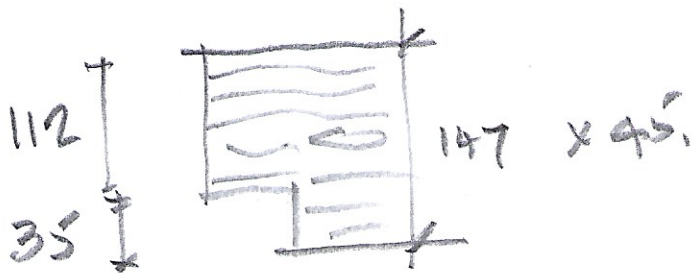Spacing 0.45m, span 3.0m

Area of roof on 1 joist = 3×0.45

$$= 1.35 m^2$$

live load 0.75 kN/m²
dead "   0.8 "
$$\overline{1.55 \text{ kN/m}^2}$$

load on 1 joist = 1.55×1.35

$$= 2.09 \text{ kN}$$

∴ reaction each end = 1.045 kN.

112

35

147 × 45.

Normal allowable shear stress for C24 = 0.71 N/mm^2

reduction factor for notch = $\dfrac{112}{147} = 0.76$

∴ allowable shear stress = 0.71×0.76

$$= 0.53 \text{ N/mm}^2$$

Actual shear stress = $\dfrac{3}{2} \times \dfrac{\text{reaction}}{\text{area}}$

$$= \dfrac{3}{2} \times \dfrac{1.045 \times 10^3}{112 \times 45}$$

$$= 0.31 \text{ N/mm}^2 \quad \therefore \text{ OK}$$