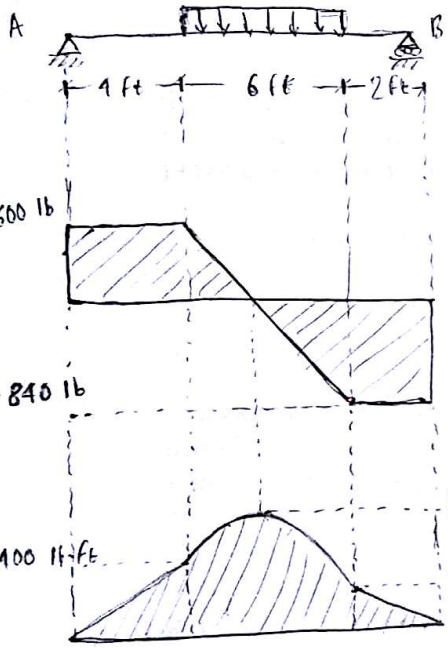
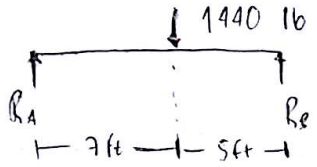
(2)



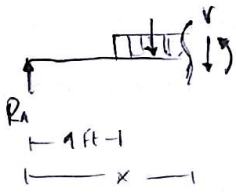




$+\circlearrowleft \Sigma M_A = 0 \quad -1440(7) + R_B(12) = 0$

$\rightarrow R_B = 840 \text{ lb}$

$R_A = 600 \text{ lb}$

a) Seccionando el tramo en que se ubica la carga




$+\uparrow \Sigma F_y = 0 \quad 600 - 240(x-4) - V = 0$

$\rightarrow V = -240x + 1560$

$+\circlearrowleft \Sigma M = 0 \quad -600x + 120(x-4)^2 + M = 0$

$\rightarrow M = -120(x-4)^2 + 600x$

$\rightarrow M = -120x^2 + 1560x - 1920$

$M_{max}$ cuando $V = 0$, entonces

$0 = -240x + 1560 \rightarrow x = 6.5$

$M_{max} = M(6.5) = 3150 \text{ lb·ft}$

b) $\begin{cases} V_{max} = 840 \text{ lb·ft} \\ M_{max} = 3150 \text{ lb·ft} \end{cases}$

$\rightarrow M_{max} = 3150 \text{ lb·ft} \left(\frac{12 \text{ in}}{1 \text{ ft}}\right) = 37\,800 \text{ lb·in}$

c) $\sigma_{max} = \frac{M_{max}\, c}{I} = \frac{(37\,800)(6.35)}{833} = 288 \text{ lb/in}^2$

d) $F.S. = \frac{\sigma_u}{\sigma_{max}} = \frac{56 \times 10^3}{288} = 191$

$F.S. \gg 1$

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