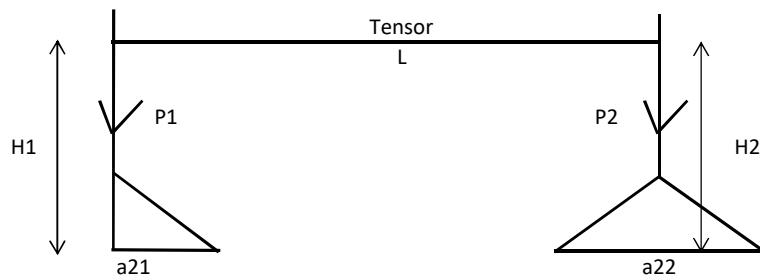


DATOS

P1	100.0 t
P2	200.0 t
H1	2.50 m
H2	2.50 m
L	6.00 m
sigma	3.0 kg/cm ²
mu	0.5
h30	300 kg/cm ²
acero	42000 t/m ² 4200 kg/cm ²
E acero	2100000 kg/cm ²
	21000000 t/m ²



0. COLUMNAS

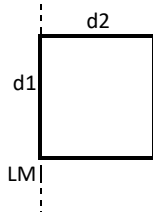
TRONCO

d1= 0.30 m
d2= 0.30 m

area col1 900 cm²

rec

0.05 b1= 0.35 m
b2= 0.33 m



1. BASE EXCENTRICA - AREA NECESARIA

Area nec= $1.1 \cdot N / \sigma$

Area nec= 3.67 m²

predim a1 2.71 m

predim a2 1.35 m

a1= 2.70 m
a2= 1.40 m

area B= 3.78 m²

relacion a1/a2 1.9

area B= a1*a2

1.36

2. EXCENTRICIDAD y TENSOR

e= (a2-d2)/2

e= 0.55 m

T= (N*e)/H

Ts= 22.0 t

Tu= 28.6 t

verifico: e<= H/4

H/4= 0.63 m

VERIFICA

3. VERIFICACIONES y RECOMENDACIONES

Carga: Ns<=120t OK

Prof: H>=1.5m OK

excent max: e<=H/4 OK

verifico:

deslizam: $\mu \cdot N_s \geq v \cdot T_s$

$\mu \cdot N_s$ $v \cdot T_s$

50 > 33.0 t

VERIFICA

μ = 0.5 tg(3/4φ)

v = 1.5

4. PARAMETROS GEOMETRICOS

recubrim>= 5 cm

D= max(D1,D2) D1= (a1-b1)/3
D= 0.78 m D2= (a2-b3)/1.5
b3= d2+((H-D)*e/H)
b3= 0.68 m
b3.adopt 0.70 m
D.adop= 0.80 m

h= D-rec
h= 0.75 m

z= 0.2*D (min 25cm)
z= 0.16 m
z.adop= 0.25 m

5. FACTORIZACION

p=L 0.25 q U1= 1.4D
g=D 0.75 q U2= 1.2D+1.6L
q=g+p P

p1= 25.0 t NU1= 105.0 t
g1= 75.0 t NU2= 130.0 t

6. ARMADURAS BASE

Tension efectiva de trabajo BASE

$\sigma_{0.serv} = N_{ser}/(a1*a2)$
 $\sigma_{0.serv} = 26.5 \text{ t/m}^2$ 2.65 kg/cm2 verifica

 $\sigma_{0.ult} = N_U/(a1*a2)$
 $\sigma_{0.ult} = 34.4 \text{ t/m}^2$ 3.44 kg/cm2

Momentos

$M_{lr1} = \left(\frac{a_1-b_1}{2}\right)^2 \times \frac{q_1}{2} \times a_2$
Mlr1= 33.2 tm

 $M_{lr2} = \left(\frac{a_2-b_2}{2}\right)^2 \times \frac{q_2}{2} \times a_1$
Mlr2= 22.8 tm

Armaduras base

$\phi = 0.9$

As1= 1.2*Mlr1/(0.8*h* ϕ *Fy)
As1= 17.6 cm2
As1/m= Fe1/a2
As1/m= 12.6 cm2/m
se adopta As1 $\phi b = 16$ mm
cant 9
sep 16 cm

$As_2 = 1.2 * M_{lr2} / (0.8 * h * \phi * F_y)$
 $As_2 = 12.0 \text{ cm}^2$
 $As_2/m = Fe_2/a_1$
 $As_2/m = 4.5 \text{ cm}^2/m$
 se adopta As_2 $\phi b = 10 \text{ mm}$
 cant 16
 sep 17 cm

7. TENSOR

$\phi = 0.9$

$As.T = 1.2 * T_u / (\phi * F_y)$

$As.T = 9.1 \text{ cm}^2$

$\phi b = 16$

cant 5

cant adop 6

adop 12.06 cm²

verifico:
$$\Delta l = \frac{T_s L}{E_s As_{adop}} \leq \frac{H'}{1000}$$

def max 0.65 cm

(suponiendo altura de entrepiso superior de 4.0m)

def tensor 0.52 cm

verifica

8. CALCULO TRONCO / FUSTE

$e.tr = (b_3 - d_2) / 2$

$e.tr = 0.20 \text{ m}$

$MU.tr = NU * e.tr$

$MU.tr = 26.0 \text{ tm}$

$NU.tr = 130.0 \text{ t}$

con estos valores -> diagramas de interaccion (H1)

9. ESQUEMA ARMADO

