

PROPOSED STRUCTURAL ALTERATIONS FOR MR + MRS ROSS

SHT 1 OF 4.

11. WOODEND HAVELWOOD L26.6BS

BEAM 'A'

EXISTING MAIN REAR SUPPORT BEAM 'A' SPAN. 5.7m.

	LOADING	START	L.	R1.	R2
U.L. MAIN IMPOSED ROOF	8.4	0.	L	23.94	23.94
U.L. REAR WALL	10.0	0.	L	28.50	28.50
U.D. SECONDARY ROOF	2.2	0.	L	6.27	6.27
TOTAL				58.71	58.71

MAX BM = 83.7 kNm @ 2.85m FROM R1.

MAX SF = 58.7 kN @ 0.0m FROM R1.

LIVE LOAD DEFLECTION = $253 \times 10^8 / EI$ @ 2.85m FROM R1.

TOTAL $\delta = 283 \times 10^8 / EI$ @ 2.85m FROM R1.

1. MAIN IMPOSED LOADING 2.0 kN/m^2 ROOF SPAN 4.25m
2. REAR WALL IMPOSED LOAD 4.0 kN/m HEIGHT 2.5m (11")
3. SECONDARY LOW ROOF 2.0 kN/m^2 SPAN 1.1m

USE 2x 305 x 165 x 40 UB. S355.

THESE CALCULATION DONE TO DETERMINE THE
IMPOSED LOADING ON BEAM 'C'

STEELWORK CALCULATIONS AND DETAILS
TO BE AGREED WITH BUILDING CONTROL
PRIOR TO PURCHASE AND INSTALLATION.
ALL WORKS TO COMPLY WITH CURRENT
BUILDING REGULATIONS AND CODES OF PRACTICE.

REAR SUPPORT BEAM LOADING. 'B' SPAN. 3.3m (L)

	LOAD.	START	LENGTH	R1.	R2
U.D. MAIN ROOF LOAD.	8.4	0	L.	13.86	13.86
U.D. REAR WALL	10.0	0	L.	16.50	16.50
U.D. SECONDARY ROOF	2.2	0	L.	3.63	3.63
TOTAL LOAD				67.98	33.99
				KN.	33.99.

MAX. BM = 28.04 KNm @ 1.65m FROM R1

MAX SF = 33.99 KN @ 0. FROM R1.

LIVE LOAD DEFLECTION. = $28.4 \times 10^8 / EI$ @ 1.65m FROM R1.

PTIAL DEFLECTION. = $31.8 \times 10^8 / EI$ @ 1.65m FROM R1.

1. MAIN IMPOSED LOAD 2.0 KN/m^2 ROOF SPAN 4.25m
2. REAR WALL IMPOSED LOAD 4.0 KN/m^2 HEIGHT 2.5m (11" WALL)
3. SECONDARY LOW ROOF LOADING 2.0 KN/m^2 SPAN 1.1m.

USE 2N^o 254 x 102 x 22 UB S355.

BENDING: $P_R = 84. \text{ N/m}^2$ $f_x = 62.6 \text{ N/mm}^2$ OK.

SHEAR: $f_s = 11.7 \text{ N/mm}^2$ ($\leq 140 \text{ N/mm}^2$) OK.

LIVE LOAD $\delta = 2.4 \text{ mm}$ ($L/1353$) OK.

TOTAL DEFLECTION. = 2.7mm ($L/1208$)

BEARINGS.

R1 500x150mm PADSTONE.

FACTORED REACTION = $3.63 \times 1.4 + 30.36 \times 1.6$

R2 AS R1

PROPOSED STRUCTURAL ALTERATIONS
FOR MR+MRS ROSS

SHT 3 OF 4

11. WOODEND HAVELWOOD L26.6BS

NEW REAR SUPPORT BEAM 'C'

SPAN. 4.5m

	UWD.			R1	R2
U.D. CABLE WALL LOADING	10.0	0.	L	23.5	23.5
P.D. BEAM 'A' LOADING	58.71	1.8	-	9.4	9.4
P.D. BEAM 'B' LOADING	33.90	1.8	-	36.23	22.48
U.D. FLOOR LOADING	4.0	0	0	20.92	12.98
	LOADING 158.41kN			90.04	68.37

MAX. BM = 139.4kNm @ 1.8m from R1.

MAX. SF = 30.0kN @ 0. FROM R1

UNE LOAD $\delta = 0.00 \times 10^8 / EI$ @ R2

TOTAL $\delta = 275 \times 10^8 / EI$ @ 2.23 FROM R1

USE 2 N² 305 x 165 x 54 UB S355.

BENDING $p_{br} = 130.7 \text{ N/mm}^2$ (TABLE 3b) $f_{tc} = 107.9 \text{ N/mm}^2$ OK

SHEAR $f_s = 21.9 \text{ N/mm}^2$ ($p_s 140 \text{ N/mm}^2$) OK

TOTAL $\delta = 6.8 \text{ mm}$ ($L/694$) OK

BEARINGS R1.

650 x 150.

Factored REACTION = $30.04 \times 1.4 + 0.0 \times 1.6 = 126.1 \text{ kN}$.

Factored STRESS UNDER PADSTONE 1.29 N/mm^2

R2 650 x 150

Factored REACTION = $68.37 \times 1.4 + 0.0 \times 1.6 = 95.7 \text{ kN}$.

Factored STRESS = 0.98 N/mm^2

FROM 'BLUEBOOK' MAX BM FOR BEAM

@ 5.0m SPAN IS. 136 kNm.

STRUCTURAL ALTERATIONS FOR
MR + MRS ROSS. 11. WOODEND.
HAREWOOD L26. 6BS

SHT. 4 OF 4

ALL CONSTRUCTION TO BE TO THE SATISFACTION OF THE B.C.O.

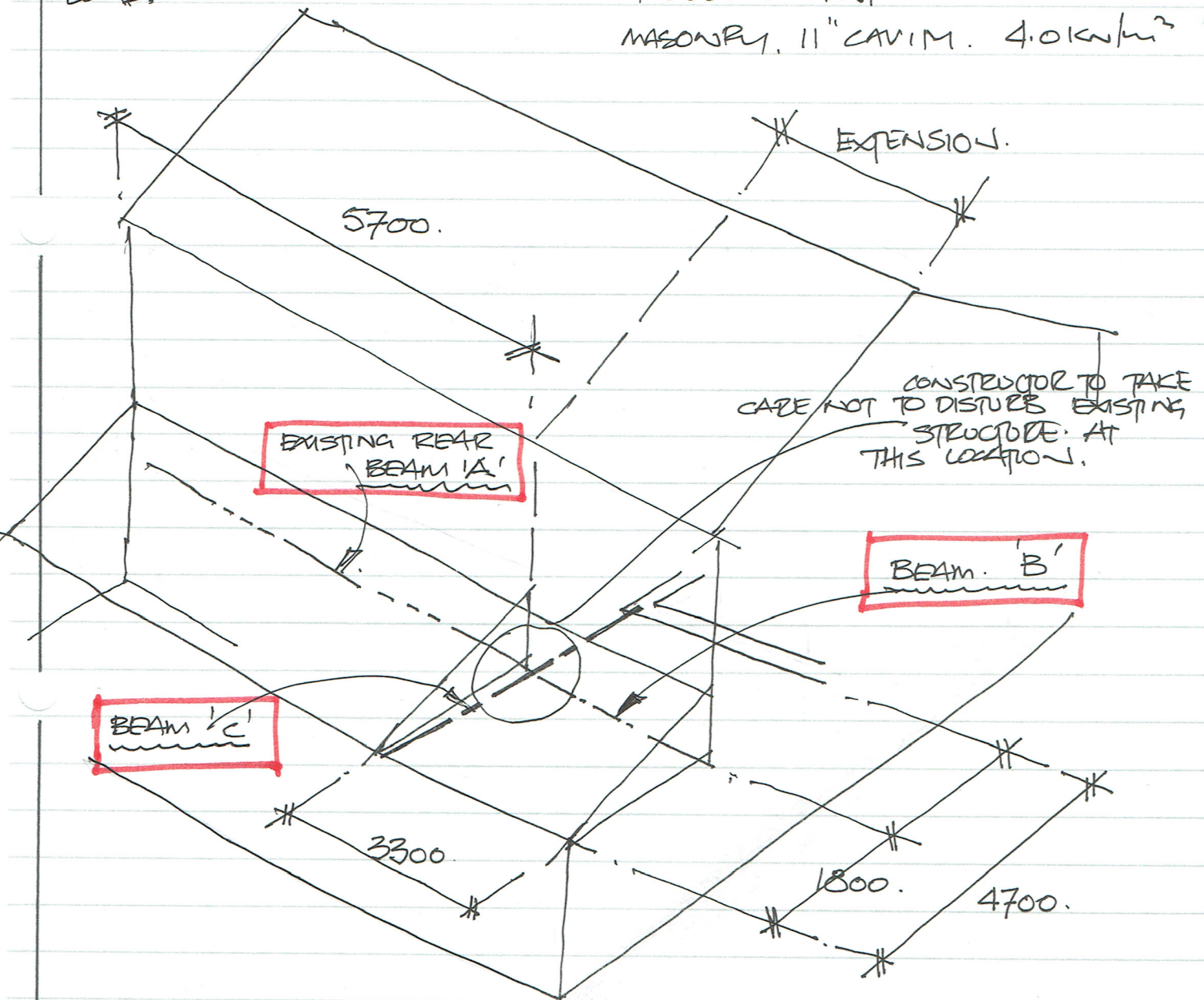
ALL PIERS TO BE OF GOOD SOUND
SUITABLE BRICKWORK FOR ITS
LOCATION. AND APPLICABLE
LOAD.

LOADING.

ROOF 2.0 kN/m^2 DEAD + SUPER.

FLOOR 2.0 kN/m^2 ———

MASONRY, 11" CAVIM. 4.0 kN/m^2



BEAM 'A' AS EXISTING. (UNCHANGED)

BEAM 'B' $2 \times 254 \times 102 \times 22 \text{ UB. S355}$.

BEAM 'C' $2 \times 305 \times 165 \times 22 \text{ UB. S355}$.

BEAMS BOLTED TOGETHER USING GAS FERRULE SPACERS AT MAX
0.75M CRS. ALL STEELWORK TO HAVE MIN 150 BEARING ON
PADSTONES.