Mi Universidad

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Nombre del tema: momentos

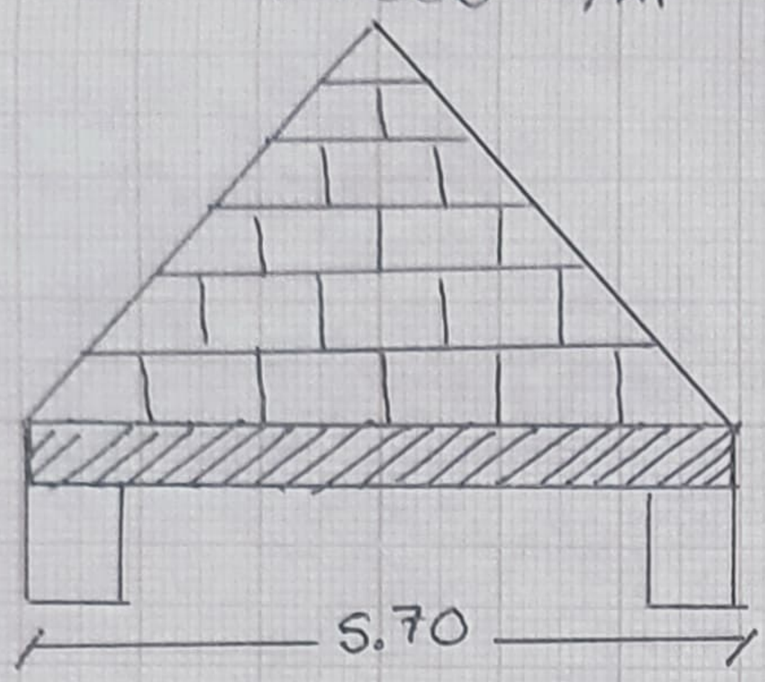
Parcial: 2

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

$q = 1.1586 \ ton/m$

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

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

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

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

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

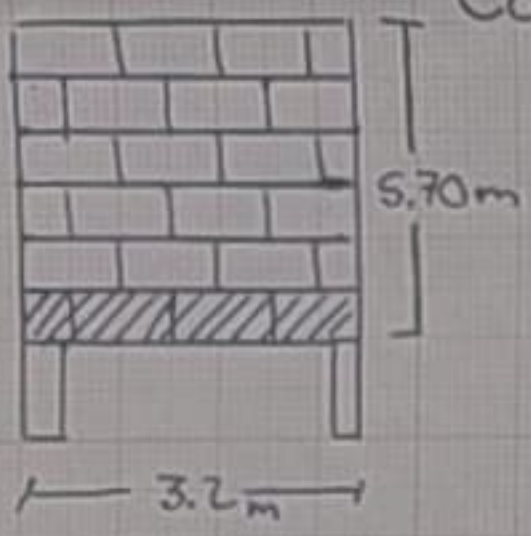
$$\frac{5 \cdot (1.1586 \ ton/m) \cdot (5.70)^3}{196 \cdot (3,100,000 \ ton/m^2) \cdot (0.002604 m^4)} = 0.0006780$$

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

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

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

Concreto reforzado



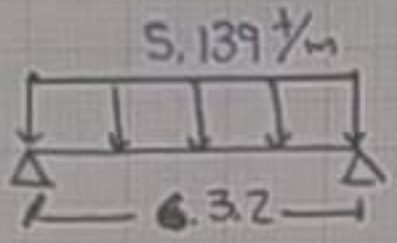
Muro de block = 270 Kg/m

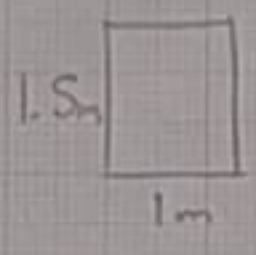
E= 700,000 t/m²

I=

h= L/2 h= 3.2/2 h= 1.6m = 1.5m

b= 0.5·(h) b=0.50·(1.6m) b= 0.8 = 1m





2400 Kg/m³ (Peso Concreto Armado)

P.P.T = 1.5m × 1m × 2400 Kg/m³ = 3,600 Kg/m

PdM = 5.70m · (270 Kg/m) = 1,539 Kg/m²

Ix= 1·(1.5)³/12 = 0.28125

1,539 Kg/m² + 3600 Kg/m = 5139 Kg/m²

q = 5.139 t/m

M= 1/8 q·L² M= 1/8·(5.139 t/m)·(3.2m)² = 6,57792 t·m

RA=RB =(q·L)/2 =(5.139 t/m · 3.2m)/2 = 8.2224

θA=θB= q·(L)³/24·E·I

5.139 t/m · (3.2)³ / 24· 3,100,000 · 0.28125m⁴

θA=θB= 0.000000804754

F= 5/384 · q·(L)⁴/E·I = 5/384 · 5.139 t/m · (3.2m)⁴ / 3,100,000 t/m² · 0.28125m⁴ =

=000000804754 m

△permisible = L/240 = 570 3.2/240 = 1.333