Problemas momentos

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Nombre del tema: momentos

Parcial: 2

Nombre de la Materia: Resistencia de materiales

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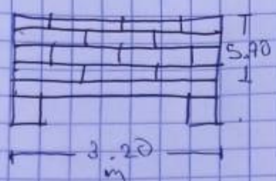
Nombre de la Licenciatura: Arquitectura

Cuatrimestre: 4



Concreto reforzado
muro block = 270 kg/m

$h = \frac{L}{12} = \frac{3.20m}{12} = 0.2666\ m$
0.15 m

$b = 0.5h \rightarrow 0.25(0.5) = 0.12m$

P.P. trabe = 0.25 m · 0.15 m · 2400 kg/m

90 Kg/m

P.F Muro 5.70 m 1270 kg/m

1.339 Kg

1539 Kg/m
+ 90 kg/m
= 1,629 Kg/m
= 1.629 t/m

$m = \frac{1}{8} q L^2 \rightarrow$

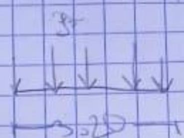
$\frac{1629(3.20)^2}{8} =$

$M = 2.1085$ ton-m

$RA = RB = \frac{q \cdot L}{2}$

$\frac{1529(3.20)}{2} =$

RARB = 2.606 ton



$\theta A = \theta B = \frac{qL^3}{24E}$

$\theta A = \theta B = \frac{1629\ t/m\ (3.20)^3}{24(3100000) \cdot 0.001953 m^4}$

$= 0.00369337$

$Ix = \frac{0.15(0.25)^3}{12}$

$Ix = 0.0001953\ m^4$

$f = \frac{5}{384} \cdot \frac{qL^4}{EI}$

$f = \frac{5}{384} \cdot \frac{1629\ t/m\ (3.20)^4}{3100000 \cdot 0.0001953 m^4} = 0.00367339$

$$M = \frac{q\,L^2}{12} \rightarrow \frac{1158(5.70)^2}{12}$$

$= 17.871$ ton·m

$$RA = RB = \frac{q \cdot L}{4} \rightarrow$$

$$RA = RB = \frac{1138(5.70)}{4}$$

$RA = RB = 1.650$ ton

$$\theta A = \theta B = \frac{5\,qL^3}{196 \cdot 8I}$$

$$\theta A = \theta B = \frac{1158\,t/m\,(5.70)^3}{(96131\,00000) \cdot 0.002604\,m^4}$$

$$F = \frac{qL^4}{120 \cdot EI}$$

$$F = \frac{1158\,t/m\,(5.70)^4}{120(3100\,000) \cdot 0.002604} = 0.00126$$

Concreto reforzado
Muro de block = 270 kg/m

$$h = \frac{L}{12} = \frac{5.70\,m}{12} = 0.475\,m \;\; 0.50\,m$$

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

P.P. trabe $= 0.50 \cdot 0.25 \cdot 2400$
$= 300$ kg/m

P.P. muro $= 3.18\,m\,(270\,kg/m)$
858.6

$$\begin{array}{r} 858.6 \\ 300 \\ \hline 1.158\,kg/m^2 \end{array} = 1158\,t/m$$

$$I_x = \frac{0.25(0.50)^3}{12}$$

$I_x = 0.002604\,m^4$