

2/12/20
McCrack Deck
7

1/2

McCrack deck - 10 View Point Rd McCrack

Loading (plan)

working stress design
(deck loads)

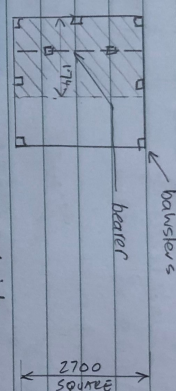
LL:

4 kPa or 1.8 kN point (C)

handrail loads:

(A) 0.9 kN point

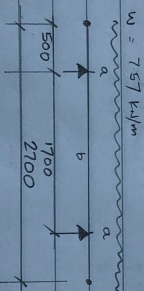
(B) 0.6 kN point
or 0.35 kN/m live load



DL: Negligible

DL: Use timber density @ 800 kg/m³

beaker



w = 7.57 kN/m

$$M_a^- = (7.57 \times 0.5) \times 0.25 = 0.95 \text{ kNm}$$

$$M_b^+ = \frac{7.57 \times 1.7^2}{8} = 2.74 \text{ kNm}$$

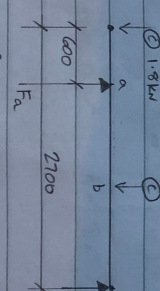
$$w_{DL} = 4.0 \text{ kPa} \times 1.75 \text{ m} = 7.0 \text{ kN/m}$$

$$w_{LL} = 0.35 \text{ kPa} \text{ (joists + decking)} \Rightarrow 4.35 \text{ kPa} \times 1.74 \text{ m} = 7.57 \text{ kN/m}$$

$$Z = \frac{0.045 \times 0.19^2}{6} = 2.71 \times 10^{-4} \text{ m}^3$$

$$S = \frac{M}{Z} = \frac{2.74 \times 10^3}{2.71 \times 10^{-4}} = 10.1 \text{ MPa}$$

joists
@ 850 cts max



$$M_a^- = 1.8 \times 0.6 = 1.08 \text{ kNm}$$

$$M_b^+ = 0.9 \times 1.05 = 0.95 \text{ kNm}$$

$$(4 \times 0.8) \times 1.4 \times 2.7^2 / 8 = 0.85 \text{ kNm}$$

$$Z = \frac{0.038 \times 0.165^2}{6} = 1.72 \times 10^{-4} \text{ m}^3$$

$$S_a = \frac{M}{Z} = \frac{1.08 \times 10^3}{1.72 \times 10^{-4}} = 6.28 \text{ MPa}$$

$$F_a (4 \times 0.8) = \frac{(1.4 \text{ kN/m} \times 2.7)^{1.35}}{2.10} = 2.43 \text{ kN}$$

(moment shear = 1.74 m)