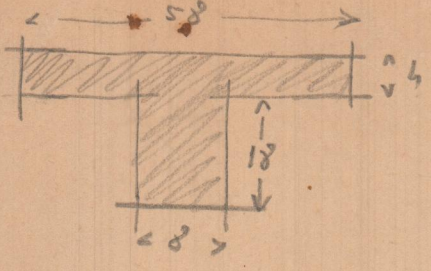


(Cálculo de vigas)



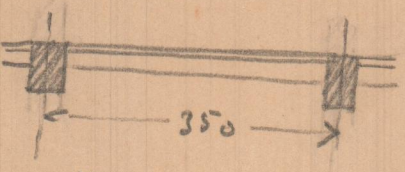
Sección $0.58 \times 0.08 = 0.0232 + 0.0144 = 0.0376 \text{ m}^2$

Peso del m. lineal $= 0.0376 \times 2400 = 90.24 \text{ Kg}$

Peso de tubos, perimetro $ct = 1.0976 \text{ Kg}$

Libre carga $= 100 \text{ Kg}$

Carga total por m. lineal de vigas $= 300 \text{ Kg}$



$M_{max} = \frac{Dl^2}{24} = \frac{300 \times 3.50^2}{24} = \frac{300 \times 12.25}{24} = \frac{3675}{24} = 153 \text{ Kg.m}$

$M_{min} = \frac{pl^2}{12} = 316 \text{ Kg.m}$

Moment en el voladizo de $1.40 \text{ m} = \frac{pl^2}{2} = \frac{300 \times 1.40^2}{2} = \frac{300 \times 1.96}{2} = \frac{588}{2} = 294 \text{ Kg.m}$

$\alpha = \sqrt{\frac{200}{0.58}} = \sqrt{345} = 18.6$, $\phi = \alpha \times b = 18.6 \times 0.58 = 10.788$, $v = \frac{h'}{\alpha} = \frac{20}{18.6} = 1.075$

Para $F_c = 1200 \text{ Kg/cm}^2$, $F_b = 13 \text{ Kg/cm}^2$, $f = 0.140$, $t = 0.082$

$\rho = f \cdot h' = 0.140 \times 20 = 2.80 \text{ cm}$, $R_F = t \cdot \phi = 0.082 \times 10.788 = 0.883 \text{ cm}^2$

$\alpha = \sqrt{\frac{316}{0.08}} = \sqrt{3950} = 62.9$, $\phi = \alpha \cdot b = 62.9 \times 0.08 = 5.032$, $v = \frac{h'}{\alpha} = \frac{20}{62.9} = 0.312$

Para $F_c = 1200 \text{ Kg/cm}^2$, $F_b = 57 \text{ Kg/cm}^2$, $f = 0.410$, $t = 0.300$

$\rho = f \cdot h' = 0.410 \times 20 = 8.20 \text{ cm}$, $R_F = t \cdot \phi = 0.30 \times 5.032 = 1.50 \text{ cm}^2$

- 1 vedaleta de 11 m de ϕ , $R = 0.95 \text{ cm}^2$
- 1 vedaleta de 14 m de ϕ , $R = 1.54 \text{ cm}^2$

$T = \frac{T_{max} - T_{min}}{2} = \frac{153 + 316}{2} = \frac{469}{2} = 234.5 \text{ Kg}$

$Z_1 = h' - \frac{\rho_1}{3} = 20 - \frac{3.00}{3} = 19 \text{ cm}$, $\frac{469}{2} = \frac{469}{0.19} = 2468 \text{ Kg}$

$Z_2 = h' - \frac{\rho_2}{3} = 20 - \frac{8.00}{3} = 17 \text{ cm}$, $\frac{468}{2} = \frac{469}{0.17} = 2758 \text{ Kg}$

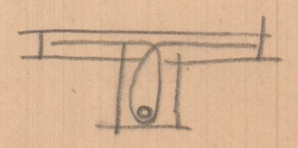
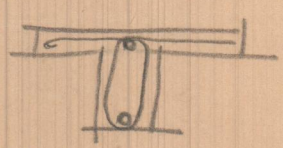
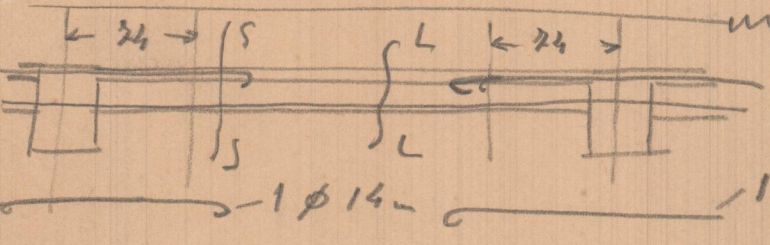
$R_c = \frac{2758}{1200} = 2.3 \text{ cm}^2$

1 vedaleta de 5 m de ϕ , $R = 0.20 \text{ cm}^2$

$n = \frac{2.3}{0.20} = 12 \text{ vedaletas}$

6 vedaletas dobles de 5 m de ϕ a media vigas

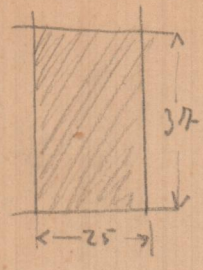
$0.21 \cdot 3.50 = 0.735 \text{ cm}$



Sección SS

Sección LL

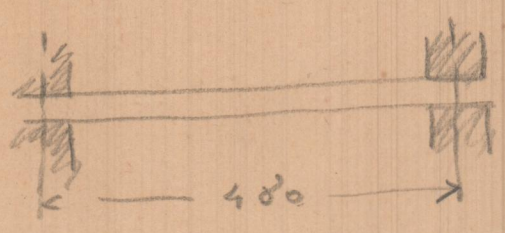
(alguno de los)



Peso del m. limít = $0.37 \times 0.25 \times 2400 = 0.0925 \times 2400 = 222 \text{ Kg}$.

Peso de viguetas y sobrecarga por m. limít de jacena = $3.50 \times 350 = 1225 \text{ Kg}$.

Carga total por m. limít = 1500 Kg .



$R_{max} = \frac{p l^2}{24} = \frac{1500 \times 4.8^2}{24} = \frac{1500 \times 23.04}{24} = \frac{34560}{24} = 1440 \text{ Kg m}$

$R_{min} = \frac{p l^2}{12} = 1440 \times 2 = 2880 \text{ Kg m}$

Tomando $\sigma_c = 1200 \text{ Kg/cm}^2$ y $h' = 34 \text{ cm}$.

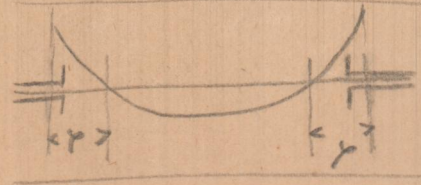
$\alpha = \sqrt{\frac{M}{b}} = \sqrt{\frac{1440}{0.25}} = \sqrt{5760} = 75.9$ " $v = \frac{h'}{\alpha} = \frac{34}{75.9} = 0.448$ " $\sigma_b = 36 \text{ Kg/cm}^2$

$\Omega_p = v \cdot h' \cdot b = 0.448 \times 34 \times 0.25 = 3.795 \text{ cm}^2$

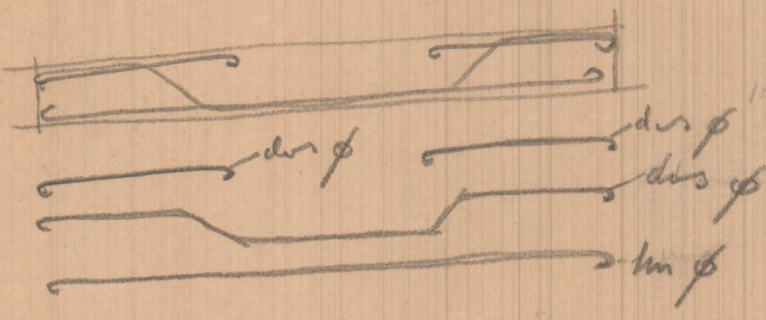
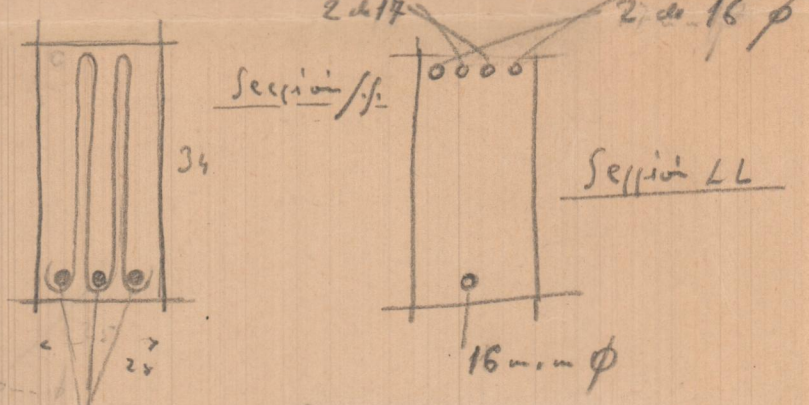
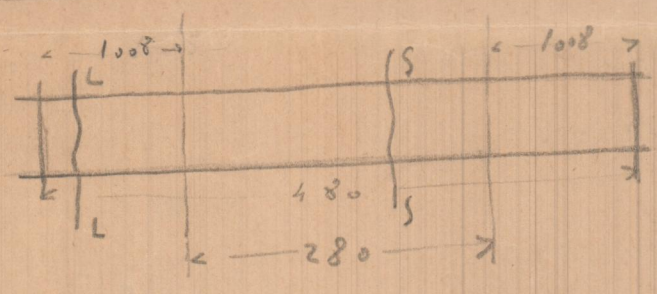
Tomando $\sigma_c = 1200 \text{ Kg/cm}^2$ y $h' = 34 \text{ cm}$

$\alpha = \sqrt{\frac{2880}{0.25}} = \sqrt{11520} = 107.5$ " $v = \frac{h'}{\alpha} = \frac{34}{107.5} = 0.316$ " $\sigma_b = 57 \text{ Kg/cm}^2$

$\Omega_F = v \cdot h' \cdot b = 1.00 \times 34 \times 0.25 = 8.50 \text{ cm}^2$



Punto de momento nulo, $x = 0.21 \cdot l = 0.21 \cdot 4.80 = 1.008 \text{ m}$.



2 de 12 + 2 de 16 = 4.54, 4.02 = 8.56 cm²
3 de 16 = 6.03 cm²

Explicación

$x = v \cdot h' = 0.316 \cdot 34 = 10.54$ " $z = h' - \frac{x}{3} = 34 - \frac{10.54}{3} = 34 - 3.50 = 30 \text{ cm}$

$\rho_1 = 0.440 \times 34 = 14.96$ " $z = h' - \frac{\rho_1}{3} = 34 - \frac{14.96}{3} = 34 - 5 = 29 \text{ cm}$

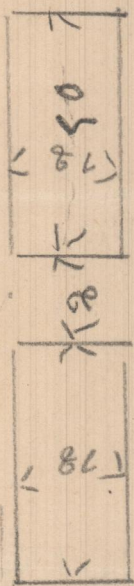
$M = \frac{p l^2}{8} = \frac{34560}{8} = 4320 \text{ Kg m}$ " $I = \frac{4320}{0.29} = 14900 \text{ Kg m}$

a 1200 Kg/cm^2 12.41 cm^2 m vedado de 5 mm ϕ $R = 0.20 \text{ cm}^2$

12.41 cm^2 se obtiene con 62 vedados de 5 mm de ϕ media vija

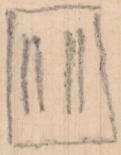
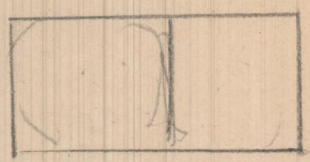


$< 79 >$



$\phi 12$
 $\phi 11$

72
 $< 78 >$



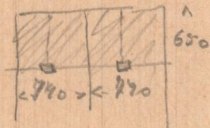
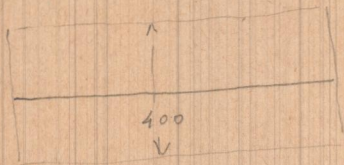
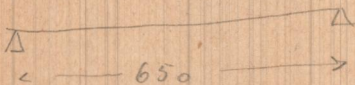
ϕ
 5

4

52

Jalan dari rumah ke sekolah
 & dari sekolah

Δ



$$V_r = \frac{P1}{8} = \frac{650 \times 400 \times 400 \times 6'5}{8} = 845000 \text{ liter. (km)}$$

$$V_r = \frac{V}{t_2} = \frac{845000}{1000} = 845 \text{ m}^3$$

Persegi $n = 32$, $V_r = 382 \text{ m}^3$ p. land 61

Puro total = $61 \times 650 = 396'5$ m

di 50% = $198'25$ m

Cara d/pu

Patris pateris

29/11/1928