UDS

Mi Universidad

Ejercicios

Alejandra Monserrath Aguilar Gómez

Esfuerzos y deformaciones

Cuarto Parcial

Resistencia de materiales de construcción

Pedro Alberto García López

Arquitectura

Cuarto Cuatrimestre

Comitán de Domínguez, 02/Diciembre/2023

Alejandra Monserrath Aguilar Gomez.

0.644
100 | 64400

6440 kg

64400 (kg/cm)

100 cm

32.2 kg

0.644 kg/cm

32.2 kg

(x)

20%

32.2 kg

16.1 kg

0 kg

0 25 cm 50 cm 75 cm 100 cm

-16.1 kg

-32.2 kg

805 kg

603.75 kg

603.75 kg

0 kg

0 kg

0 25 cm 50 cm 75 cm 100 cm

① q(c)

64.400 kg/cm (100 cm) = 6440 kg

② $R_A - R_B = \frac{qL}{2}$

$\frac{0.644 \text{ kg/cm}\ (100\text{cm})}{2} = 32.2 \text{ kg}$

③

④ Ecuacion de cortante

$3220\text{kg} - [0.644\text{k/cm}(x)] - V = 0$

$\leftarrow V = 3.220\text{kg} - [0.644\text{k/cm}(x)]$

⑤ Ecuacion de momentos

$-3,220\text{kg} - [0.644\text{k/cm}(x)(x/2)] + M = 0$

$-3.220\text{kg}(x) + \frac{0.644\text{k/cm}(x^2)}{2} = 0$

$-3.220\text{kg} + 0.322x^2 + M = 0$

$\leftarrow M = 3.220\text{kg}(x) - 0.322\text{k/cm}(x^2)$

⑥.1

X	0	25cm	50cm	75cm	100cm
V	32.2 kg	16.1 kg	0 kg	-16.1 kg	-32.2 kg

$V = 32.2\text{kg} - [0.644\text{kg/cm}(0)] = 32.2$

$V = 32.2\text{kg} - [0.644\text{kg/cm}(25\text{cm})] = 16.1$

$V = 32.2\text{kg} - [0.644\text{kg/cm}(50\text{cm})] = 0$

$V = 32.2\text{kg} - [0.644\text{kg/cm}(75\text{cm})] = -16.1$

$V = 32.2\text{kg} - [0.644\text{kg/cm}(100\text{cm})] = -32.2$

kg

⑦.1

X	0	25cm	50cm	75cm	100cm
M	0 kg	603.75 kg	805 kg	603.75 kg	0 kg

$M = 32.2\text{kg}(0) - 0.322\text{k/cm}(0)^2 = 0$

$M = 32.2\text{kg}(25\text{cm}) - 0.322\text{k/cm}(25)^2 = 603.75$

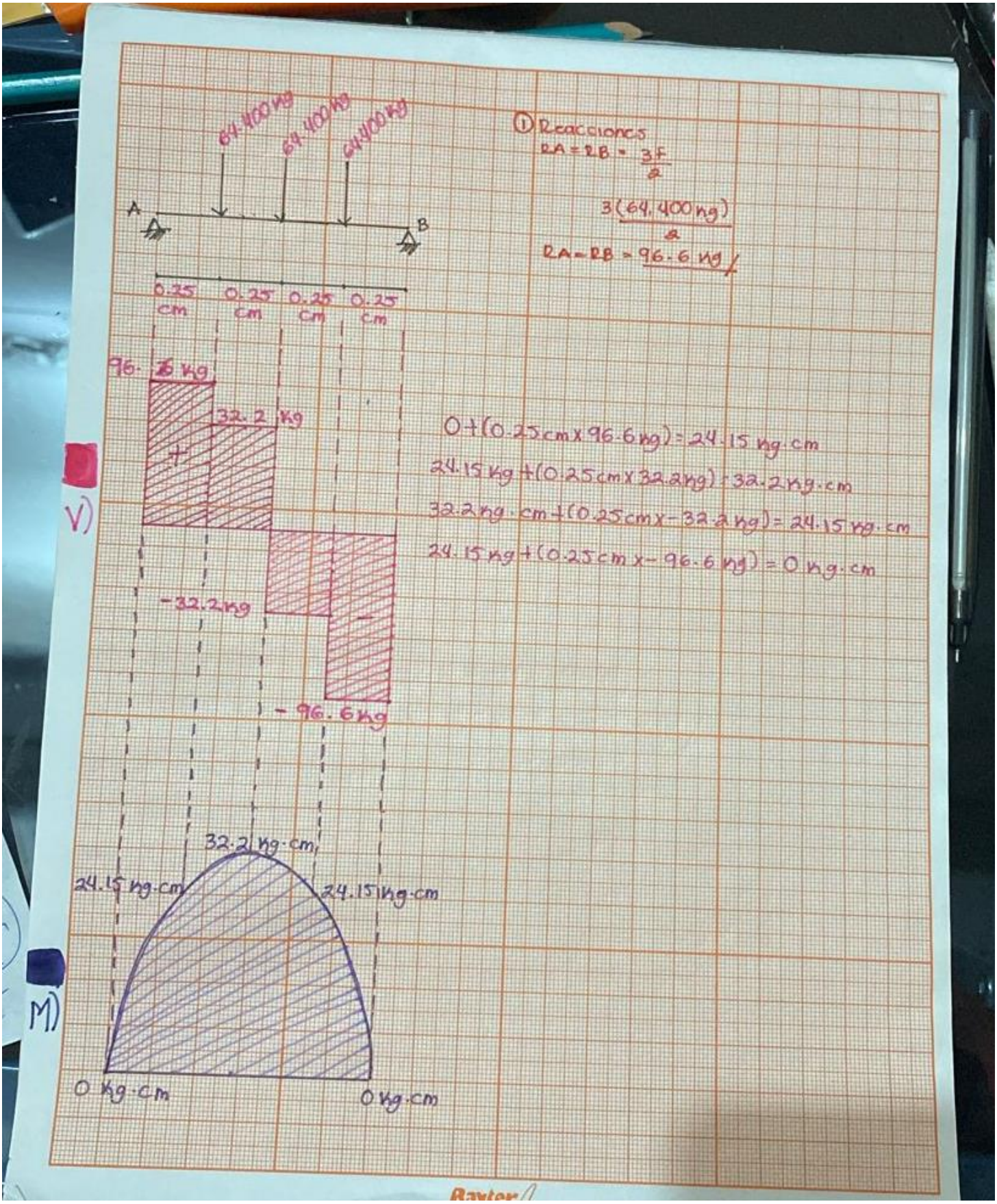
$M = 32.2\text{kg}(50\text{cm}) - 0.322\text{k/cm}(50)^2 = 805$

$M = 32.2\text{kg}(75\text{cm}) - 0.322\text{k/cm}(75)^2 = 603.75$

$M = 32.2\text{kg}(100\text{cm}) - 0.322\text{k/cm}(100)^2 = 0$

kg-cm

Rayter



① Reacciones

$R_A = R_B = \frac{3F}{2}$

$R_A = R_B = \frac{3(64.400\ kg)}{2}$

$R_A = R_B = 96.6\ kg$

$0 + (0.25\ cm \times 96.6\ kg) = 24.15\ kg \cdot cm$

$24.15\ kg + (0.25\ cm \times 32.2\ kg) = 32.2\ kg \cdot cm$

$32.2\ kg \cdot cm + (0.25\ cm \times -32.2\ kg) = 24.15\ kg \cdot cm$

$24.15\ kg + (0.25\ cm \times -96.6\ kg) = 0\ kg \cdot cm$