

CLIENT NAME:	MRS V SAYELL
PROJECT ADDRESS:	30 MOLYNEUX DRIVE, BODIGATE
DATE:	3/7/19
SHEETS ENCLOSED:	12824/1-6, D1-D3 OPTION 1 - DORMER OVER BOTH BEDROOMS

GENERAL NOTE ON DIMENSIONS:

PLEASE NOTE THAT ALL DIMENSIONS SHOWN BY ANDREW BAXTER CIVIL & STRUCTURAL ENGINEERING CONSULTANTS ARE ACCURATE ENOUGH FOR DESIGN PURPOSES ONLY. THEY SHOULD NOT BE USED TO SET OUT THE STRUCTURE/MEASURE BEAM LENGTHS ETC.

EXACT DIMENSIONS SHOULD ALWAYS BE CHECKED ON SITE AND/OR CONFIRMED BY THE ARCHITECT.

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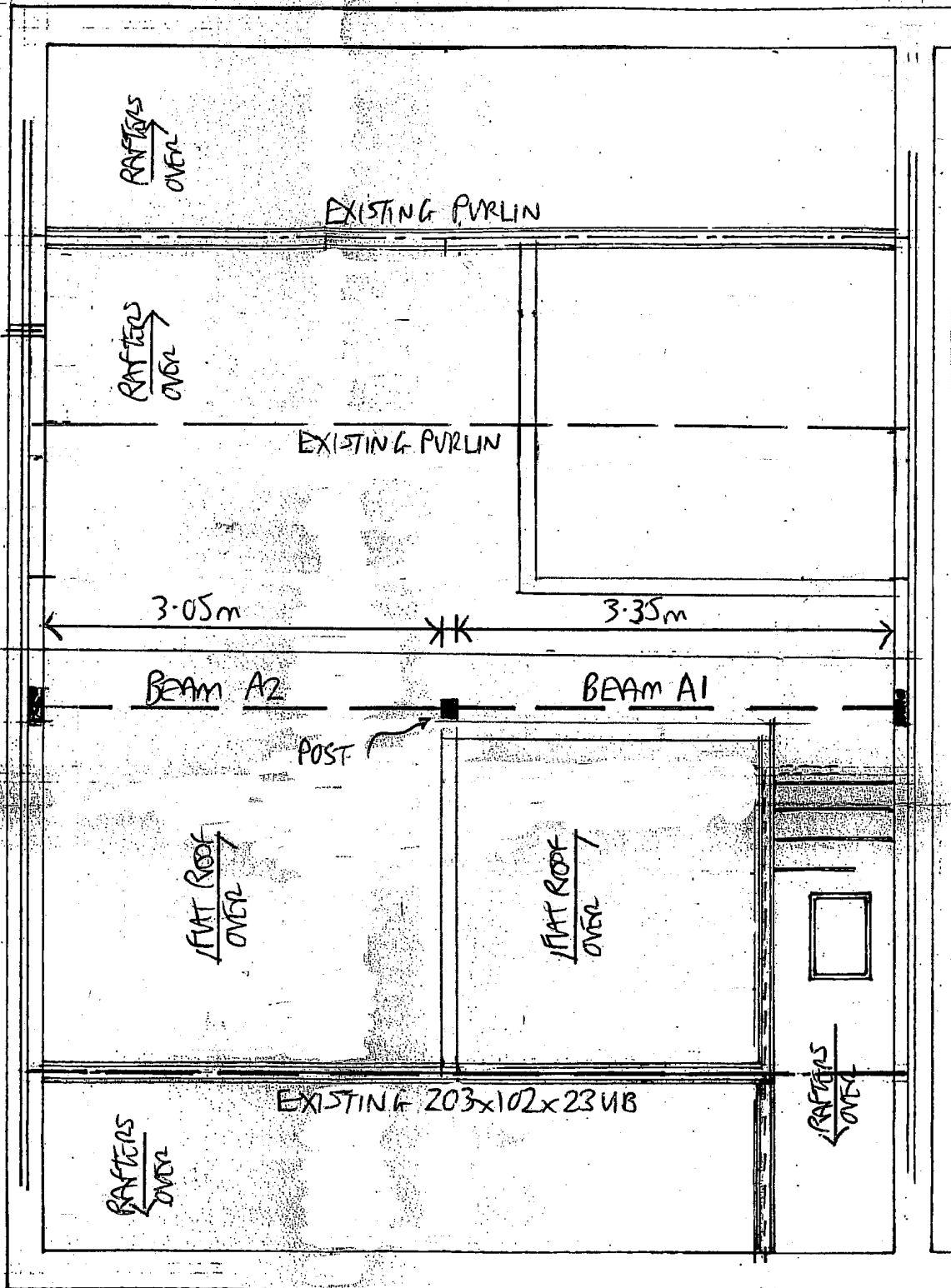
Contract No. 12024 Drg. No.

The Woodlands, Edgehill, Banbury, Oxon. OX15 6DJ
Telephone: 01295 670485 Fax: 01295 670605

Made by DBB Date JULY 9 Checked by Date

Client..... MRS V SAYELL

Project..... 30 MOLYNEUX DRIVE,
BODIGOTE - OPTION 1

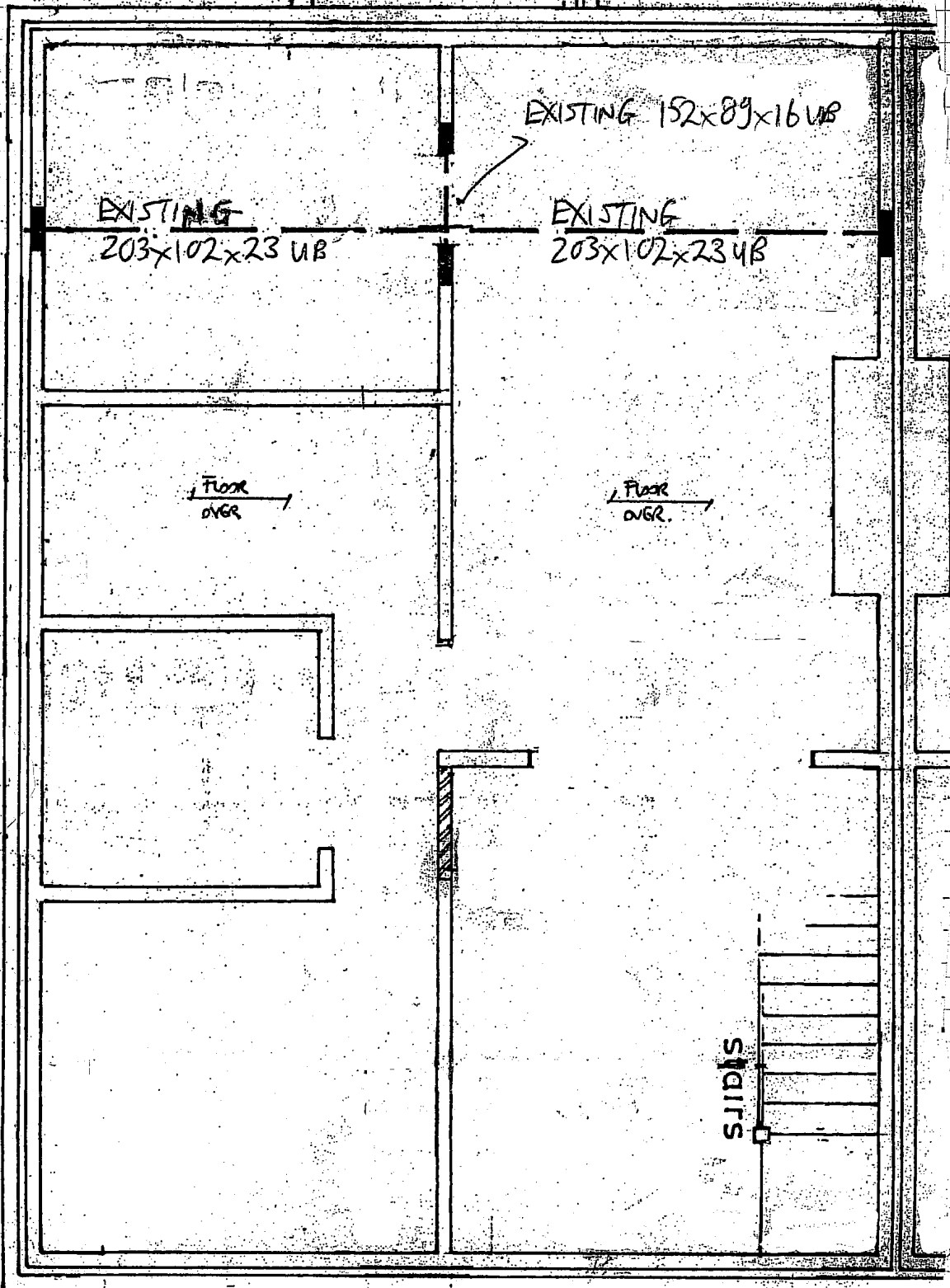


FIRST FLOOR PLAN SHOWING PROPOSED
SUPPORT STRUCTURE OVER - SCALE 1-50

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Contract No.	12824	Drg. No.	
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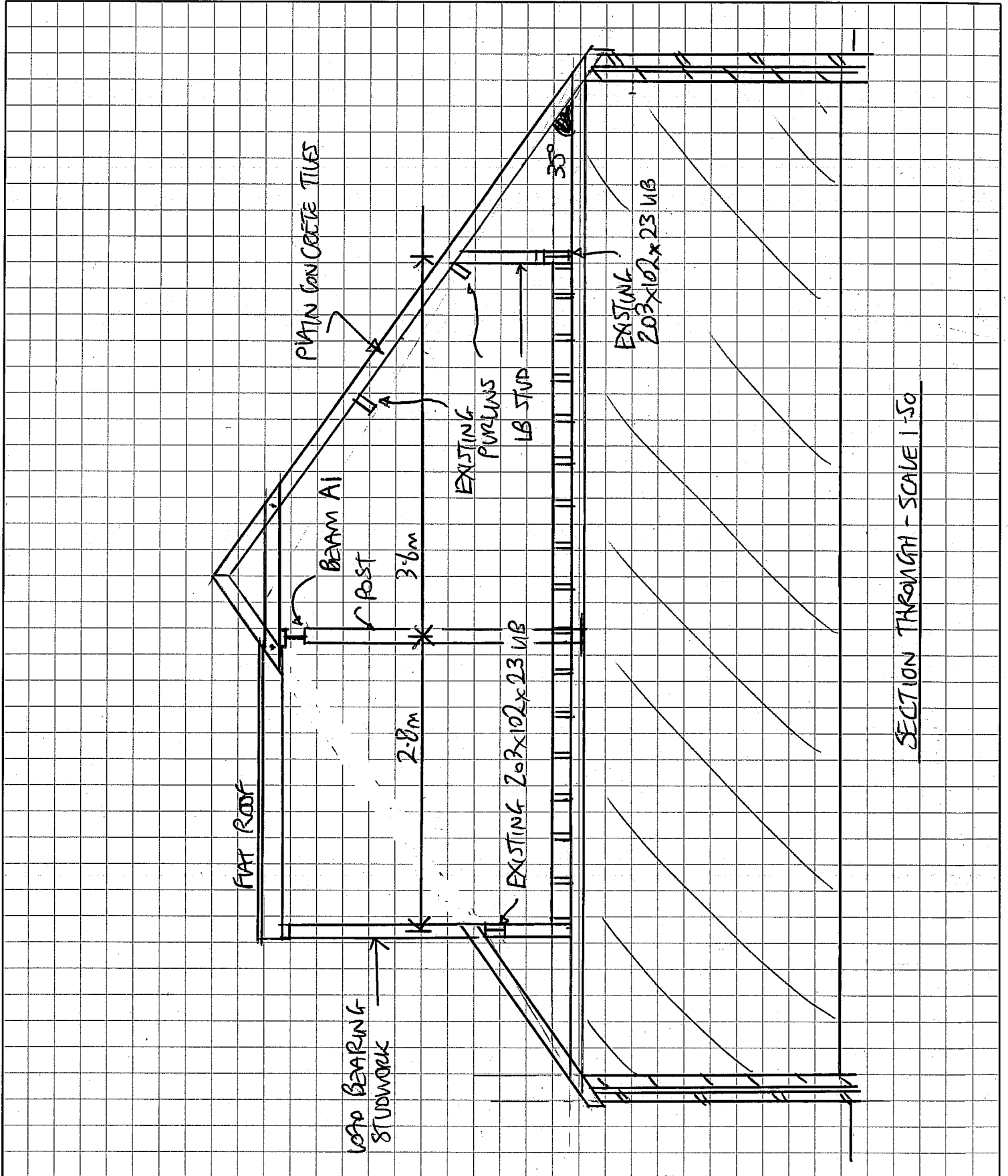
Project..... **30 MOLYNEUX DRIVE, BODICOTE
OPTION 1**



**GROUND FLOOR PLAN SHOWING EXISTING SUPPORT STRUCTURE
OVER - SCALE 1:50**

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Calculation
Sheet No.

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OPTION 1

Reference	Output
BS 449	
Design of Beams A1 & A2	
Beams A1 - clear span 3.35m - support some roof, A2 MAX loft and flat roof load	
<u>Roof load</u>	<u>KN/m²</u>
Plain concrete tiles	0.74
Battens/joints	0.15
Ridge	0.15
Plastic board	0.15
TOTAL ON SLOPE	1.19
TOTAL ON PLAN (= 6.535)	1.453
+ snow @ 35° PITCH	0.625
<u>TOTAL ROOF + SNOW</u>	<u>2.08 KN/m²</u>
<u>Loft load</u>	<u>KN/m²</u>
Imposed load	0.25
Self wt of joists etc.	0.25
<u>TOTAL LOFT LOAD</u>	<u>0.5 KN/m²</u>
<u>FLAT ROOF LOAD</u>	<u>KN/m²</u>
Imposed load	0.75
Self wt of joists etc.	0.25
Finishes	0.25
Plasterboard/insulation	0.25
<u>TOTAL FLAT ROOF LOAD</u>	<u>1.5 KN/m²</u>
width of roof supported = $3.6 / 2 = 1.8$ m	
" " of bjt = $1.2 / 2 = 0.6$ m	
" " of flat roof = $2.8 / 2 = 1.4$ m	
∴ vol on Beam from roof, bjt, flat roof	
$(2.08 \times 1.8) + (0.5 \times 0.6) + (1.5 \times 1.4) = 6.14$ KN/m	
Design span = $3.35 + 0.2 = 3.55$ m	

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Reference	Output
Bending moment = $6.14 \times 3.55^2/8 = 9.67 \text{ kNm}$	
Reaction = $6.14 \times 3.55/2 = 10.89 \text{ KN}$ (9.98 KN BEAM A2)	
Max def = $3550/360 = 9.86 \text{ mm}$	
$\therefore I_{reqd} = \frac{5 \times 6.14 \times 3550^3}{384 \times 205 \times 9.86 \text{ EI}} = 628 \text{ cm}^4$	
TRY 152x89 x 16 UB FOR BEAM A1 (fully restrained)	
I = 838 $\text{cm}^4 > 628$ OK ppc = 180 N/mm^2	
Z = 110 cm^3	
Actual stress = $\frac{9.67 \text{ E3}}{110} = 88 \text{ N/mm}^2 < 180$ OK	
\therefore ADOPT 152x89 x 16 UB FOR BEAMS A1/A2 WITH ENGINEERING BRICK PADSTONE AT SUPPORT WALL	ADOPT 152x89 x 16 UB FOR BEAMS A1/A2 WITH ENGINEERING BRICK PADSTONE AT SUPPORT WALL
Design of Post Supporting Beams A1/A2	
Effective height = $2.5 \times 12 = 3 \text{ m}$	
PROP REACTION = 20.87 KN	
ECCENTRIC MOMENT = $20.87 \times 0.1 = 2.1 \text{ kNm}$	
TRY 80x80 x 5.0 SHS BOX SECTION FOR POST	
A = 14.9 cm^2 $I_{reqd} = \frac{3000}{34.7} = 86$	
Z = 34.7 cm^3	
\therefore ppc = 180 N/mm^2 pc = 96 N/mm^2	ADOPT
SECTION CHECK:	80x80 x 5.0 SHS BOX SECTION FOR POST SUPPORTING BEAMS A1 & A2
$\frac{20.87 \text{ E3}}{96 \times 1490} + \frac{2.1 \text{ E3}}{180 \times 34.7} = 0.48 < 1$ OK	
\therefore ADOPT 80x80 x 5.0 SHS BOX SECTION FOR POST SUPPORTING BEAMS A1 & A2	

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Calculation
Sheet No.

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of

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Reference	Output
Design of Flat Roof Joists to New Dormer.	
CLEAR SPAN = 2.8m	ADOPT
∴ ADOPT 47x150mm C16 FLAT ROOF JOISTS @ 400dc TO NEW DORMER	47x150mm C16 FLAT ROOF JOISTS @ 400dc TO NEW DORMER
Allowable span = 3.04m > 2.80m (BUILDING REGS TABLE A7)	

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OPTION 1**

47x50mm C16 FLAT ROOF JOISTS
@ 400 c/c

EXISTING
RAFTERS +
CEILING
JOISTS

47x100mm C16 TIMBER
TOP PLATE, FIXED TO BEAM A1
WITH M12/8-8 STAGGERED
BOLTS @ 400 c/c

PLASTERBOARD

BEAM A1 -
152x89x16 UB

BEAM A1 / RAFTER / CEILING JOIST / BANNER FLAT ROOF
JOIST DETAIL - SCALE 1:5 - NB SAME DETAIL FOR A2

BEAM A2 - 152x89x16 UB

BEAM A1 - 152x89 x16 UB

225x90 x 8mm TOP PLATE,
WELDED TO POST, FIXED
THROUGH BEAMS A1/A2 WITH
4No M12/8-8 BOLTS

2No 4mm FISH
PLATES, FIXED TO
BEAMS A1/A2 WITH
4No M12/8-8 BOLTS

80x80x5.0 SHS POST

BEAM A1/A2 / POST DETAIL - SCALE 1:5

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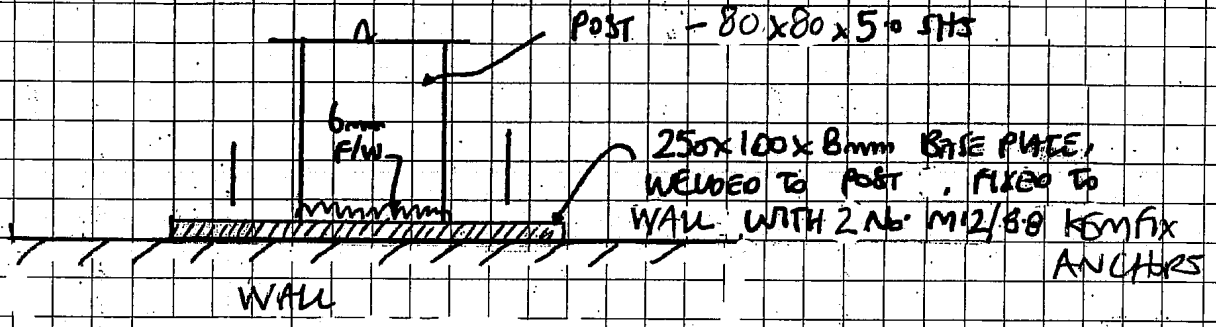
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POST/WALL DETAIL - SCALE 1:5

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