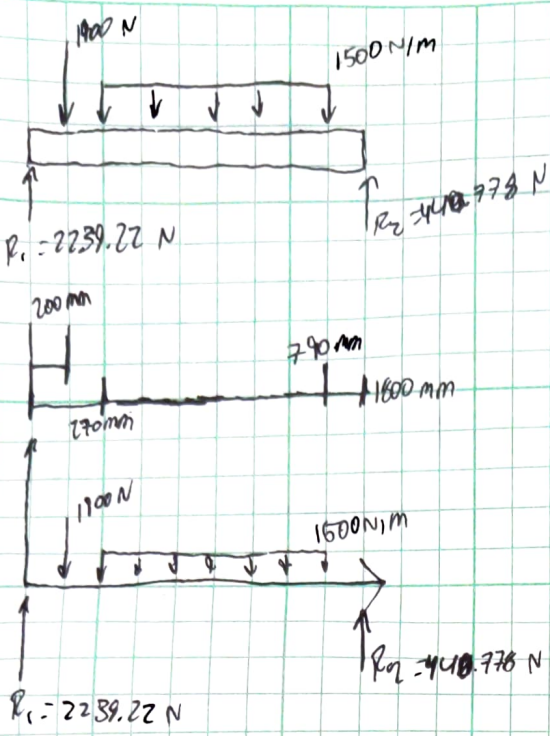


$E = 206.8$ GPa

$I = \frac{1}{12}(10)(30^3) = .002025\ m^4$

$\sum M_0 = 0 = -1900(.2) - 1500(.52)(.53) + R_2(1.8)$

$R_2 = 440.778$

$\sum F_y = 0 = -1900 - 1500(.52) + 440.778 + R_1 = 0$

$R_1 = 2239.22$

$$q(x) = R_1\langle x\rangle^{-1} - F_1\langle x-.2\rangle^{-1} - w\langle x-.27\rangle^{0} + w\langle x-.79\rangle^{0} + R_2\langle x-1.8\rangle^{-1}$$

$$V(x) = R_1\langle x\rangle^{0} - F_1\langle x-.2\rangle^{0} - w\langle x-.27\rangle^{1} + w\langle x-.79\rangle^{1} + R_2\langle x-1.8\rangle^{0}$$

$$M(x) = R_1\langle x\rangle^{1} - F_1\langle x-.2\rangle^{1} - \frac{w}{2}\langle x-.27\rangle^{2} + \frac{w}{2}\langle x-.79\rangle^{2} + R_2\langle x-1.8\rangle^{1}$$

$$\theta(x) = \frac{1}{EI}\left[\frac{R_1}{2}\langle x\rangle^{2} - \frac{F_1}{2}\langle x-.2\rangle^{2} - \frac{w}{6}\langle x-.27\rangle^{3} + \frac{w}{6}\langle x-.79\rangle^{3} + \frac{R_2}{2}\langle x-1.8\rangle^{2} + C_3\right]$$

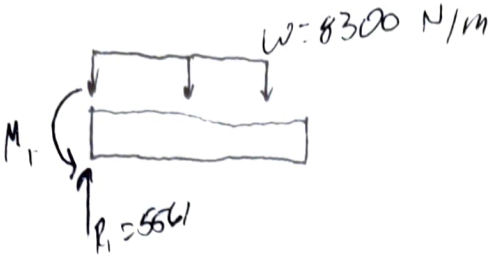
$$y(x) = \frac{1}{EI}\left[\frac{R_1}{6}\langle x\rangle^{3} - \frac{F_1}{6}\langle x-.2\rangle^{3} - \frac{w}{24}\langle x-.27\rangle^{4} + \frac{w}{24}\langle x-.79\rangle^{4} + \frac{R_2}{6}\langle x-1.8\rangle^{3} + C_3x + C_4\right]$$

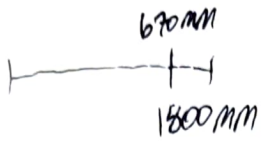
$y(0) = 0 \Rightarrow C_4 = 0$

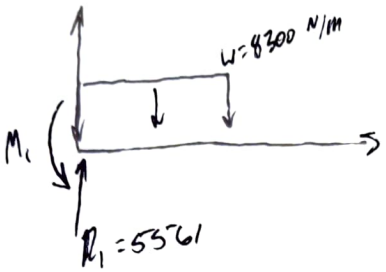
$$y(1.8) = 0 = \frac{1}{206.8(.002025)}\left[\frac{2239.22}{6}(1.8)^3 - \frac{1900}{6}(1.8-.2)^3 - \frac{1500}{24}(1.8-.27)^4 + \frac{1500}{24}(1.8-.79)^4 + \frac{440.778}{6}(1.8-1.8)^3 + C_3(1.8)\right]$$

$\Rightarrow C_3 = -334.448 = -334$

$$C_3x = \frac{1900}{6}(x-.2)^3 + \frac{1500}{24}(x-.27)^4 - \frac{2239.22}{6}(x)^3 - \frac{1500}{24}(x-.79)^4 - \frac{440.778}{6}(x-1.8)^3$$







$E = 206.8$ GPa

$I = \frac{1}{4}\pi(.1^4) = 7.8539 E-5$

$\sum F_y = 0 \; -8300(.67) + R_1 = 0$

$\Rightarrow R_1 = 5561$ N

$\sum M_0 = 0 = M_1 - 8300(.67)(\frac{.67}{2})$

$\Rightarrow M_1 = 1862.935$ Nm

$$q(x) = M_1\langle x\rangle^{-2} + R_1\langle x\rangle^{-1} + w\langle x\rangle^{0} + w\langle x-.67\rangle^{0}$$

$$q'(x) = M_1\langle x\rangle^{-1} + R_1\langle x\rangle^{0} - w\langle x\rangle^{1} + w\langle x-.67\rangle^{1}$$

$$M(x) = M_1\langle x\rangle^{0} + R_1\langle x\rangle^{1} - \frac{w}{2}\langle x\rangle^{2} + \frac{w}{2}\langle x-.67\rangle^{2}$$

$$\theta(x) = \frac{1}{EI}\left[M_1\langle x\rangle^{1} + \frac{R_1}{2}\langle x\rangle^{2} - \frac{w}{6}\langle x\rangle^{3} + \frac{w}{6}\langle x-.67\rangle^{3} + C_3\right]$$

$$y(x) = \frac{1}{EI}\left[\frac{M_1}{2}\langle x\rangle^{2} + \frac{R_1}{6}\langle x\rangle^{3} - \frac{w}{24}\langle x\rangle^{4} + \frac{w}{24}\langle x-.67\rangle^{4} + C_3x + C_4\right]$$

$\theta(0) = 0 \Rightarrow C_3 = 0$

$y(0) = 0 \Rightarrow C_4 = 0$