UDS

Mi Universidad

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Nombre del tema: planta de albañilería

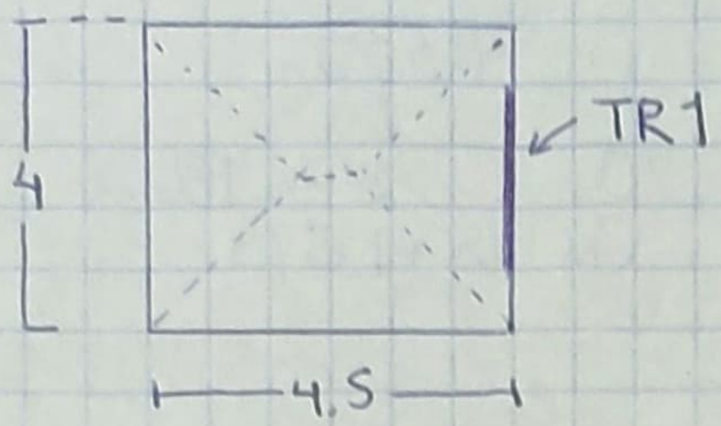
Parcial: 2

Nombre de la Materia : taller de construcción de materiales básicos

Nombre del profesor: Pedro Alberto García Lopez

Nombre de la Licenciatura: arquitectura

Cuatrimestre: 5



① H = P/170 R = (4.5 + 4.5 + 4 + 4)/170 + 0.04m =
0.14 = 0.13cm

② Azotea
Losa: 682 Kg/m²

③ Area
A1 = b.h/2 = 4.2/2 = 4 m²
A2 = B+b.h/2 = 4.5 + .5 = 5/2 = 2.5 M²

④ Peso de area (P losa · Area tributaria) / longitud del apoyo

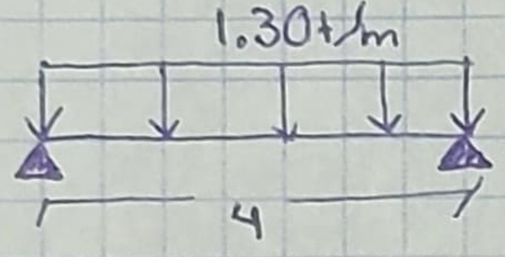
$P_1 = 4m \cdot (682 Kg/m^2) = 2728/4 = 682 Kg/m$
$P_2 = 2.5m \cdot (682 Kg/m^2) = 1705/4 = 426.25 Kg/m$

⑤ Carga W $P_1 + P_2$ + Peso propio de la trabe
P.P = h/12 = 4.5/12 = 0.375 = 0.4

P.P = 2.4 t/m
b = 0.5 · (h) = 187 = 0.2

0.40 · 0.20 · 2.4 t/m = 0.192 t/m
$P_1 + P_2$ = 682 + 426.25 = 1,108.25/1000 = 1.10825 t/m + 0.192 = 1.300

⑥



⑦ Momento = $\omega \cdot L^2/2$
$\omega \cdot L^2/8 = (1.3 t/m \cdot (4)^2)/2 = 10.4 t.m$

⑧ $M_u = M_{to} \cdot F_s =$
$[10.4 t.m \cdot (1.3 \times 10^5)] = 1,352,000$

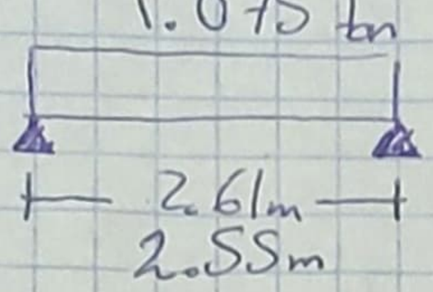
Datos
H = 40 cm
b = 20 cm
L = 400 cm
d = 36 cm
F'c = 200 Kg/cm²
F"c = 136 Kg/cm²
F_y = 4,200 Kg/cm²
FR = 0.9
ρ_{max} = 0.01143
ρ_{min} = 0.00235
ρ =

⑨
$$q = \sqrt{-\frac{MU}{FR \cdot b \cdot d^2 \cdot F''c} \cdot 2 + 1} \qquad q = \sqrt{-\frac{1352000}{0.9 \cdot 20 \cdot (36^2) \cdot 136} \cdot 2 + 1}$$

q = 0.384 323

⑩ $\rho = (-q + 1) \cdot F''c / F_y = (-0.3843 + 1) \cdot 136 / 4,200 = 0.019936$

⑪ Area de acero $A_s = \rho \cdot (b) \cdot d$ $A_s = 0.019936 (20) 36 = 14.35392 cm^2$



$M_{to} = 1.075 \cdot (2.55)^2/8 = 0.871335$

P.P. $2.55/12 : 0.21 = .20cm / 2 = 10cm$

P.P $= 25 \times 0.13cm \cdot 2.4 = 0.078 + 1.075$

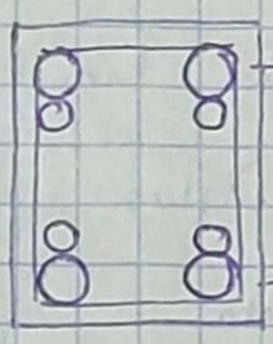
P.P $= 1.153$

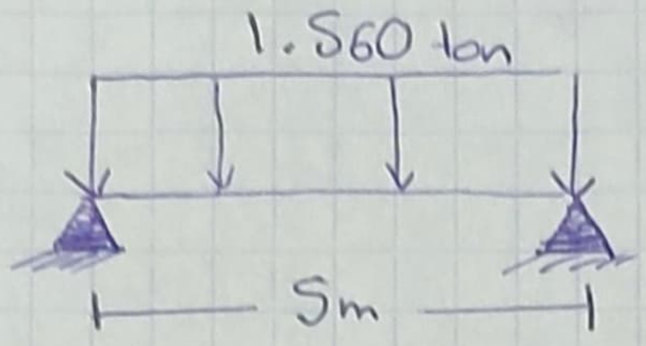
$M_u = (1.153 tm \cdot 1.3 \times 10^5) = 149890$

$$q = \sqrt{- \frac{149890}{0.9 \cdot 10 \cdot 76 \times 136}} \cdot 2 + 1 = 3.7825$$

$\rho = (-q+1) \cdot F'c) / Fy = (-3.78 + 1) \cdot 136) / 4200 = 0.0576$

$As = \rho \cdot b \cdot d \qquad As = 0.0576 \cdot (20)(36) = 9.222 cm^2$





$1.56(5m)^2/8 = 4.875\ t\cdot m$

P.P. $5/12 = 0.41 = 0.40$ $\quad 0.40/2 = 0.20$

P.P $= 0.40 \cdot 0.20 \cdot 240 = 0.192 + 1.56 =$

P.P $= 1.752$ ton

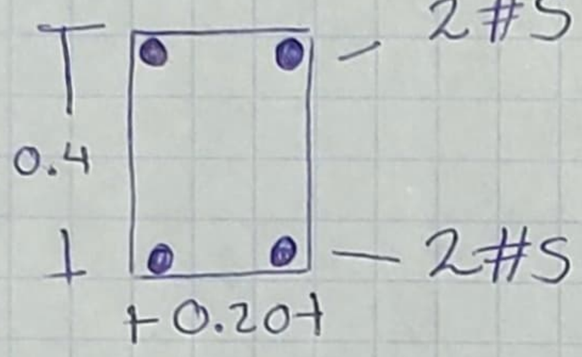
$M_o = \omega \cdot L^2/2 = (1.56 \cdot (5m)^2/2 = 4.875$

$M_o = 4.875\ t\cdot m \times 1.3\times10^5 = 633.750$

$$q = \sqrt{-\frac{633,750}{0.9\cdot 20\cdot 36^2\cdot 136}} \cdot 2+1 = q = 0.774$$

$\rho = ((-0.774+1)\cdot 136)/4200 =$ 0.007318095

$As = 0.007318 \cdot (20)(0.36) = 0 = 5.26896$



2#5 = 5.7

6 $As_{min} = 0.002357 \cdot (20) \cdot (36) = 1.70\ cm^2$

As_{max} $0.01143\ (0.20)(0.36) = 8.23\ cm$