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STRUCTURAL ENGINEER'S CALCULATIONS FOR

High Beech

Mill Lane

Lower Beeding

Our Ref: MM/25114

March 2025

MITCHINSON MACKEN

JOB TITLE	High Beech – Lower Beeding		ITEM	Calculations	
DESIGNED BY	DATE	CHECKED BY	JOB NO.	SHEET	REV
AJM	March 2025		25114	01	

SCREW PILES

LOADING

SLAB = $3.5/2 \times 2.7/2 \times 0.25 \times 24\,kN/m^2$ = 14.4 kN

$2.4\,m^2 \times 1.5\,kN/m^2$ = 3.6 kN

$2.4\,m^2 \times 0.5\,kN/m^2$ = 1.2 kN

Σ_{SLAB} = 19.2 kN

WALLS = $3.5\,m/2 \times 2.7\,m \times 0.98\,kN/m^2$ = 4.5 kN

$5.0\,m/2 \times 0.5\,kN/m \times 3.5/2$ = 2.2 kN

$5.0\,m/2 \times 1.6\,kN/m \times 3.5/2$ = 7.0 kN

Σ_{WALLS} = 13.7 kN

PILE 1 = 13.7 + 13.7 + 19.2 = 46.6 kN

2 = 19.2 + 19.2 + 13.7 = 52.1 kN

3 = 52.1 kN

4 = 46.6 kN

5 = 47.4 kN

6 = 38.4 kN

7 = 38.4 kN

8 = 47.4 kN

9 = 46.6 kN

10 = 52.1 kN

11 = 52.1 kN

12 = 46.6 kN

MITCHINSON MACKEN

JOB TITLE	High Beech – Lower Beeding		ITEM	Calculations	
DESIGNED BY	DATE	CHECKED BY	JOB NO.	SHEET	REV
AJM	March 2025		25114	02	

LINTEL DESIGN

L1 = SPAN = 1300 mm

LOADING

1.1m x 0.95 kN/m² = 1.0 kN/m

E = 7200 x 1.14 = 820.8 deflm = 3.9 mm

$$I_{req} = \frac{5 \times 1300^4 \times 1.0}{384 \times 820.8 \times 3.9} = 1.2 \times 10^6 \text{ mm}^4$$

2No. 50 x 150 C24 = 28.4×10^6 mm⁴

MITCHINSON MACKEN

JOB TITLE			ITEM		
High Beech – Lower Beeding			Calculations		
DESIGNED BY	DATE	CHECKED BY	JOB NO.	SHEET	REV
AJM	March 2025		25114	03	

FLITCH BEAM DESIGN

SPAN = 5100 mm

LOADING

$5.0\ m/2 \times 0.5\ kN/m^2 = 1.25\ kN/m$ CEILING

$5.0\ m/2 \times 1.45\ kN/m^2 = 3.6\ kN/m$ ROOF

$0.2\ kN/m$ SW

$\Sigma = 5.0\ kN/m \quad \Sigma_{ULT} = 7.5\ kN/m$

$BM = 7.5 \times 5.1^2/8 = 24.4\ kNm$

$f = M/Z = \dfrac{24.4 \times 10^6 \times 6}{220^2 \times 12}$

$= 252\ N/mm^2$

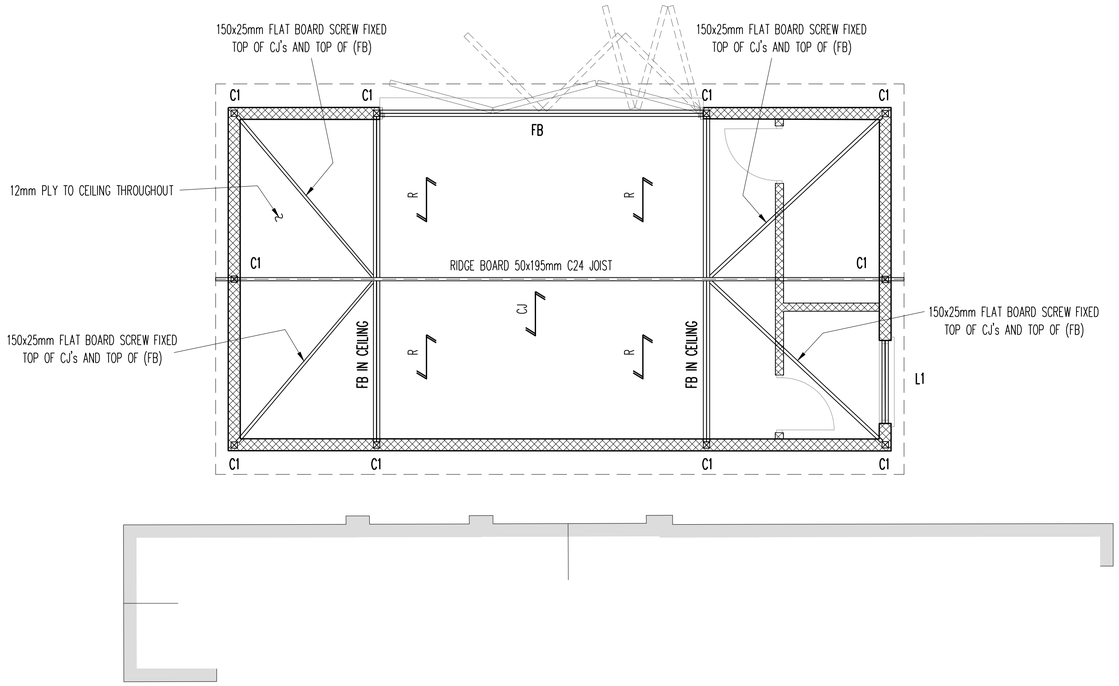
$f_0 = 275\ N/mm^2$

$R = 7.5 \times 5.1/2 = 19.1\ kN$

C1 = 100 x 100 C24 = 20.0 kN ✓

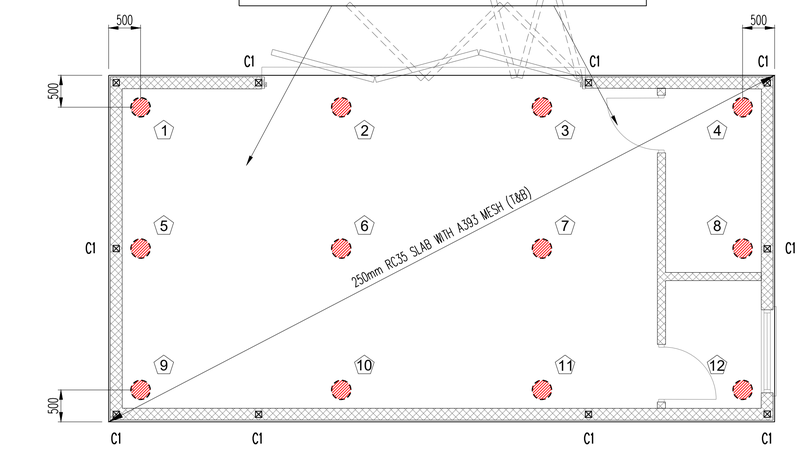
0 1 2 3 4 5m

Scale in Metres (1:50 at A1)



GROUND FLOOR PLAN – SHOWING STRUCTURE OVER

NOTE
NEW SLAB CAST OVER EXISTING BASES
CORE DRILL ø 200mm HOLES THROUGH EXISTING SLAB TO RECEIVE NEW SCREW PILES

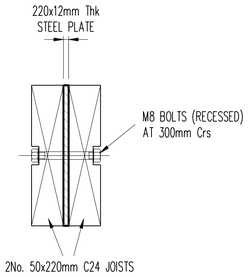


SCREW PILE DATA	
PILE No.	LOADING (kN) (UNFACTORED)
1	47
2	52
3	52
4	47
5	48
6	39
7	39
8	48
9	47
10	52
11	52
12	47

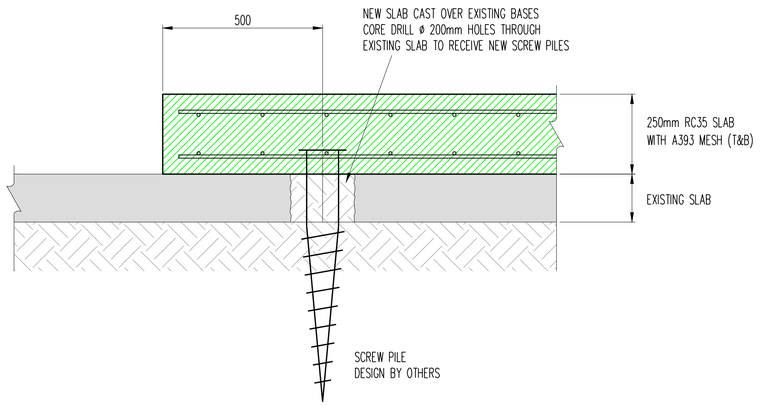
GROUND FLOOR PLAN – SHOWING FOUNDATION LAYOUT

0 0.5m

Scale in Metres (1:5 at A1)



TYPICAL SECTION
FLITCH BEAM (FB)



SECTION A – A

NOTES

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications.

The Contractor is responsible for verifying all site dimensions before commencing work.

All dimensions are in millimetres unless noted otherwise.

This drawing has been produced electronically and may have been photo reduced or enlarged when printed or copied. Dimensions on this drawing shall not be scaled. Work only to figured dimensions. Any dimensional discrepancies errors or omissions are to be reported to the engineer immediately.

Levels are in metres unless noted otherwise to Ordnance Survey datum.

The Contractor is responsible for the stability of the building whilst the works are in progress.

STRUCTURAL NOTES :

1. ALL STRUCTURAL STEELWORK TO BE Gr. S275 JO
   ALL STEELWORK PLATES TO BE Gr S275 JO
2. FOR 150mm CAVITY WALLS USE ANCON ST1 TYPE1 WALL TIES AT 600mm (HORIZONTAL) x 450mm (VERTICAL) Crs

LEGEND ;

- EXISTING STRUCTURE
- WALLS TO BE DEMOLISHED
- NEW CAVITY WALLS
- STRUCTURAL MEMBERS
- NEW STUD WALLS

C1 – 100x100mm C24 TIMBER POST

FB – FLITCH BEAM
2No. 50x220mm C24 JOISTS WITH
220x12mm Thk STEEL PLATE
(SEE TYPICAL SECTION)

TIMBER :

CJ – 50x220mm C24 CEILING JOISTS AT 400mm Crs

R – 50x170mm C24 RAFTERS AT 400mm Crs

LINTELS :

L1 – 2No. 50x150mm C24 JOISTS

REV	DESCRIPTION	DATE	BY
0	ORIGINAL ISSUE	17/3/25	MJB

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PROJECT
STRUCTURAL ALTERATIONS TO HIGH BEECH, MILL LANE LOWER BEEDING. RH13 6PX

DRAWING
GROUND FLOOR PLANS SHOWING FOUNDATIONS & STRUCTURE OVER

DRAWING No.	REV	CHECKED
25114 / 01	0	AM
SCALE: As Shown	DATE: Feb '25	DRAWN: MJB / APPROVED