Mi Universidad

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Nombre del tema: momentos

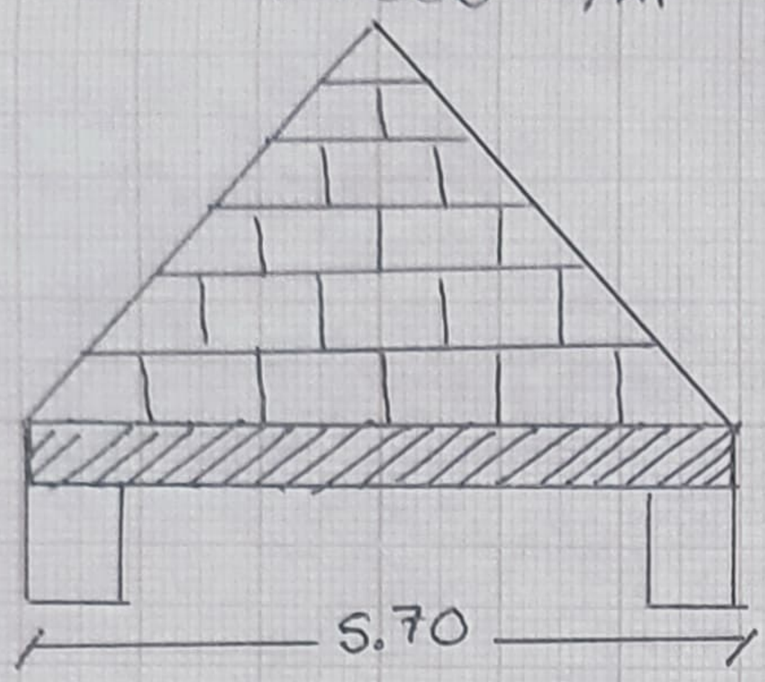
Parcial: 2

Nombre de la Materia: Resistencia de materiales de construcción

Nombre del profesor: Pedro Alberto García

Nombre de la Licenciatura: arquitectura

Cuatrimestre: 4



Concreto Reforzado

Muro de block = 270 kg/m

$h = L/12 = 5.70m/12 = 0.475m$

$b = 0.5(h) = 0.50(0.475) = 0.25m$

$P.P.t = 0.50m \cdot 0.25m \cdot 2400 kg/m^2 = 300 kg/m$

$P.P.M = 3.18m \cdot (2.70 kg/m) = 858.6 kg/m$

2 $858.6 kg/m + 300 kg/m = 1,158.6 kg/m$

$q = 1.1586 \ ton/m$

$I_x = b \cdot h^3/12 = [0.25m \cdot (0.50)^3]/12 = 0.002604 m^4$

$M = q \cdot L^2/12 = 1.1586 \ ton/m \cdot (5.70)^2 /12 = 3.136 \ ton \cdot m$

$R_A = R_B = q \cdot L/4 = 1.1586 \ ton/m \cdot (5.70)/4 = 1.651 \ ton$

$E = 3,100,000 \ ton/m^2$

$\theta_A = \theta_B = 5qL^3/196 \cdot E \cdot I$

$$\frac{5 \cdot (1.1586 \ ton/m) \cdot (5.70)^3}{196 \cdot (3,100,000 \ ton/m^2) \cdot (0.002604 m^4)} = 0.0006780$$

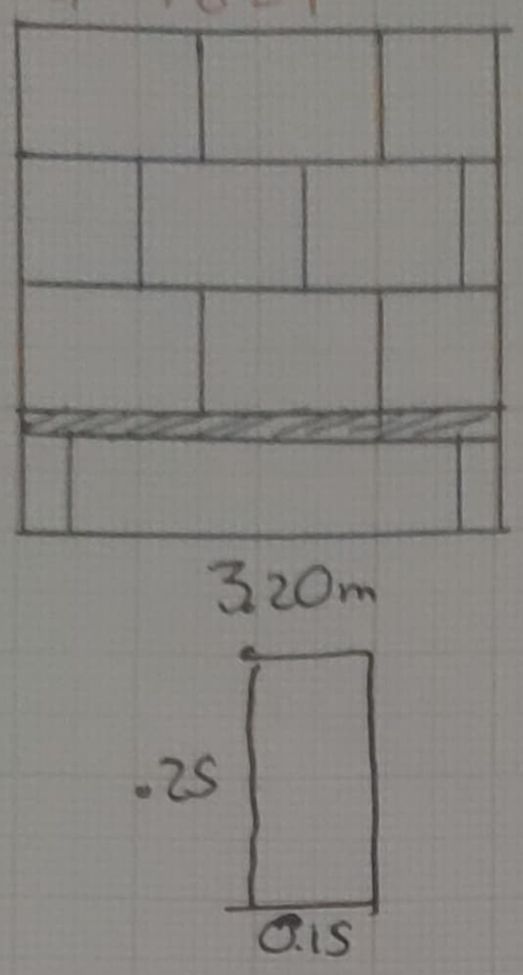
$F = 7 \cdot L^4/120 \cdot E \cdot I$

$$\frac{(1.1586 \ ton/m \cdot (5.70m)^4}{120 \cdot (3,100,000 ton/m^2) \cdot (0.002604 m^4)} = 0.001262 m = 12.62 cm$$

Δ permisible = $L/240 = 570m/240 = 2.375 cm$

Concreto Reforzado

Muro de block = 270 Kg/m



$h = L/12 = 3.20m/12 = 0.2666m$

$b = 0.5(h) = 0.5(0.25m) = 0.125m$

$P.P.T = 0.25 \times 0.15 \cdot 2400 = 90 Kg/m$

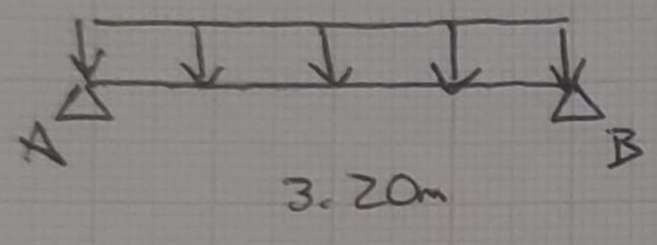
$P.P\ muro = 5.70m(2.70\ Kg/m) = 1,539 Kg/m$

$1.599 + 90 = 1629\ ton/m = 1.629\ ton/m$

$M = 1/8 \cdot q \cdot L^2 =$

$1.629\ ton/m \cdot (3.20m)^2/8 =$

$2.085\ ton \cdot m$



$R_A = R_B = q \cdot L/2 =$

$1.629\ ton/m \cdot (3.20m)/2 =$

$2.606\ ton$

$E = 3,100,000\ ton/m^2$

$I_x = bh^3/12 = (0.15m) \cdot (0.25m)^3/12 =$

$0.0001953m^4$

Δ permitido

$L/240 = 320cm/240$

$= 1.33cm$

$\theta_A = \theta_B = q \cdot L^3/24 \cdot E \cdot I$

$1.629 \cdot (3.20m)^3/24\ (3,100,000\ \frac{ton}{m^2}) \cdot (0.0001953m^4)$

$= 53.379072/14,530.32 = 0.003673$

$F = \frac{5}{384} \cdot \frac{qL^4}{E \cdot I} = \frac{5}{384} \cdot \frac{1.629\ ton/m \cdot (3.20m)^4}{(3,100,000\ ton/m) \cdot (0.0001953m^4)} =$

$0.003673m = 36.73cm$