



MITCHINSON
MACKEN

STRUCTURAL ENGINEER'S
REMEDIAL WORKS
SPECIFICATION
TO INTERNAL ROOF STRUCTURE



South Down House – High Street

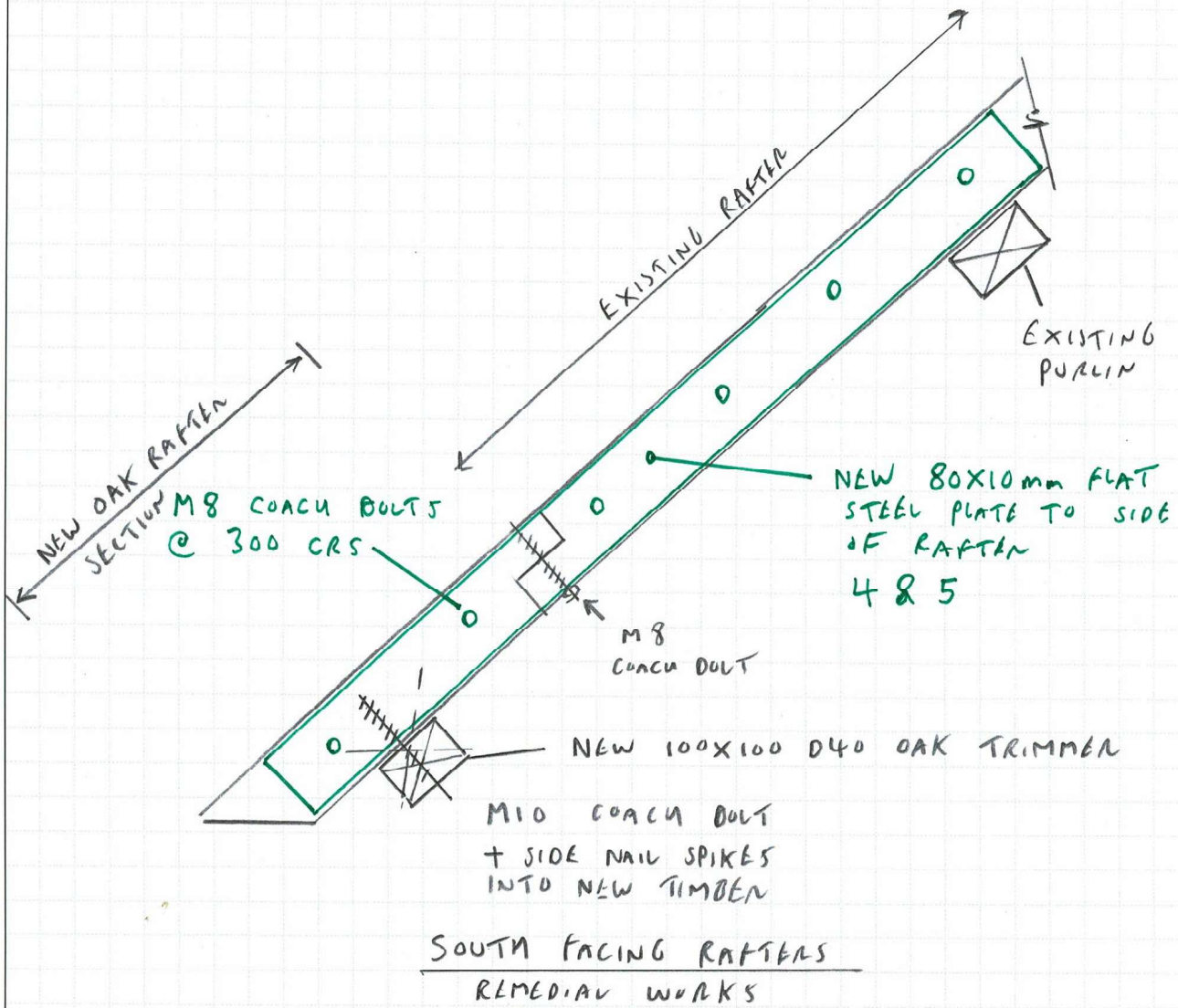
Henfield

West Sussex

Our Ref: MM/25511

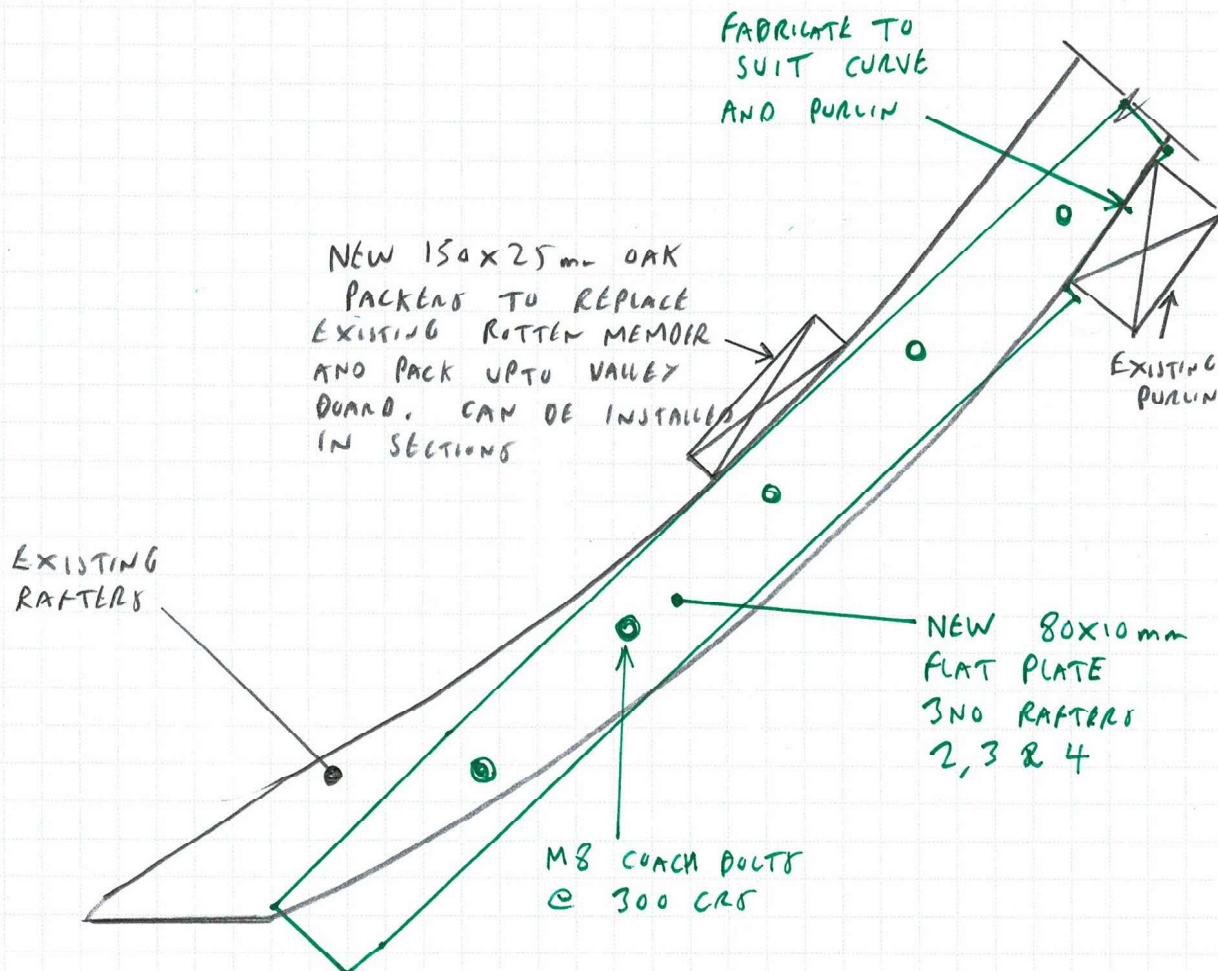
Feb 2026

JOB TITLE: South Down House – High St Henfield			ITEM: Calculations		
DESIGNED BY AJM	DATE Feb 2026	CHECKED BY	JOB NO. 25511	SHEET SK01	REV



- 2 NO 80X10 mm FLAT STEEL PLATES
- NEW 100X100 OAK TRIMMER 1200 mm LONG
- NEW OAK SPLICE SECTION 80X150 D40

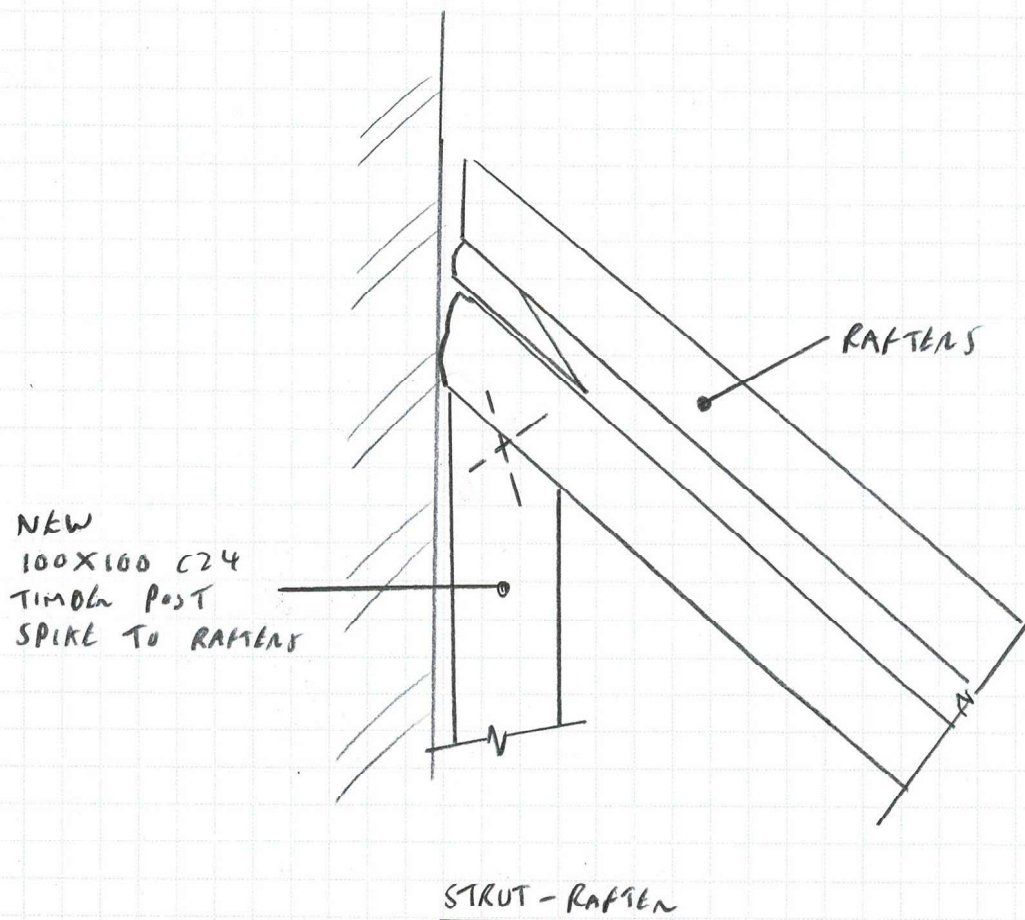
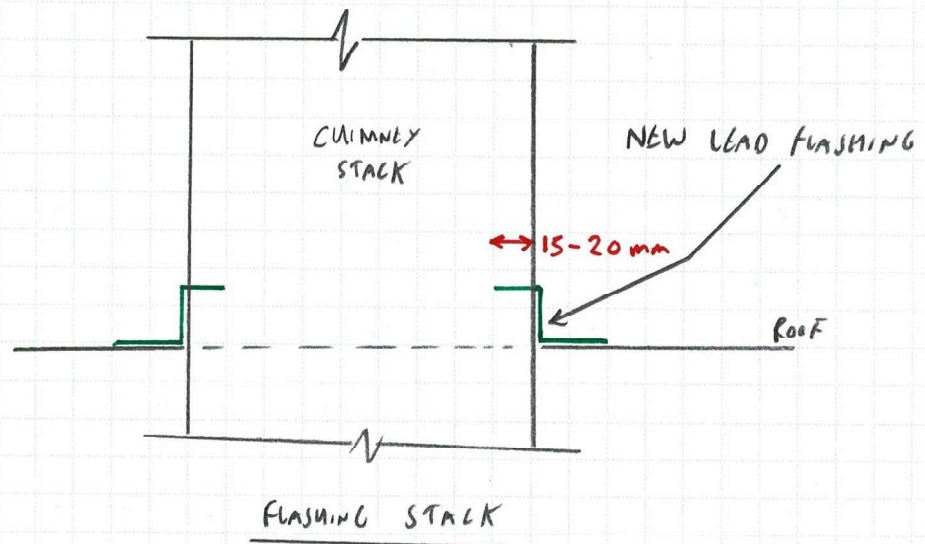
JOB TITLE South Down House – High St Henfield			ITEM Calculations		
DESIGNED BY AJM	DATE Feb 2026	CHECKED BY	JOB NO. 25511	SHEET SK02	REV



NORTH FACING RAFTER 5

- 3 NO 80x10mm FLAT STEEL PLATES
- 150x25 OAK PACKER BOARD

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NEW RAFTER SUPPORT PLATE

SOUTH FACING ROOF

SPAN ON SLOPE = 2300 mm

LOADING

$$0.4 \text{ m} \times 0.5 \text{ kN/m}^2 = 0.2 \text{ kN/m}$$

ROOF TIMBERS

$$0.4 \text{ m} \times 4.0 \text{ kN/m}^2 = 1.6 \text{ kN/m}$$

STONE

$$\Sigma = 1.8 \text{ kN/m}$$

$$\Sigma_{\text{RF}} = 2.7 \text{ kN/m}$$

$$BM = 2.7 \times 2.3^2 / 8 = 1.8 \text{ kNm}$$

$$R = 2.7 \times 2.3 / 2 = 3.1 \text{ kN}$$

80X150 FLAT OAK RATTING

TRY 80X10 mm FLAT PLATE

$$f = \frac{M}{Z} = \frac{1.8 \times 10^6 \times 6}{80^2 \times 10} = 168.8 \text{ N/mm}^2$$

80X10 mm FLAT PLATE OK ✓

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NORTH FACING VALLEY

SPAN = 2600 mm

140x70 FLAT OAK

LOADING SAME (01) = 2.7 kN/m FACTORED

$$DM = 2.7 \times 2.6^2 / 8 = 2.3 \text{ kNm}$$

$$R = 2.7 \times 2.6 / 2 = 3.5 \text{ kN}$$

$$f = \frac{M}{Z} = \frac{2.3 \times 10^6 \times 6}{80^2 \times 10} = 215 \text{ N/mm}^2 \quad \checkmark$$

80x10 mm FLAT PLATE

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RAFTER FLEET TRIMMER

$$R = 3.1 \text{ kN t/c} = 2.0 \text{ kN}$$

$$2.0 \text{ kN} \times 2.5 = 5.0 \text{ kN/m}$$

$$E = 7200 \quad \Delta_{\text{all}} = 1200 \times 0.003 = 3.6 \text{ mm}$$

$$I_{\text{req}} = \frac{5 \times 1200^4 \times 5.0}{384 \times 7200 \times 3.6} = 5.2 \times 10^6 \text{ mm}^4$$

EXISTING TIMBER OK ✓

$$\underline{100 \times 100 \text{ C24} = 8.7 \times 10^6 \text{ mm}^4}$$

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NEW VALLEY BEAM SECTIONS

SPAN = 700 mm 2.1m - 2.1m

6" x 1" = 150 x 25 mm TIMBERS

3.5 kN PAUL ② / 2 = 1.75 kN

BM = $0.35 \times 1.75 / 1.581 \times 0.75 / 0.7$

= 0.2 kN/m

W = 3.2 kN/m

$$I_M = \frac{5 \times 700^4 \times 3.2}{384 \times 10400 \times 2.1} = 0.18 \times 10^6 \text{ mm}^4$$

150 x 25 OAK = 0.195 x 10⁶ mm⁴ ✓



SOUTH FACING RAFTERS AND TRIMMER



ROTTEN ENDS TO 4 & 5 – ADD STEEL PLATES



ADD NEW STRUT TO RAFTERS



REPLACE EXISTING ROTTEN STRUT



REPLACE EXISITNG VALLY BOARD/PACK TO UNDERSIDE OF NEW VALLEY BOARD



REATTACH ELBOW TIMBER



ADD STEEL PLATE TO 2,3 & 4 "BANANA" RAFTERS