



# Mi Universidad

*Nombre del Alumno: Joaquin Betony Zapete Morales.*

*Nombre del tema: Métodos energéticos.*

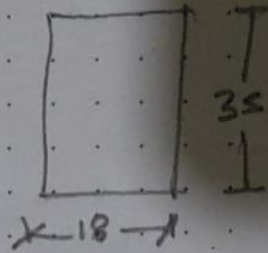
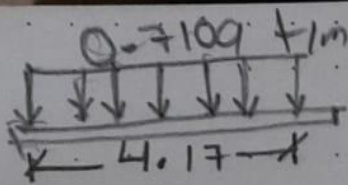
*Parcial: Unida III*

*Nombre de la Materia: Análisis de estructuras.*

*Nombre del profesor: ARQ. Pedro Alberto García López.*

*Nombre de la Licenciatura: Arquitectura.*

*Cuatrimestre: Numero 5.*



$$M_{to} = \frac{0.7109 (4.17)^2}{8} = 0.370556$$

$$M_u = 0.370556 (1.3 \times 10^5) = 48165$$

$$z = \sqrt{\frac{48165}{0.9 \times 15 \times 36^2 \times 136}} \cdot 2 \cdot 1$$

$$z = 0.922366$$

$$z = \frac{0.922366 + 1}{4} \times 200 \text{ K/cm}^2$$

$$z = 0.003698$$

Datos

$$h = 35 \text{ cm}$$

$$b = 18 \text{ cm}$$

$$d = 31 \text{ cm}$$

$$F_c' = 200 \text{ K/cm}^2$$

$$F_y = 4200 \text{ K/cm}^2$$

$$F_c = 136 \text{ K/cm}^2$$

$$F_R = 0.9$$

$$z_{min} = 0.00735$$

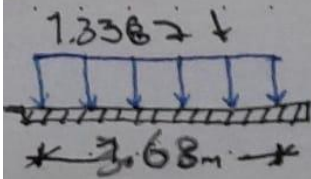
$$z_{max} = 0.01193$$

$$z =$$

$$A_s = 0.003698 (16) 26 = 1.83362$$

2# 4 Lecho Inferior

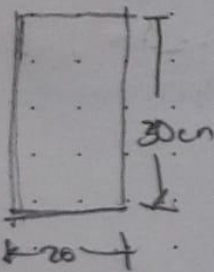
2# 3 Lecho Superior.



Momento

$$\frac{w (L)^2}{8} = \frac{1.3387 (3.68)^2}{8} = 0.615802$$

$$M_u = M_{to} (1.3 \times 10^5) \rightarrow 0.615802 (1.3 \times 10^5) = 80054$$



$$q = \sqrt{\frac{80054 \text{ K/cm}}{0.9 \cdot 15 \cdot 26 \cdot 136}} \cdot 2 + 1 = 0.933273$$

Datos

$$f = \frac{(0.933273 + 1) \cdot 200 \text{ Kg/cm}^2}{4,200 \text{ Kg/cm}^2}$$

$$H = 30 \text{ cm}$$

$$b = 15 \text{ cm}$$

$$L = 368 \text{ cm}$$

$$d = 26 \text{ cm}$$

$$F_c = 200 \text{ Kg/cm}^2$$

$$F_y = 4,200 \text{ Kg/cm}^2$$

$$F_c = 136 \text{ K/cm}$$

$$F_e = 0.9$$

$$f_{\min} = 0.01143$$

$$f_{\text{moy}} = 0.00235$$

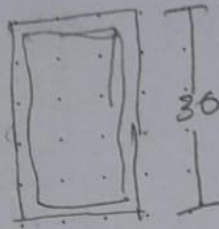
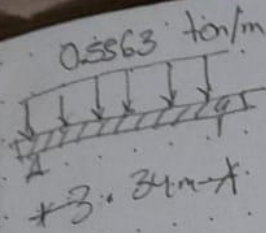
$$f = 0.003177$$

$$f = 0.003177$$

$$A_s = 0.003177 (15) 26 = 1.239212$$

2# 4 → Lecho Inferior

2# 3 → Lecho Superior



$$\frac{w(L)^2}{8} \rightarrow \frac{0.5563 (3.34)^2}{8} = 0.7757$$

$$M_0 = M_{t0} (1.3 \times 10^5) = 0.7755 (130,000)$$

$$\rightarrow 100,841 \text{ kg/cm}$$

$$q = \frac{\sqrt{M_0}}{F R \cdot b \cdot d^2 \cdot F''c} \cdot 2 + 1$$

$$q = \frac{\sqrt{100,841 \text{ kg/cm}}}{0.9 \cdot 15 \cdot 26^2 \cdot 136} \cdot 2 + 1$$

$$\rightarrow 0.91515$$

$$j = \frac{(-q + 1) - F''c}{F_y}$$

$$j = \frac{(-0.91515 + 1) \cdot 200 \text{ kg/cm}^2}{4,200 \text{ kg/cm}^2}$$

$$\rightarrow 0.004040$$

$$A_s = 0.004040 (15) 26 \rightarrow 1.575359$$

2#4  $\rightarrow$  Lecho Inferior

2#3  $\rightarrow$  Lecho Superior

Datos

$$H = H = 30 \text{ cm}$$

$$b = 15 \text{ cm}$$

$$L = 3.34 \text{ cm}$$

$$d = 26 \text{ cm}$$

$$F_c = 200 \text{ kg/cm}^2$$

$$F_y = 4,200 \text{ kg/cm}^2$$

$$F_c = 136 \text{ kg/cm}^2$$

$$F_R = 0.90$$

$$j_{may} = 0.01143$$

$$j_{min} = 0.00235$$

$$j = 0.004040$$