



**Mi Universidad**

**Trabajo Virtual**

*Alejandra Monserrath Aguilar Gómez*

*Reacciones en elementos combinados*

*Parcial 3*

*Estática para la arquitectura*

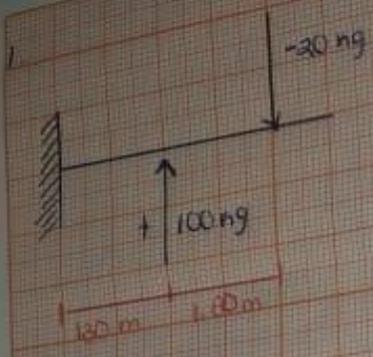
*Pedro Alberto García López*

*Arquitectura*

*3er Cuatrimestre*

*Comitán de Domingues, 06/07/2023*

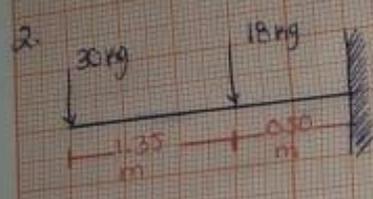
# Tercera Unidad "Reacciones en elementos combinados"



$$MA = (100 \text{ ng} \cdot 1.00 \text{ m}) + (-30 \text{ ng} \cdot 2.90 \text{ m}) = 0$$

$$100 \text{ ng} \cdot \text{m} - 87 \text{ ng} \cdot \text{m} = 0$$

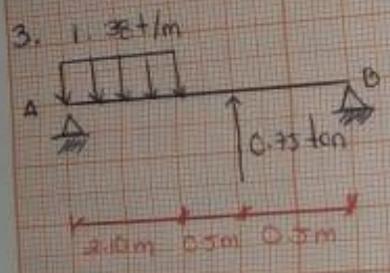
$$MA = 13 \text{ ng} \cdot \text{m}$$



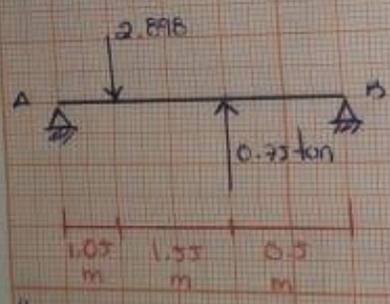
$$MA = (18 \text{ ng} \cdot 0.90 \text{ m}) + (30 \text{ ng} \cdot 1.85 \text{ m}) = 0$$

$$16.2 \text{ ng} \cdot \text{m} + 55.5 \text{ ng} \cdot \text{m} = 0$$

$$MA = 71.7 \text{ ng} \cdot \text{m}$$



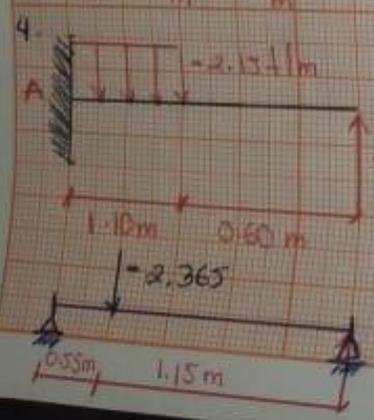
1.  $P = w \cdot L$   
 $U_p = L/2$   
 $p = 1.38 \text{ t/m} \cdot 2.10 \text{ m}$   
 $p = 2.898$   
 $U_p = 2.10 / 2 = 1.05 \text{ m}$



$$MA = (-2.898 \cdot 1.05 \text{ m}) + (0.75 \text{ ton} \cdot 2.10)$$

$$MA = -3.0429 + 1.575$$

$$MA = -1.4679 \text{ ton} \cdot \text{m}$$



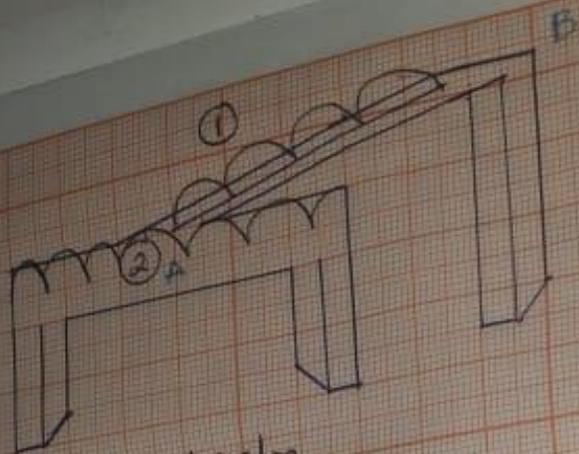
1.  $P = w \cdot L$   
 $U_p = L/2$   
 $p = -2.15 \text{ t/m} \cdot 1.10 \text{ m}$   
 $p = -2.365$   
 $U_p = 1.10 \text{ m} / 2 = 0.55 \text{ m}$

$$MA = (-2.365 \cdot 0.55 \text{ m}) + (3.10 \text{ ton} \cdot 1.15 \text{ m})$$

$$MA = -1.30075 + 3.565$$

$$MA = 2.26425 \text{ ton} \cdot \text{m}$$

5.



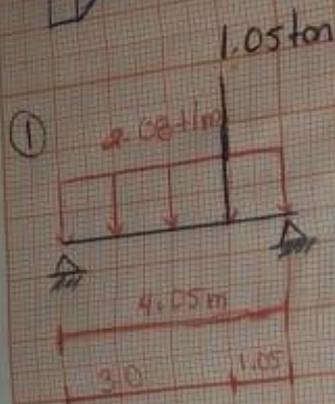
$$I.P = w.l$$

$$w.p = L/2$$

$$p = 2.8 \text{ t/m} \times 4.05$$

$$p = -8.424$$

$$w.p = 4.05 / 2 = 2.025$$



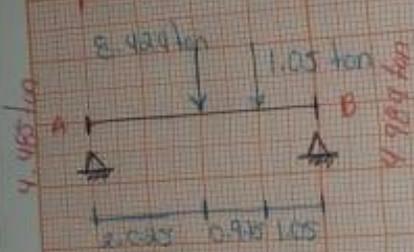
$$M_A = (-8.424 \times 2.025) + (-1.05 \text{ ton} \times 3.0) + (R_B \cdot 4.05) = 0$$

$$M_A = -13.0586 + -3.15 + R_B \cdot 4.05 = 0$$

$$M_A = -20.2086 + R_B \cdot 4.05 = 0$$

$$R_B = 20.2086 / 4.05$$

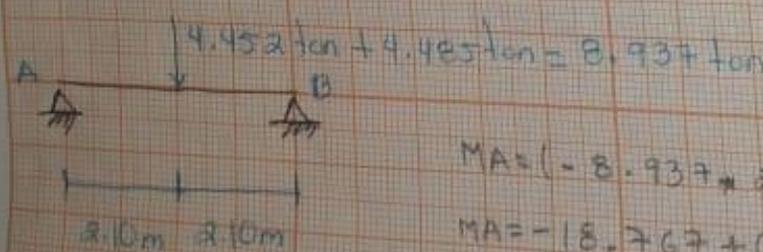
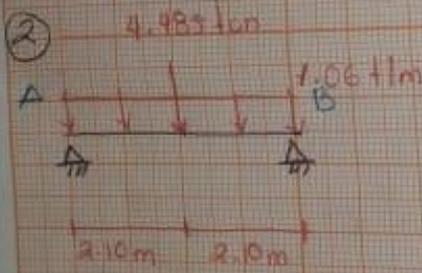
$$R_B = 4.989 \text{ ton}$$



$$R_A = -8.424 \text{ ton} - 1.05 \text{ ton} = -9.474$$

$$R_A = -4.485$$

$$R_A = 4.485 \text{ ton}$$



$$M_A = (-8.937 \times 2.10) + (R_B \cdot 4.2)$$

$$M_A = -18.767 + (R_B \cdot 4.2)$$

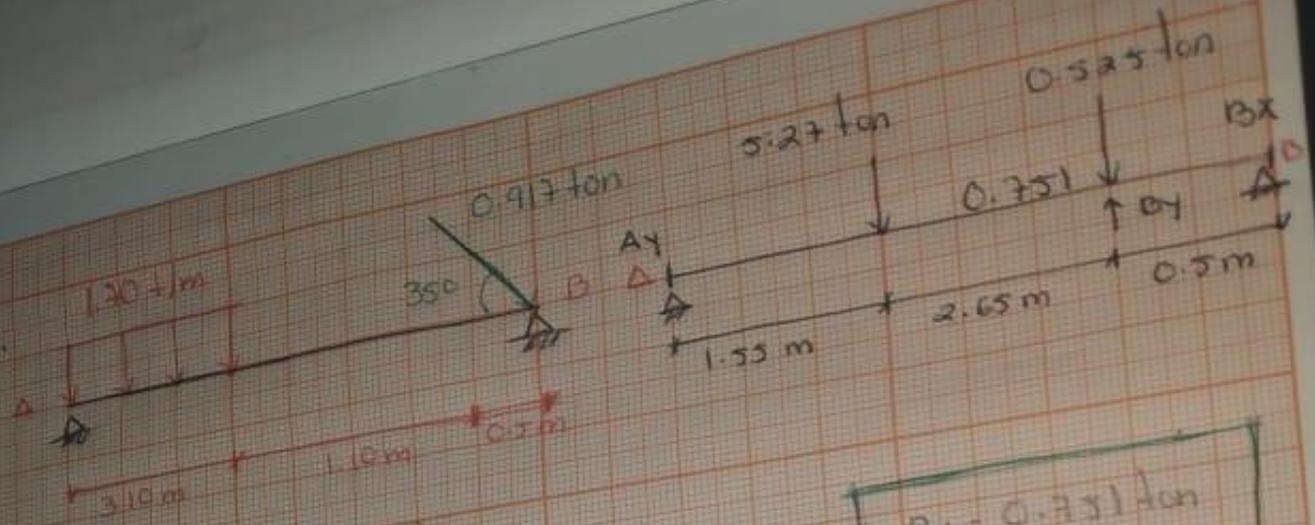
$$M_A = R_B - 18.767 = 4.468 \text{ ton}$$

$$R_A = -8.937 + 4.468$$

$$R_A = 4.469 \text{ ton}$$

Rayter

6.



1.  $P = w \cdot L = (1.20 \text{ t/m}) (3.10 \text{ m})$

$P = 5.27 \text{ ton}$

$w_p = 1.55 \text{ m}$

2.  $C_x = C \sin 35^\circ = (0.917 \text{ ton}) (0.525 \text{ ton})$

$C_A = C \cos 35^\circ = (0.917 \text{ ton}) (0.751 \text{ ton})$

$B_x = 0.751 \text{ ton}$   
 $A_y = 3.587 \text{ ton}$   
 $B_y = 2.208 \text{ ton}$

3.  $\sum F_x = 0$

$0.751 \text{ ton} - B_x = 0$

$B_x = 0.751 \text{ ton}$

4.  $\sum F_y = 0$

$A_y - 5.27 \text{ ton} - 0.525 \text{ ton} + B_y = 0$

$A_y - 5.795 \text{ ton} + B_y = 0$

$A_y + B_y = 5.795 \text{ ton}$

5.  $\sum M_B = 0$

$-0.525 \text{ ton} (0.5 \text{ m}) - 5.27 \text{ ton} (3.15 \text{ m}) + A_y (4.7 \text{ m}) = 0$

$-0.2625 - 16.6005 + A_y \cdot 4.7 \text{ m} = 0$

$-16.863 \text{ ton} + A_y \cdot 4.7 \text{ m} = 0$

$A_y = \frac{16.863 \text{ ton} \cdot \text{m}}{4.7 \text{ m}}$

$A_y = 3.587 \text{ ton}$

6.  $B_y = 5.795 \text{ ton} - A_y$

$B_y = 5.795 \text{ ton} - 3.587 \text{ ton}$

$B_y = 2.208 \text{ ton}$