



Mi Universidad

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Parcial 2

Análisis de estructuras

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Arquitectura

5to Cuatrimestre

30/01
①

$$F'c = 250 \text{ kg/cm}^2$$

$$F^*c = 0.8 F'c \rightarrow 0.8 \cdot 250 \text{ kg/cm}^2 = 200$$

$$F''c = 0.85 F^*c \rightarrow 0.85 \cdot 200 \text{ kg/cm}^2 = 170 \text{ kg/cm}^2$$

$$p_{min} = \frac{0.7 \sqrt{F'c}}{F_y} \rightarrow \frac{0.70 \sqrt{250}}{4200} = 0.00263$$

$$p_{max} = 0.75 p_b \rightarrow 0.75 (0.1904) = 0.1428$$

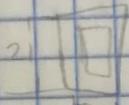
$$p_b = \frac{F'c}{F_y} = \frac{4800}{4200 \text{ kg}} \rightarrow \frac{170 \text{ kg/cm}^2 \cdot 4800}{4200} = 0.01904$$

3 varillas del número 4

$2.28 \frac{1}{m}$
 \downarrow
 $\frac{3.10}{n}$
 \rightarrow

$AS = 3 \# 4 = 3.81 \text{ cm}^2$

$R_a = R_b \rightarrow \frac{2.28 + 1/2(3.10)}{2} = 3.534 \text{ ton}$

Datos  $h = \frac{3.10}{12} = 0.25$

$F'_c = 200 \text{ kg/cm}^2$
 $F_y = 4,200 \text{ kg/cm}^2$
 $b = 15 \text{ cm}$
 $h = 25 \text{ cm}$
 $r = 6 \text{ cm}$
 $d = b - r = 2 \text{ cm}$

$V_u = 4.947 \text{ ton}$
 $AS = 0.81 \text{ cm}^2$
 $P = 0.01987$
 $V_{CR} = 1,249.52$
 $S = 12.5 \text{ cm}$

$V_u = V(1.4) \rightarrow 3.534(1.4) = 4.947 \text{ ton}$

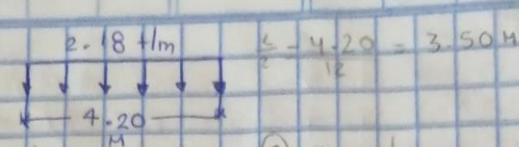
$P = \frac{AS}{60} = \frac{3.8}{15 \text{ cm} \cdot 21 \text{ cm}} = 0.0120$

$V_{CR} = 0.70 \cdot F_R \cdot V_d = 0.70 \cdot 0.80 \cdot 15 \text{ cm} \cdot 21 \text{ cm}$
 $(0.2 + 30 - 0.0120) \sqrt{160} \text{ kg/cm}^2$
 $V_{CR} = 1,249.52 \text{ ton}$

$S = 0.50(h) = 0.50(25) = 12.5 \text{ cm}$

LOVE yourself

15,689



① Momento $\frac{1}{8} (2.18 \text{ t/m}) (4.20 \text{ m})^2$
Momento = 4.81 ton

② Momento $100,000 \times 4.81 =$
Momento = 481,000

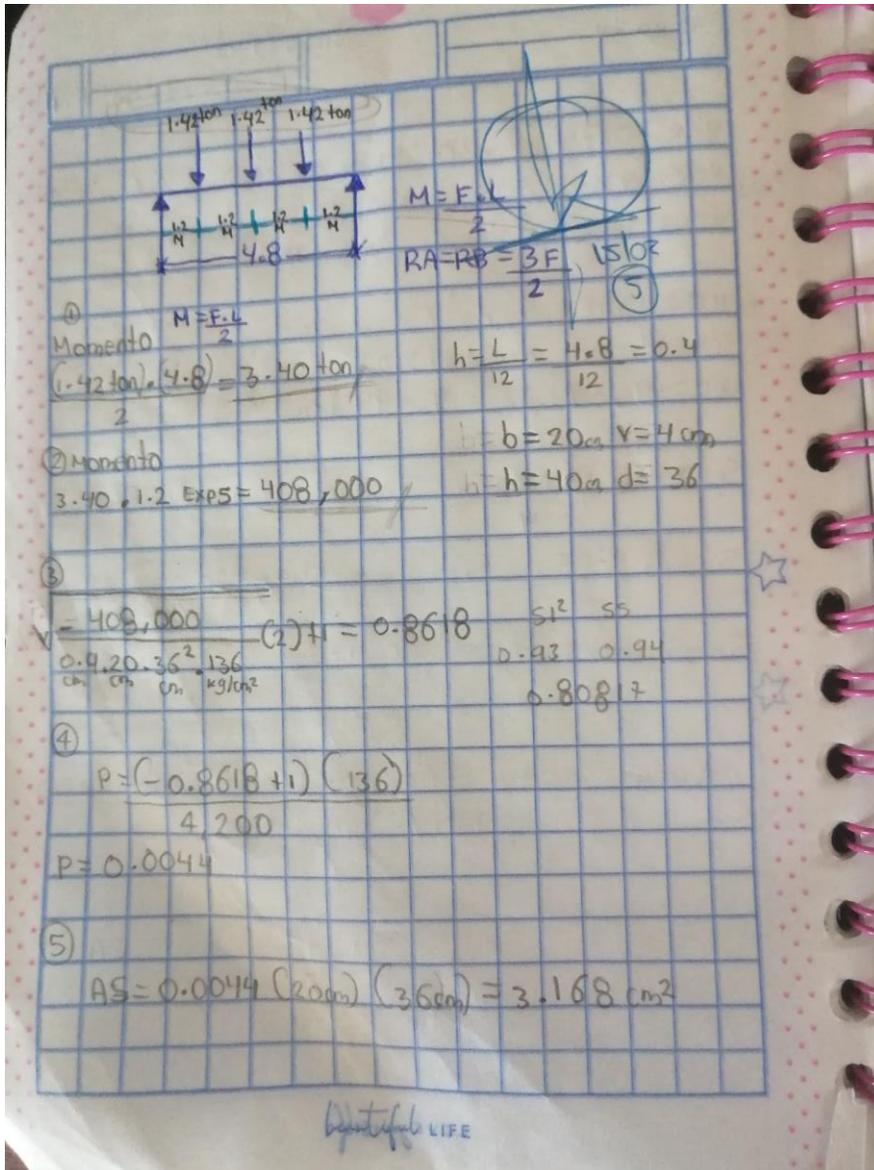
③ $\sqrt{\frac{-481,000}{0.9 \cdot 20 \cdot 55 \cdot 136}} + 1 =$
 $= 0.00423$

④ $\frac{(-0.1168 + 1) (136 \text{ kg/cm}^2)}{4,200 \text{ kg/cm}^2} \quad P = 0.0285$

$\sqrt{\frac{-481,000}{0.9 \cdot 20 \cdot 55 \cdot 136}} + 1 = 0.1299$
 $\frac{(-0.1299 + 1) (136 \text{ kg/cm}^2)}{4,200 \text{ kg/cm}^2}$

⑤ AS $AS = 0.0287 (20 \text{ cm}) (29 \text{ cm}) = 22.38$

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$1.42 \text{ ton} \quad 1.42 \text{ ton} \quad 1.42 \text{ ton}$
 $1.6 \quad 1.6 \quad 1.6$
 4.8

$M = \frac{F \cdot L}{2}$
 $R_A = R_B = \frac{3F}{2}$ (5)

① Momento $M = \frac{F \cdot L}{2}$
 $\frac{(1.42 \text{ ton}) \cdot (4.8)}{2} = 3.40 \text{ ton}$

$h = \frac{L}{12} = \frac{4.8}{12} = 0.4$
 $b = 20 \text{ cm} \quad v = 4 \text{ cm}$
 $h = h = 40 \text{ cm} \quad d = 36$

② Momento $3.40 \cdot 1.2 \text{ Exp} = 408,000$

③ $\sigma = \frac{408,000}{0.9 \cdot 20 \cdot 36^2 \cdot 136} (2) + 1 = 0.8618$
 $\frac{\text{cm}^2}{\text{cm}^2} \cdot \frac{\text{kg/cm}^2}{\text{kg/cm}^2}$

④ $P = \frac{(-0.8618 + 1) (136)}{4,200}$
 $P = 0.0044$

⑤ $AS = 0.0044 (20 \text{ cm}) (36 \text{ cm}) = 3.168 \text{ cm}^2$

Beautiful LIFE

$P = 0.0044$
 $AS = 0.0044 (20) (36) = 3.16 \text{ cm}^2$

⑥ Diseño

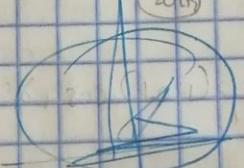
$\frac{3.168 \text{ cm}^2}{2} = 1.58 \text{ m}^2$ $2\#5 = 3.98$

$AS_{\text{min}} = 0.000235 (20) (36) = 1.4692 = 0.846$

$4.80 = 1.2$ $2\#5 = 1.99 = 3.98$

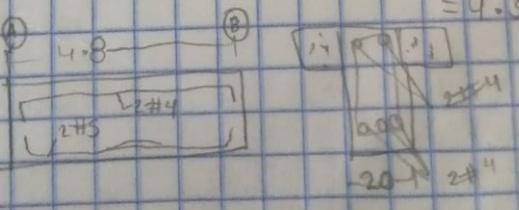
$\frac{4.80}{20} = 0.24$ $\frac{3.98}{20.86} = 0.0055$

$2 \times 2 = 8 \text{ m} \times 0.2$ (20 cm)



$VCR = RA = RB = \frac{3 (1.42)}{2} = 2.93$

$VU = 2.13 (1.4) = 2.982 \rightarrow VCR = 1.5 (0.8) (20.35) = 9.381$



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