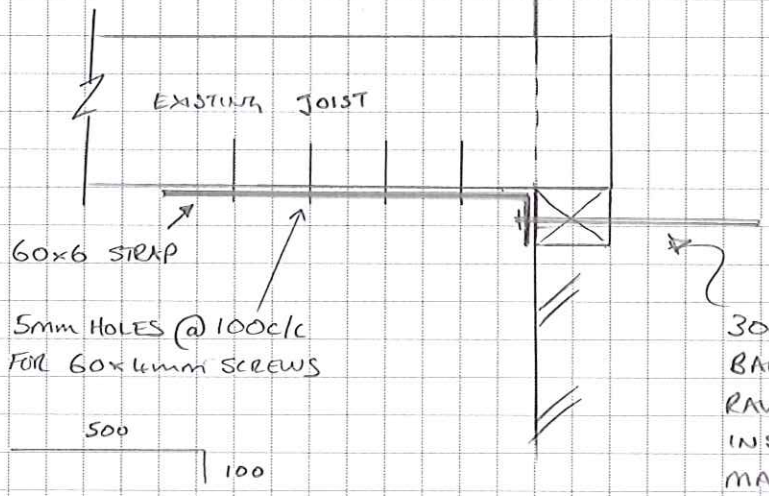
Project Title:	80 GUILFORD STREET		
Project No:	5333		
Compiled By:	DES	Sheet No:	SK. 008
Date:	NOV 13	Revision:	C1

Calculation	Output

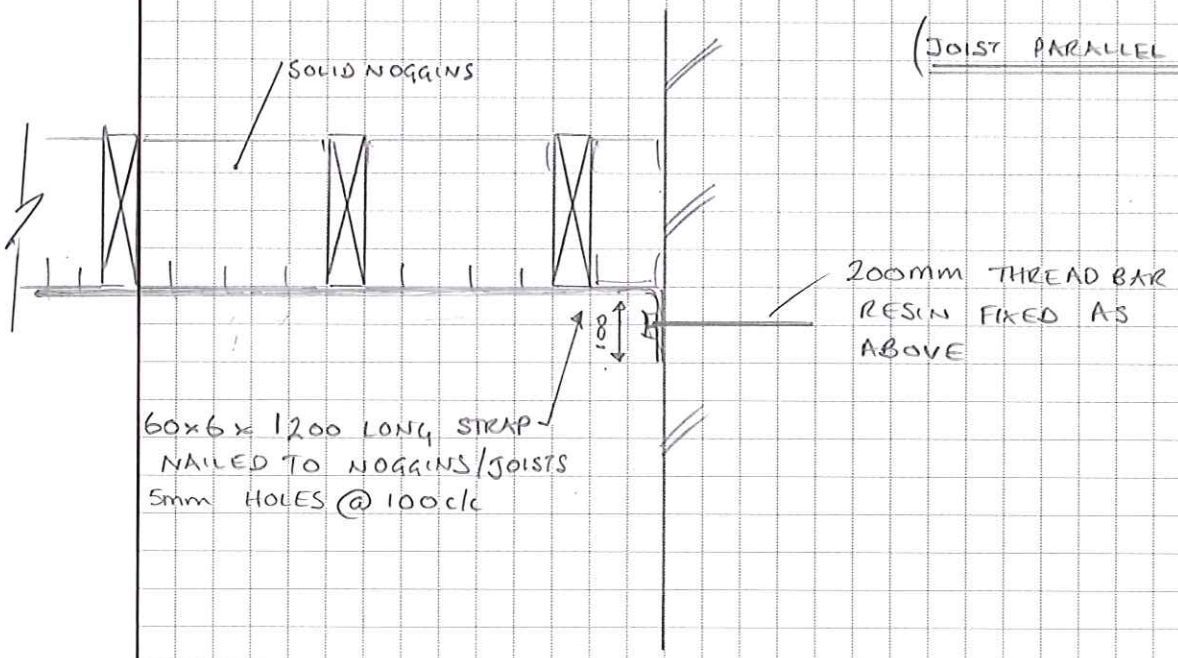
SK. 008 STRAPPING DETAIL FOR FLOORS

(JOIST PERPENDICULAR TO WALL)

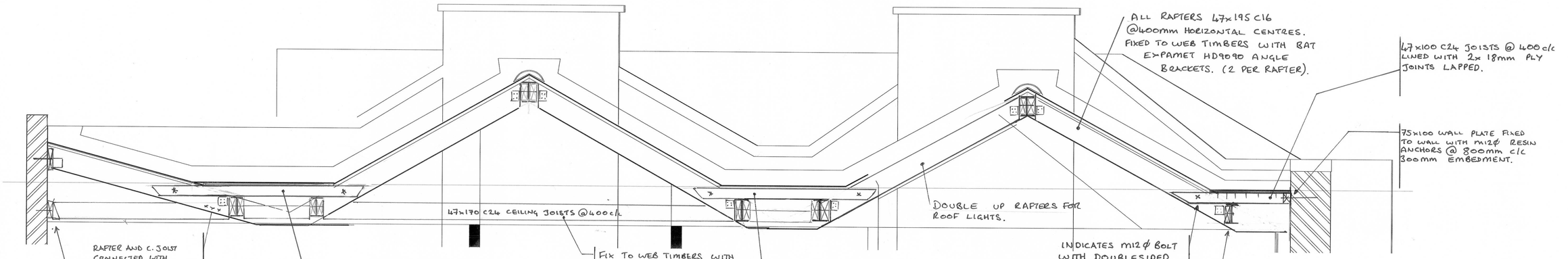


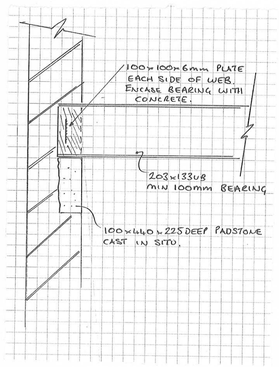
STRAP AT EVERY OTHER JOIST ALL FLOORS FRONT AND REAR ELEVATIONS

(JOIST PARALLEL TO WALL)



STRAPS AT 1500mm CENTRES, GROUND AND FIRST FLOOR.





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Drawing title: NEW ROOF CONSTRUCTION DETAILS

Drawn:	Chkd/Appd:	Date:	Sheet size:	Scale/s:
JCO		09/12/13	A1	1:20

Drawing Number:	Revision:
5333 SK.009	P1