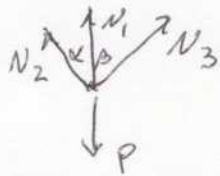


Possible collapse mechanisms:

- | | | | |
|-----|-------|-------------------|---------|
| (a) | 1 & 2 | Yield in tension, | 3 rigid |
| (b) | 1 & 3 | " " | 2 " |

Equil



$$N_2 \sin \alpha = N_3 \sin \beta$$

$$\text{if } \beta > \alpha \quad N_2 > N_3$$

\therefore (a) will occur if $\beta > \alpha$

$$\alpha = 30^\circ, \beta = 45^\circ \text{ at yield: } N_1 = N_2 = N_0$$

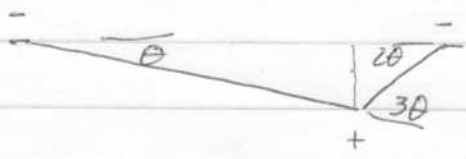
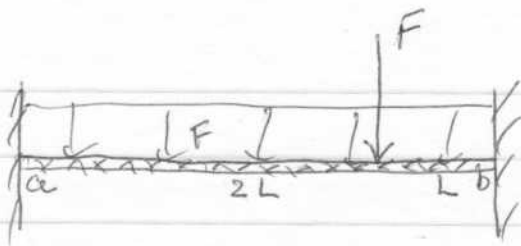
$$N_3 = \frac{\sin \alpha}{\sin \beta} N_0 = \frac{1/2}{\sqrt{2}/2} N_0 = \frac{\sqrt{2}}{2} N_0$$

$$P_0 = N_1 + N_2 \cos \alpha + N_3 \cos \beta$$

$$= N_0 + N_0 \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} N_0 \frac{\sqrt{2}}{2}$$

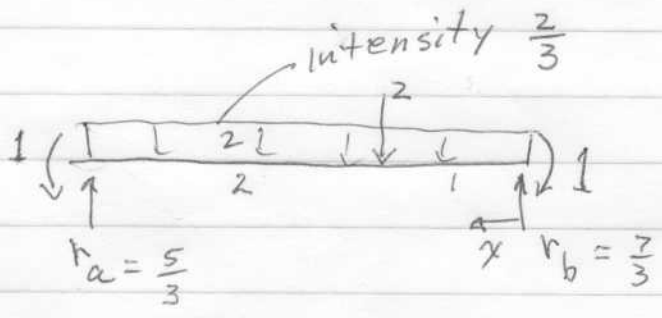
$$= N_0 (1 + 0.866 + 0.5) = \underline{2.366 N_0}$$

$$\text{or } \boxed{P_0 = 2.366 \sigma_0 A}$$



$$\frac{F(2L\theta)}{2} + F(2L\theta) = M_0\theta(1+3+2)$$

$$f^+ = 2$$



$$\sum \text{moments at } a = -1 + 1 + 3r_b - 2\left(\frac{3}{2}\right) - 2(2) = 0$$

$$r_b = \frac{7}{3}$$

$$0 \leq x \leq 1; \quad m(x) = -1 + \frac{2}{3}x - \frac{2}{3} \frac{x^2}{2}$$

$$m'(x) = \frac{2}{3} - \frac{2}{3}x = 0 \text{ @ } x = \frac{2}{2} \text{ (outside of range)}$$

no max/min in $0 < x < 1$

$$1 \leq x \leq 3 \quad m(x) = -1 + \frac{2}{3}x - \frac{2}{3} \frac{x^2}{2} - 2(x-1)$$

$$= 1 + \frac{1}{3}x - \frac{2}{3} \frac{x^2}{2}$$

$$m'(x) = \frac{1}{3} - \frac{2}{3}x = 0 \text{ @ } x = \frac{1}{2} \quad "$$

ie no max/min in $1 < x < 3$

$$\therefore f^0 = 2$$

