ARQ. JOSE LISANDRO LOPEZ ALFARO

NOMBRE DEL TEMA: APUNTES CLASES

PARCIAL: 2

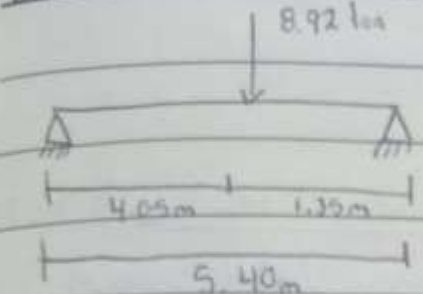
NOMBRE DE LA MATERIA: RESISTENCIAS DE MATERIALES DE CONSTRUCCION

ARQ. PEDRO ALBERTO GARCIA LOPEZ

NOMBRE DE LA LICENCIATURA: ARQUITECTURA

CUATRIMESTRE: IIII

Resistencias de Materiales 09/08/23



$M = \frac{F \cdot 2 \cdot b}{L}$

$M = 9.031 \text{ ton} \cdot m$

$R_A = 2.23 \text{ ton}$

$R_B = 6.69 \text{ ton}$

$h = 0.45 m$

$\bar{I}_x = 0.001898 m^4$

$\emptyset_A = 0.01726$

$\emptyset_B = 0.02417$

$E = 310.000 \text{ ton}/m^2$

$M = \frac{8.92 \text{ ton} \cdot 4.05 m \cdot 1.35 m}{5.40 m} = 2.23 \text{ ton}$

$R_A = \frac{F \cdot b}{L}$ $R_A = \frac{8.92 \text{ ton} \cdot 1.35 m}{5.40 m} = 2.23 \text{ ton}$

$R_B = \frac{F \cdot A}{L}$ $R_B = \frac{8.92 \text{ ton} \cdot 4.05 m}{5.40 m} = 6.69 \text{ ton}$

$h = L/12$ $h = \frac{5.40}{12}$ $h = 0.45$ $b = h/2 = 0.45/2 = 0.25$

$\bar{I}_x = \frac{b \cdot h^3}{12}$ $\frac{0.25 m \cdot (0.45)^3 m}{12} = 0.001898 m^4$

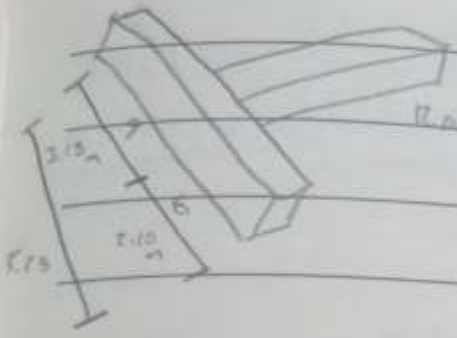
$$\theta_A = \frac{F \cdot z \cdot h^3}{6L \cdot E \cdot I}$$

$$\theta_A = \frac{8.92\,ton \cdot 0.45m \cdot 1.35m\,(5.40m + 1.35m)}{6\,(5.40m) \cdot (310.000\,ton/m^2) \cdot (0.001898m^4)} = 0.01726$$

$$\theta_B = \frac{F \cdot z \cdot b\,(L+a)}{6L \cdot E \cdot I}$$

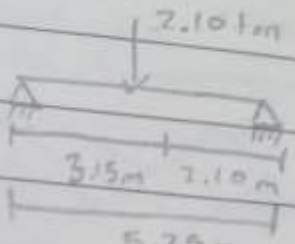
$$\theta_B = \frac{8.92ton \cdot 4.05m \cdot 1.35m\,(5.40m + 4.05m)}{6\,(5.40) \cdot 310.000\,ton/m^2 \cdot 0.001898m^4} = 0.02417$$

310,000 ton/m²



concreto reforzado

$R_A = R_B = 2.10$ ton



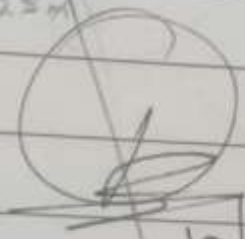
$M = \frac{F \cdot a \cdot b}{L}$

$h = L/12$

$b = h(0.5)$

$M = \frac{2.10 \text{ ton} \cdot 3.15\text{m} \cdot 2.10\text{m}}{5.25\text{m}}$

$M = 2.646$ m



$R_A = \frac{F \cdot b}{L} \rightarrow R_A = \frac{2.10 \cdot 2.10}{5.25} = 0.84$ ton

$R_B = \frac{F \cdot a}{L} \rightarrow R_B = \frac{2.10 \text{ ton} \cdot 3.15}{5.25} = 1.26$ ton

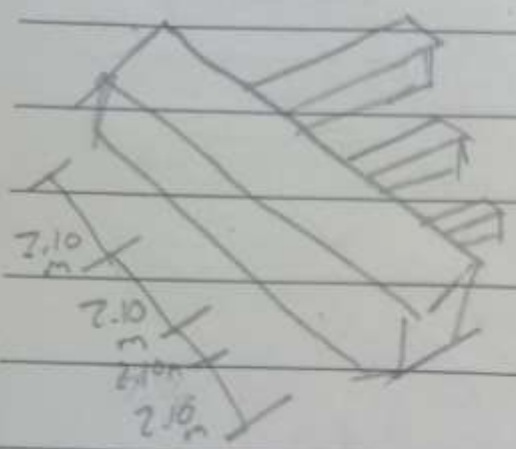
$h = L/12 \quad 5.25/12 = 0.45 \quad b = h/2 \quad 0.43/2 = 0.20$

$\bar{I}_x \frac{b \cdot h^3}{12} \quad \frac{0.20 \cdot (0.43)^3}{12} = 0.001518875\ m^4$

$O_A = \frac{F \cdot a \cdot b^3}{6L \cdot E \cdot I}$

$O_A = \frac{2.10 \text{ ton} \cdot 3.15 \cdot 2.10 (5.25 + 2.10)}{6(5.25) \cdot (310{,}000\ \text{ton/m}^2) \cdot (0.001518\ m^4)} = 0.01035$

$$\delta_B = \frac{2.10 \cdot 3.15 \cdot 2.10 \quad (5.25 + 3.15)}{6\,(5.25) \cdot (310000) \cdot (0.001518)} = 0.01549$$



$R_A = R_B$

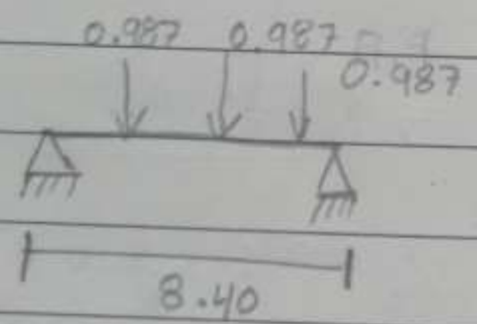
$= 0.987$ ton

$E = 200\,000$

Madera de pino

4" x 8"

$M = \frac{FL}{2}$ $R_A = R_B = 3F/2$ $\delta_A = \delta_B = \frac{5FL^3}{32 \cdot E \cdot I}$



$$M = \frac{(0.987)(8.40)}{2} = 4.1454 \text{ ton·m}$$

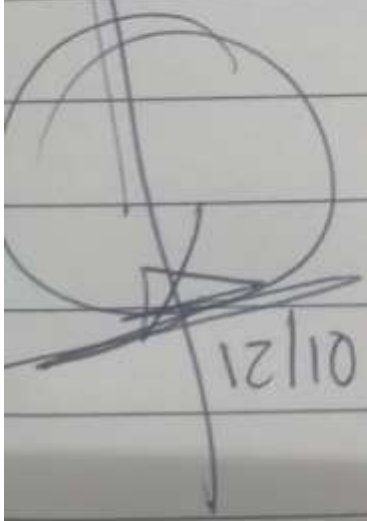
$$R_A = R_B \quad \frac{3\,(0.987) \cdot (840)^2}{2} = 0.6568 \text{ ton}$$

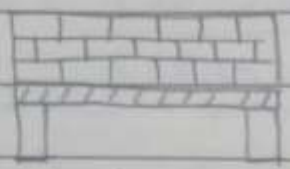
$$R_A = R_B = \frac{3\,(0.987)}{2} = 1.480$$

SAIF

$$\theta_A = \frac{2(0.987)}{32(700000)(0.0000710)} = 0.6568$$

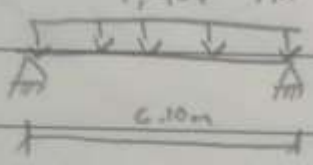
$$I_x = \frac{b \cdot h^3}{12} = \frac{(0.1016)(0.7032)^3}{12} = 0.218947$$





Concreto reforzado

Muro de block = 270 kg/m



$h = L/12 \rightarrow \frac{6.10m}{12} = 0.5083\,m$

↳ 0.50m

$b = 0.5(h) \rightarrow 0.50_m (0.5) = 0.25m$

2400 kg/m³ (peso concreto armado)

P.P. Viga = 0.50m · 0.25 m · 2,400 kg/m³

→ 300 kg/m

P.P. Muro 4.10m (270 kg/m)

= 1,107 kg/m

1,107 kg/m

+ 300 kg/m

1,407 kg/m

$M = \frac{1}{8} q L^2 \rightarrow \frac{1}{8} \frac{1.9074\ t/m\ (6.10m)^2}{8}$

$M = 6.544\ t \cdot m$

$R_A = R_B = \frac{q \cdot L}{2} \rightarrow \frac{1.407\ t/m\ (6.10m)}{2}$

$R_A = R_B = 4.291\ ton$

$\theta_A = \theta_B \quad \frac{q L^3}{24 \cdot E \cdot I} = \frac{1.407\ t/m\ (6.10)^3}{24\ (3{,}000{,}000)(0.002604)}$

$\theta_A = \theta_B = 0.0001648$

$\bar{I}_x = \frac{0.25\ (.50)^3}{12} \rightarrow 0.0002604$

$F\ \frac{5}{384} \cdot \frac{1.407\ t/m\ (6.10m)^4}{3100000\ t/m^2 \cdot 0.0002604\ m^4} = 0.003142\ m$

$= 3.14\ mm$

$\frac{6.10m}{2.40} = 2.54m$

Area = 532.86

Perimetro. 100.61