Nombre del Alumno: Yessica Hernandez Zuñiga

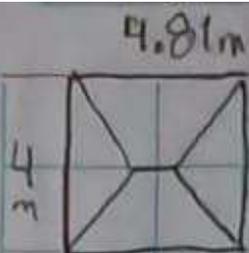*Nombre del tema: Planta de Albañileria*

Parcial: 2

Nombre de la Materia: Taller de Construcción de Materiales Básicos

Nombre del profesor: Pedro Alberto Garcia Lopez

Nombre de la Licenciatura: Arquitectura

Cuatrimestre: Quinto Cuatrimestre

Comitán de Domínguez a 10 de febrero del 2024.

4.81m

4 m

① $H_1 = \dfrac{4_h + 4.81m + 4m + 4.81m}{1 \cdot 10} + 0.04 = 17.66 = 0.25$

② A_{ZOTEA}

$\omega_{\partial A} = 665 \, kg/cm^2$

③ $\bar{A}_{REA}$

$A_1 = \dfrac{b \times h}{2} = \dfrac{4.81m \times 4m}{2} = 9.6 m^2$

$A_2 = \dfrac{bM + bm}{2} \cdot h = \dfrac{4.81 + 4m \cdot (1.3)}{2} = 5.72 m^2$

④ PESO DE AREA

$P_1 = 9.6m^2 (665 \, kg/cm^2) = 6384 \, kg/cm^2 / 4.81m = 1327.23 \, kg/m$

$P_2 = 5.72 (665 \, kg/cm^2) = 3803.8 / 4.81m = 790.81$

⑤ CARGA W

$P.P. = h = L/12 \rightarrow 4.81/12 = .4m$

$b = 0.5(h) \rightarrow 0.5(.4m) = 0.2m$

$PESO = 2.4 \, t/m$

$h(b) \, PESO = 0.4m \times 0.2m (2.4 t/m) = 0.192 \, t/m$

$P_1 + P_2 = \dfrac{2,118.04}{1000} = 2.118 \, t/m + 0.192 \, t/m = 2.31 \, t/m$

⑥ Datos

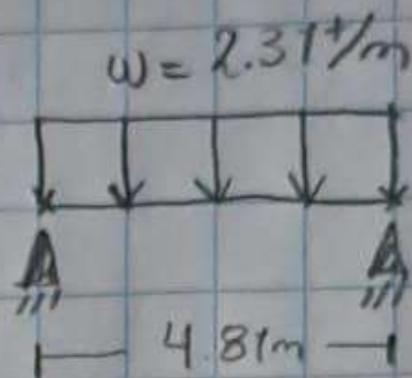$H = 40cm$ $F'C = 200 \, kg/cm^2$

$b = 20cm$ $FY = 4,200 \, kg/cm^2$

$L = 481cm$ $F''C = 136 \, kg/cm^2$

$d = 36cm$ $FR = 0.90$

$\omega = 2.31 \, t/m$

$\vdash \quad 4.81m \quad \dashv$

⑦ Momento

$$\frac{\omega(L)^2}{8} \longrightarrow \frac{2.31 \, t/m \, (4.81m)}{8} = 1.38 \, t \cdot m$$

⑧ Momento Último (Mu)

$$Mu = Mto(1.3 \times 10^5) = kg/cm$$
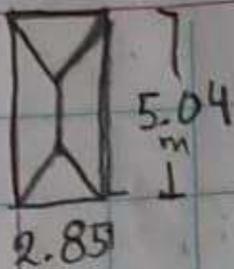
$$= 1.38 \, t \cdot m \, (1.3 \times 10^5) = 179,400 \, kg/cm$$

⑨

$$q = \sqrt{-\frac{Mu}{FR \cdot b \cdot d^2 \cdot F''C} \cdot 2 + 1} =$$

$$q = \sqrt{-\frac{179,400}{.9 \times .2 \times 36^2 \times 136} \cdot 2 + 1} = .941$$

⑩

$$P = \frac{(-q+1) \cdot F''C}{Fy} \longrightarrow \frac{(-.941+1) \cdot 136}{4.200} = 0.001910$$

⑪

$$As = p(b)d$$

$$= 0.001910(20)36 = 1.3752 \, cm^2$$

① $H_1 = \dfrac{2.85m + 5.04 + 2.85 + 5.04 + 0.04}{170} = 0.13$

② AZOTEA

Losa $= 682\, hg/cm^2$

③ ÁREA

$A_1 = \dfrac{b \times h}{2} = \dfrac{2.85m \times 5.04}{2} = 7.182\, m^2$

$A_2 = \dfrac{bM + bm \times h}{2} = \dfrac{5.04 + 2.85(1.3)}{2} = 10.257\, m^2$

④ PESO DE ÁREA

$P_1 = 7.182\, m^2 (682\, hg/m^2) = 4898.124\, kg/cm^2 / 5.04m = 971.85\, kg/m$

$P_2 = 10.257\, m^2 (682\, kg/m^2) = 6995.274\, kg/cm^2 / 5.04m = 1,387.95\, hg/m$

⑤ CARGA W

$P.P = h = \dfrac{L}{12} \rightarrow \dfrac{5.04}{12} = .42\, m$

$b = 0.5(h) \rightarrow 0.5(.42m) = .21\, m$

$PESO = 2.4\, t/m$

$h(b)\, PESO = .42(.21m)\, 2.4\, t/m = 0.211\, t/m$

$P_1 + P_2 = \dfrac{971.85 + 1387.95}{1000} = 2.359\, t/m + 0.211\, t/m = 2.57\, t/m$

⑥ DATOS

$H = 42 cm$ $F'C = 200 kg/cm^2$

$b = 21 cm$ $Fy = 4200 kg/cm^2$

$L = 504 cm$ $F''C = 136 kg/cm^2$

$d = 36 cm$ $FR = 0.90$

$\omega = 2.57 t/m$

$\vert\!-\!-\!-\!5.04\!-\!-\!-\!\vert$
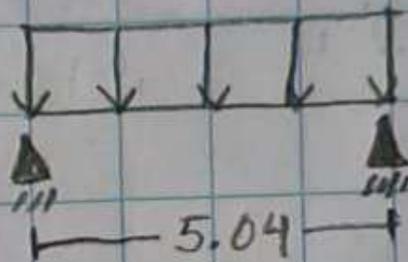
⑦ MOMENTO

$$\frac{\omega(L)^2}{8} \rightarrow \frac{2.57 t/m (5.04m)}{8} = 1.61 t \cdot m$$

⑧ MOMENTO ÚLTIMO (M_U)

$M_U = MTO (1.3 \times 10^5) = kg/cm$
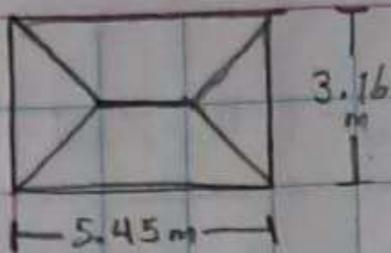
$= 1.61 t \cdot m (1.3 \times 10^5) = 209,300 kg/cm$

⑨ $q = \sqrt{-\dfrac{M_U}{FR \cdot b \cdot d^2 \cdot F''C} \cdot 2 + 1} =$

$q = \sqrt{-\dfrac{209,300 kg/cm}{.9 \times 21 \times 36^2 \times 136} \cdot 2 + 1} = 0.935$

⑩ $\rho = \dfrac{(q+1) \cdot F''C}{Fy} \rightarrow \dfrac{(-.935 + 1) \cdot 136}{4,200} = 0.002104$

⑪ $A_S = \rho (b) d$

$= 0.002104 (21) 36 = 1.5906 cm^2$

3.16 m

|— 5.45 m —|

① $H_1 = \dfrac{5.45m + 3.16m + 5.45 + 3.16}{170} \to 0.04 = 0.25$

② ACOTEA

$LOSA = 665 \, kg/cm^2$

③ ÁREA

$A_1 = \dfrac{b \times h}{2} = \dfrac{5.45m \times 3.16m}{2} = 8.611 m^2$

$A_2 = \dfrac{bM + bm\,(h)}{2} = \dfrac{5.45m + 3.16m\,(1.3)}{2} = 5.596 m^2$

④ PESO DE ÁREA

$P_1 = 8.611 m^2 (665 \, kg/cm^2) = 5,726.315 / 5.45m = 1,050.7 \, kg/m$

$P_1 = 5.596 m^2 (665 \, kg/cm^2) = 3,721.34 / 5.45m = 682.81 \, kg/m$

⑤ CARGA W

$P.P = h = 1/12 = 5.45/12 = 0.45m$

$b = 0.5(h) = 0.5(.45m) = .225 m$

$PESO = 2.4 \, t/m$

$h(b) PESO = .45m\,(.225m)\,2.4 \, t/m = .243 \, t/m$

$P_1 + P_2 = \dfrac{1050.7 \, kg/m + 682.81 \, kg/m}{1000} = 1.733 \, t/m + .243 \, t/m = 1.976 \, t/m$

⑥ DATOS

H = 45 cm   F´C = 200 kg/cm²
b = 22 cm   Fy = 4,200 kg/cm²
L = 545 cm   F"C = 136 kg/cm²
d = 36 cm   FR = 0.90
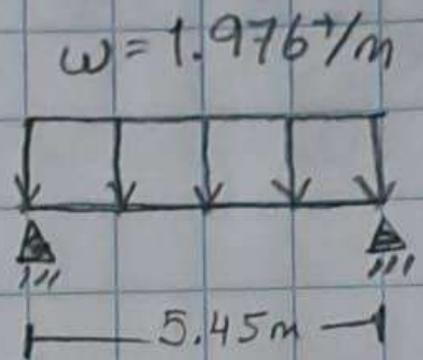
$\omega = 1.976 \, t/m$

├──── 5.45 m ────┤

⑦ MOMENTO

$$\frac{\omega(L)^2}{8} = \frac{1.976 \, t/m (5.45 m)}{8} = 1.34 \, t \cdot m$$

⑧ MOMENTO ÚLTIMO (HU)

$$Hu = Mto(1.3 \times 10^5) = kg/cm$$
$$= 1.34 \, t \cdot m (1.3 \times 10^5) = 174,200 \, kg/cm$$

⑨ $q = \sqrt{-\dfrac{HU}{FR \cdot b \cdot d^2 \cdot F"C} \cdot 2 + 1} =$

$$q = \sqrt{-\frac{174,200 \, kg/cm}{.9 \times 22 \times 36^2 \times 136} \cdot 2 + 1} = 0.948$$

⑩ $\rho = \dfrac{(-q+1) \cdot F"C}{Fy} \rightarrow \dfrac{(-0.948+1) \, 136}{4200} = 0.001683$

⑪ $As = \rho (b) d$
$$= 0.001683 (22) 36 = 1.3329 \, cm^2$$