

Project 46 Swanside Road
Huyton

Title Proposed Ground Floor Plan
Showing Structure Over.

Drawn by
REG

Scale
1:50

Drawing Number
1842/SK101

Checked by
RMcK

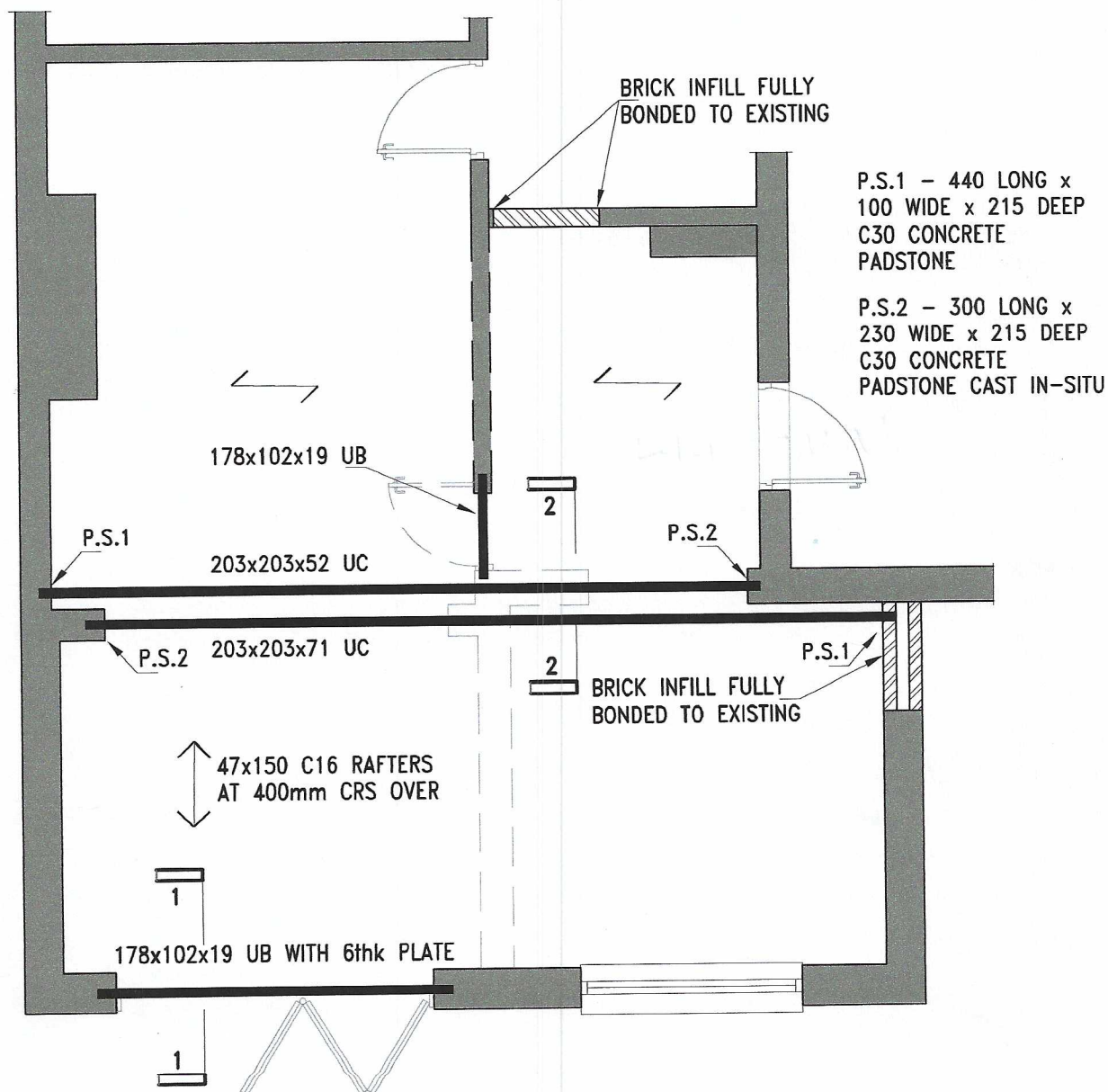
Date
Feb 2018

Rev
2

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DESIGNERS RISK ASSESSMENT

ELEMENT OR ACTIVITY	HAZARD EG SLIPS, FALLS, HAZARDOUS SUBSTANCES ETC.	DESIGN ACTION
DEMOLITION	COLLAPSE OF STRUCTURE	PROVIDE ADEQUATE PROPPING TO EXISTING STRUCTURE PRIOR TO DEMOLITION AND INSTALLATION OF STEELWORK. IF IN DOUBT, ASK.

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Job Ref : 1842

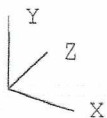
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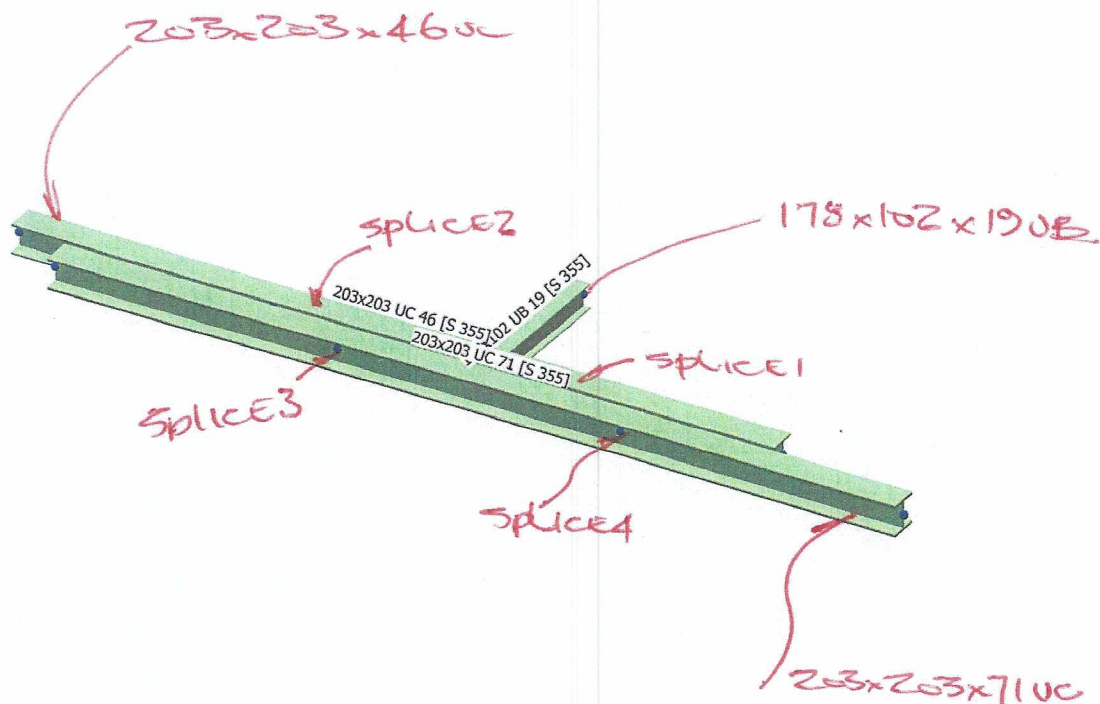
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ALL STEEL MEMBERS -
GRADE S355.



Frame Geometry - (Full Frame) - 3D Front View

Not to Scale

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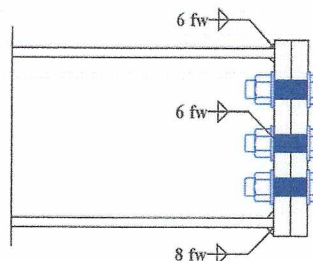
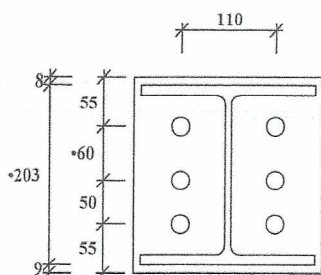
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End-Plate 220 x 220 x 20 mm (8 kg)
6 No. M20 Grade 8.8 Bolts in 21 mm holes

Welds grd E 42 Plates S 275
Beam 203x203 UC 46 [S355]

Splice 1

Apex joint at : N.4 - Member SBL1Id 18 - Level 1
Beam to Beam End-Plated Connection to BS 5950
Loading Case 004 : Dead Plus Live Ultimate

Basic Data**Integrated Applied Forces at End-plate Interface**

Resultant Forces M, Fv, F

-57.7 kNm, 6.4 kN, 0.0 kN

Load directions

Bottom of Connection in Tension, Rafter moving Down.

Design to

BS 5950-1: 2000 and the SCI Green Book: SCI-P-207/95

Basic Dimensions

Beam-203x203UC46 [S 355]

D=203.2, B=203.6, T=11.0, t=7.2, r=10.2, py=355

Bolts 20 mm Ø in 21 mm holes

Grade 8.8 Bolts

Plates S 275, Welds E 42

Rafter Capacities Mc, Fvc, Fc

176.6 kN.m, 311.6 kN, 2084.9 kN

Mc = 176.6 kN.m

OK

Summary of Results (Unity Ratios)

Moment Capacity 60.3 kNm (for 2 rows of bolts) (Modified Applied Moment Mm=57.7 kNm)

0.96

OK

Shear Capacity

0.02

OK

Flange Welds

0.76

0.76

OK

Web Welds

0.73, 0.73, 0.03

0.73

OK

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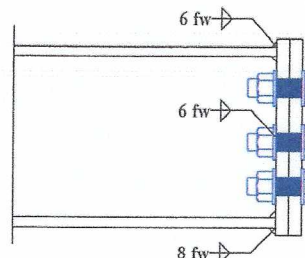
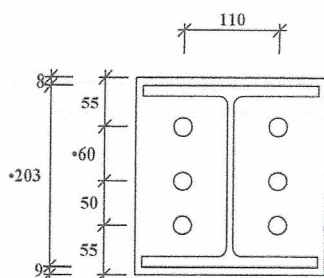
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End-Plate 220 x 220 x 15 mm (6 kg)
6 No. M20 Grade 8.8 Bolts in 21 mm holes

Welds grd E 42 Plates S 275
Beam 203x203 UC 46 [S355]

Splice 2**Apex joint at : N.2 - Member SBL1Id 18 - Level 1****Beam to Beam End-Plated Connection to BS 5950****Loading Case 004 : Dead Plus Live Ultimate****Basic Data****Integrated Applied Forces at End-plate Interface**

Resultant Forces M, Fv, F

-32.3 kNm, -17.4 kN, 0.0 kN

Load directions

Bottom of Connection in Tension, Rafter moving Up.

Design to

BS 5950-1: 2000 and the SCI Green Book: SCI-P-207/95

Basic Dimensions

Beam-203x203UC46 [S 355]

D=203.2, B=203.6, T=11.0, t=7.2, r=10.2, py=355

Bolts 20 mm Ø in 21 mm holes

Grade 8.8 Bolts

Plates S 275, Welds E 42

Rafter Capacities Mc, Fvc, Fc

176.6 kN.m, 311.6 kN, 2084.9 kN

Mc = 176.6 kN.m

OK

Summary of Results (Unity Ratios)

Moment Capacity 51.8 kNm (for 2 rows of bolts) (Modified Applied Moment Mm=32.3 kNm)

0.62

OK

Moment Capacity 35.2 kNm (for the 1 rows of bolts required in the tension zone)

0.92

OK

Shear Capacity

0.04

OK

Flange Welds

0.37

0.37

OK

Web Welds

0.32, 0.23

0.32

OK

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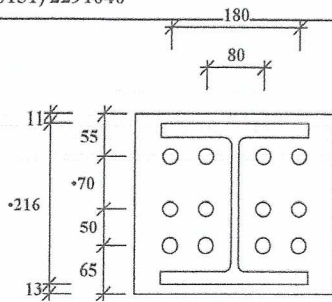
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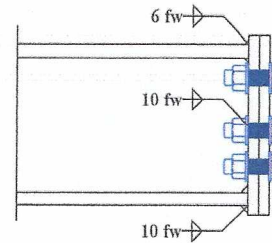
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End-Plate 240 x 280 x 15 mm (8 kg)
12 No. M20 Grade 8.8 Bolts in 21 mm holes



Welds grd E 42 Plates S 275
Beam 203x203 UC 71 [S355]

Splice 3**Apex joint at : N.8 - Member SBL1Id 20 - Level 1****Beam to Beam End-Plated Connection to BS 5950****Loading Case 004 : Dead Plus Live Ultimate****Basic Data****Integrated Applied Forces at End-plate Interface**

Resultant Forces M, Fv, F

-78.4 kNm, -10.1 kN, 0.0 kN

Load directions

Bottom of Connection in Tension, Rafter moving Up.

Design to

BS 5950-1: 2000 and the SCI Green Book: SCI-P-207/95

4 bolts per Row

This is outside the scope of the SCI Green Book.

Design based on the Green Book methodology as follows:

Mode 1 = hcc inner, Mode 2 = hcc ave, Mode 3 = 4•Pt

Basic Dimensions

Beam-203x203UC71 [S 355]

D=215.8, B=206.4, T=17.3, t=10.0, r=10.2, py=345

Bolts 20 mm Ø in 21 mm holes

Grade 8.8 Bolts

Plates S 275, Welds E 42

Rafter Capacities Mc, Fvc, Fc

275.6 kN.m, 446.7 kN, 3119.5 kN

Mc = 275.6 kN.m

OK

Summary of Results (Unity Ratios)

Moment Capacity 85.7 kNm (for 2 rows of bolts) (Modified Applied Moment Mm=78.4 kNm)

0.91 OK

Shear Capacity

0.02 OK

Flange Welds

0.83

0.83 OK

Web Welds

0.85, 0.19

0.85 OK

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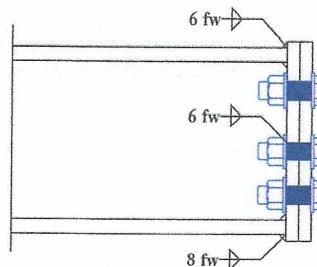
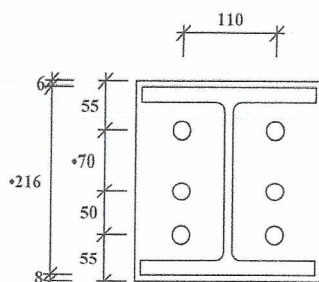
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End-Plate 230 x 220 x 15 mm (6 kg)
6 No. M20 Grade 8.8 Bolts in 21 mm holes

Welds grd E 42 Plates S 275
Beam 203x203 UC 71 [S355]

Splice 4**Apex joint at : N.9 - Member SBL1Id 20 - Level 1****Beam to Beam End-Plated Connection to BS 5950****Loading Case 004 : Dead Plus Live Ultimate****Basic Data****Integrated Applied Forces at End-plate Interface**

Resultant Forces M, Fv, F

-50.4 kNm, 24.2 kN, 0.0 kN

Load directions

Bottom of Connection in Tension, Rafter moving Down.

Design to

BS 5950-1: 2000 and the SCI Green Book: SCI-P-207/95

Basic Dimensions

Beam-203x203UC71 [S 355]

D=215.8, B=206.4, T=17.3, t=10.0, r=10.2, py=345

Bolts 20 mm Ø in 21 mm holes

Grade 8.8 Bolts

Plates S 275, Welds E 42

Rafter Capacities Mc, Fvc, Fc

275.6 kN.m, 446.7 kN, 3119.5 kN

Mc = 275.6 kN.m

OK

Summary of Results (Unity Ratios)

Moment Capacity 55.9 kNm (for 2 rows of bolts) (Modified Applied Moment Mm=50.4 kNm)

0.90

OK

Shear Capacity

0.07

OK

Flange Welds

0.61

0.61

OK

Web Welds

0.64, 0.64, 0.10

0.64

OK

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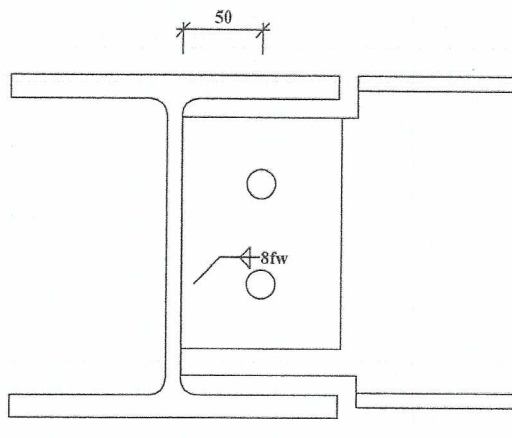
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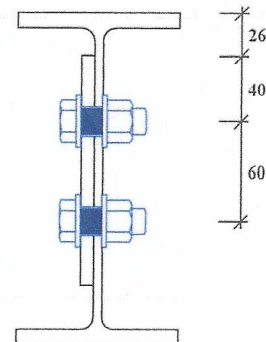
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Beam: 203x203 UC 60 [S355]
 Beam to web gap 0 mm
 Welds E35 Fin-Plates S 275



Right: 203x102 UB 23 [S355]
 Top Notch: 26 x 100 mm lg. net
 Bot Notch: 20 x 100 mm lg. net
 Plate: 8 x 100 x 140 mm dp. (1 kg)
 With 2 No. 18 mm holes
 For 16 mm Ø Grade 8.8 Bolts.

Kitchen Beam into Main Rear Beam Beam to Beam Fin-plate Connection to BS 5950 Basic Data

User Defined Applied Forces at Interface

Shear Forces	Right = 39.0 kN
Tie Force	75.0 kN
	But not less than 100% of the Shear Load. (SCI P341 T5.1)
Design to	BS 5950: Pt 1: 2000 and the SCI Green Book: SCI-P212: 2002

Basic Dimensions

Supporting-203x203UC60 [S 355]	D=209.6, B=205.8, T=14.2, t=9.4, r=10.2, py=355
Right-203x102UB23 [S 355]	D=203.2, B=101.8, T=9.3, t=5.4, r=7.6, py=355
Bolts 16 mm Ø in 18 mm holes	Grade 8.8 Bolts
Plates S 275, Welds E 35	

Summary of Results (Unity Ratios)**Right Hand Beam**

Bolt Shear & Bearing	0.64, 0.44	0.64	OK
Fin-Plate & Web Bearing	0.64, 0.80	0.80	OK
Beam Web Shear	0.24, 0.25, 0.25	0.25	OK
Beam Web Bending		0.70	OK
Fin-Plate Shear	0.18, 0.18, 0.15	0.18	OK
Fin-Plate Bending	0.21, 0	0.21	OK
Tie force Plate T,B, Web T, B	0.23, 0.42, 0.49, 0.63	0.63	OK
Additional tie checks	0.64, 0.43, 0.20	0.64	OK

Supporting Beam

Web		0.08	OK
Web Tie Force		0.03	OK
Web Tie Force		0.10	OK

Project 46 Swanside Road
Huyton

Drawn by
REG

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RMcK

D.R.Beckett

Consulting Civil and
Structural Engineers

Title
Details.
Sheet 1.

Scale
1:10

Date
Feb 2018

Drawing Number
1842/SK102

Rev
2

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