REF: MH

MAIN LINTEL LOADING.

Dead Load Per Metre.

BRICKWORK (OUTER)	2.5MX 1M x 238 kg/m²	= 595 k
BRICKWORK (INNER)	2.5M x 1M x 238 kg/m²	= 595 k
2 COAT PLASTERWORK	2.5M x 1M x 22 kg/m²	= 55 kg
FLOOR JOISTS + BOARDS	4M x 1M x 42 kg/m²	= 171 kg
CEILING JOISTS / PLASTER ETC	4M x 1M x 19.87 kg/m²	= 79.48
RAFTERS/BATTENS/FELT	4.7M x 1M x 12.10 kg/m²	= 56.87
SINGLE LAP TILING	4.7M x 1M x 49 kg/m²	= 230.36
		1782.35 KG.

KG x 9.81 = NEWTONS

∴ 1782.35KG x 9.81 = 17485 N or 17.5 KN

Imposed Load per Metre

FLOOR	4M x 1m x 1.5 kg/m²	= 6 KN
ROOF	4.7M x 1m x 1.5 kg/m² (SNOW)	= 7.05 KN
		13.05 KN

DEAD + IMPOSED LOAD IS 17.5 KN + 13.05 KN = 30.55 KN

PLANNING
ACK'D
REPLIED
RECD 29 MAY 2008
	INIT.	DATE

REF: MH

MAIN LINTEL REQUIREMENTS

6.5M SPAN INCLUDING SEATING
WITH 30.55 KN LOADING PER METER.
PREFABLE 280mm WIDTH FOR MATERIAL FOOTING.

Span L (between supports) = 5480MM

DESIGN LOADING = 30.55 KN +5% (ASSUMED LINTEL)
∴ 32.08 KN PER METER

DESIGN MOMENT = CONSTAINT LOAD = $\frac{32.08\ KN \times 5.5\ M}{8} = 22.05\ KN$
(MAX BENDING MOMENT)

MAX SHEARING FORCE = $\frac{32.08\ KN \times 5.5\ M}{2} = 88.22\ KN$ = TOTAL WEIGHT

STEEL SECTION REQUIREMENTS

$M_c = 4000 \times 88.22 = 352880$

MAIN LINTEL REQUIREMENTS 2

REF: (1.A1)

SPAN 5.48M

LOAD NAME	LOADING w1	START x1	END x2	R1 COMP	R2 COMP
UD TOTAL	17.5	0	L	47.95	47.95
UL TOTAL	13.05	0	L	35.76	35.76
		TOTAL LOAD 167.41 KN		83.71	83.71
			DEAD	47.95	47.95
			LIVE	35.76	35.76

MAX BM = 114.7 KNM @ 2.74m from R1

MAX SF = 83.7 KN @ R1

LIVE LOAD DEFLECTION = 153.2 x 1e8/EI @ 2.74m from R1

(E = N/mm², I in cm⁴)

TOTAL DEFLECTION = 358.7 x 1e8/EI @ 2.74m from R1

∴ USE 457 x 191 x 67 UB GRADE 43

P_{bc} = 91.8 N/mm² (TABLE 3a) f_{bc} = 88.2 N/mm² OK

f_s = 21.7 N/mm² (P_s 110 N/mm²) OK

LIVE LOAD DEFLECTION = 2.5mm (L/2156) OK

TOTAL DEFLECTION = 6.0mm (L/921)

∴ **457 x 191 x 67 UB GRADE 43 REQUIRED.**

REF (MH)

FOUNDATION LOADING

Dead Load Per Metre²

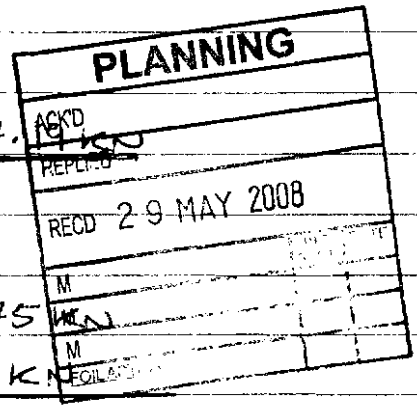
BRICKWORK (OUTER)	2·5M × 1M × 238 kg/m²	= 595 kg
BRICK WORK (INNER)	2·5M × 1M × 238 kg/m²	= 595 kg
2 COAT PLASTERWORK	2·5M × 1M × 22 kg/m²	= 55 kg
FLOOR JOIST + BOARDS	4 M × 1m × 42 kg/m²	= 171 kg
CEILING JOIST + PLASTER	4M × 1M × 19·87 kg/m²	= 79·48 kg
RAFTERS/BATTENS/FELT	4M × 1M × 12·10 kg/m²	= 56·87 kg
SINGLE LAP TILING	4M × 1M × 49 kg/m²	= 230·3 kg
BLOCKWORK (OUTER)	2·5M × 1M × 238 kg/m²	= 595 kg
BRICKWORK (INNER)	2·5M × 1M × 238 kg/m²	= 595 kg
2 COAT PLASTERWORK	2·5m × 1m × 22 kg/m²	= 55 kg
SUBSTRUCTURE BRICKWORK	1m × 1m × 1½ + 76 kg/m²	= 476 kg
CAVITY CONCRETE	50mm × 1m × 2300 kg/m³	= 115 kg
FOUNDATION CONCRETE	0·15m × 1m × 1m × 2300 kg/m³	= 173 kg

FUTU DEVEL -ME

3792 kg

Note: kg × 9·81 = Newtons

∴ 3792 × 9·81 = 37192 N or 37.19 KN



Imposed load per metre run

Floor: 2·5m × 1m × 1·5 KN/m² = 3·75 KN

ROOF: 4·0m × 1m × 1·5 KN/m² (SNOW) = 6 KN

9·75 KN

Given that the subsoil has a safe bearing of 75 KN/m²

w = load ÷ bearing Capacity = (37·19 + 9·75 KN) ÷ 75

= 625 mm

∴ A Foundation Width of 650mm is adequate.

Foundation width 650mm
minus width of supporting brickwork - 300mm
= 350mm

350 ÷ 2 = 175mm

∴ FOUNDATION = 650mm x 175mm C35 CONCRETE