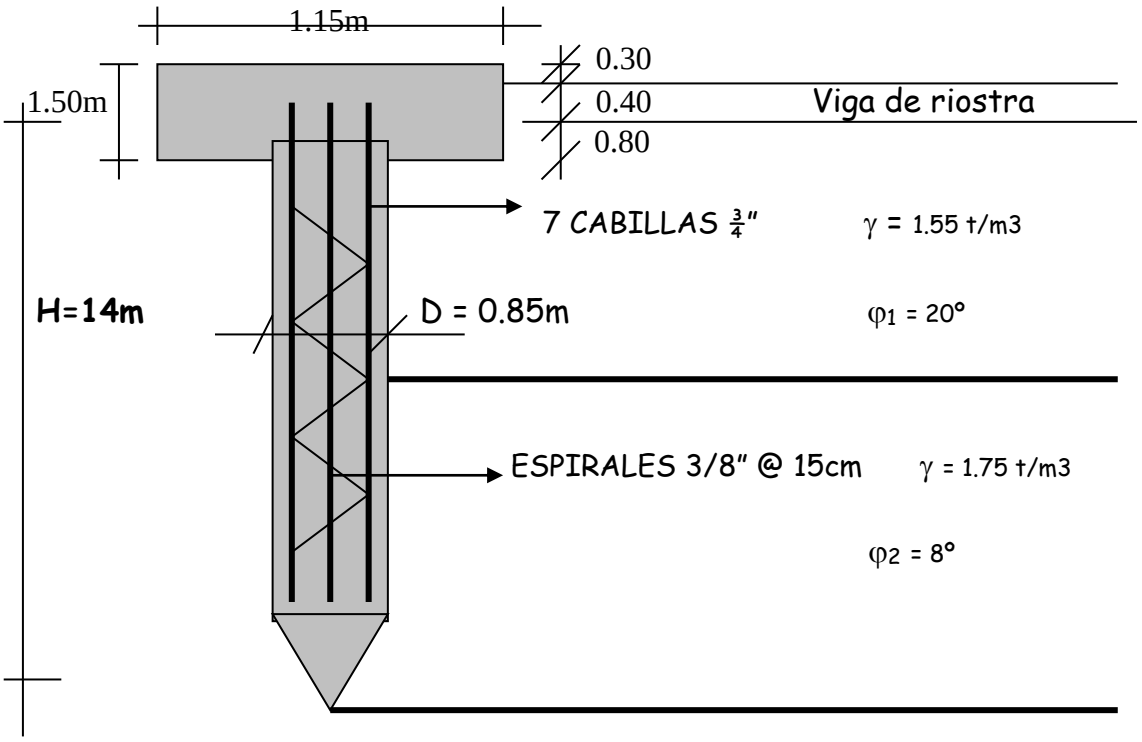


CÁLCULO DE LA CAPACIDAD RESISTENTE DEL PILOTE

ECUACIÓN DE DÖHR

$$Pup = \frac{\pi D^2}{4}\left[\gamma_1 h_1 tg^2(45^o + \varphi_1) + \gamma_2 h_2 tg^2(45^o + \varphi_2)\right]$$

$$Pup = \frac{\pi (0.85)^2}{4}\left[1.55 \times 8.3 \times 2.03 + 1.75 \times 5.7 \times 1.32\right] = 22.3 \text{ ton}$$

$$Puf = \pi \left[D \gamma_1 f \frac{h_1^2}{2}(1 + tg^2 \varphi 1) + D \gamma 2 f \frac{h_2^2}{2}(1 + tg^2 \varphi 2\right]$$

Con f= 0.3

$$Puf = \pi \left[0.85 \times 1.55 \times 0.3 \times \frac{8.3^2}{2}(1 + tg^2 20) + 0.8 \times 1.75 \times 0.3 \times \frac{5.7^2}{2}(1 + tg^2 8)\right]$$

$$Puf = \pi \left[15.42 + 6.96\right] = 70.3 \text{ Ton}$$

$P\,adm = Pu / Fs \Rightarrow \quad Pu = Pup + Puf ; \quad Fs = 2$

$$Padm = \frac{22.3 + 70.3}{} = 46.3 \text{ Ton} \geq 31 \text{ ton}$$

VERIFICACIÓN DE LA ARMADURA DEL PILOTE

As mín= 0.005 Ap; Ap= $\pi r^2 = \pi (0.85 / 2)^2 = 5674{,}5\ cm^2$

As mín= 0.005 x 5674,5 cm^2 = 28.37 cm^2

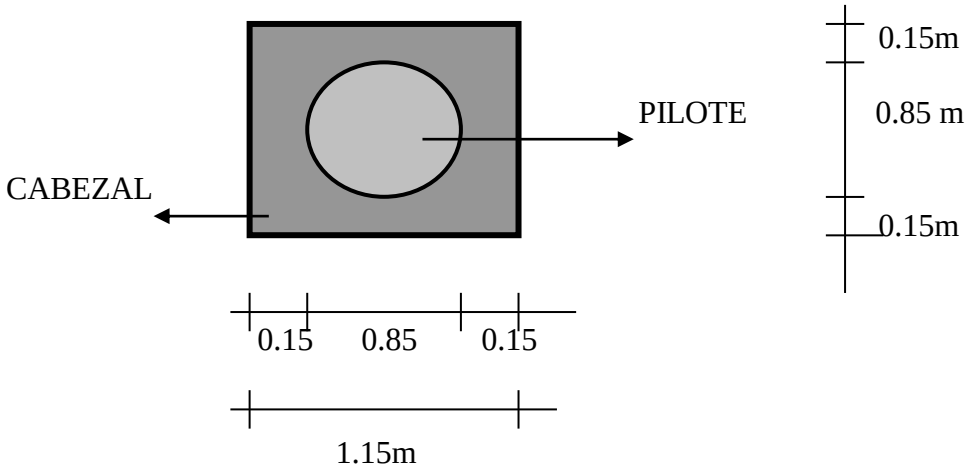
Capacidad resistente del acero existente < Capacidad resistente del acero admisible

$$\frac{\text{P actuante}}{\text{Nº cabillas x Area}} = \text{Capacidad resistente del acero existente}$$

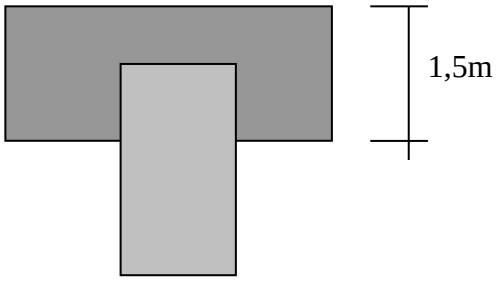
$$\frac{30985\ kgf}{7 \times 2.237\ cm^2} = 1978\ kgf / cm^2 \leq 2100\ kgf/cm^2$$

DISEÑO DEL CABEZAL DEL PILOTE

VISTA CENITAL



VISTA LATERAL



Q= Q pilote + Q cabezal

Q pilote= (πr^2 x h x 2,1) = π x (0.85 / 2) ² x 14 x 2,1 = 16,68 Ton

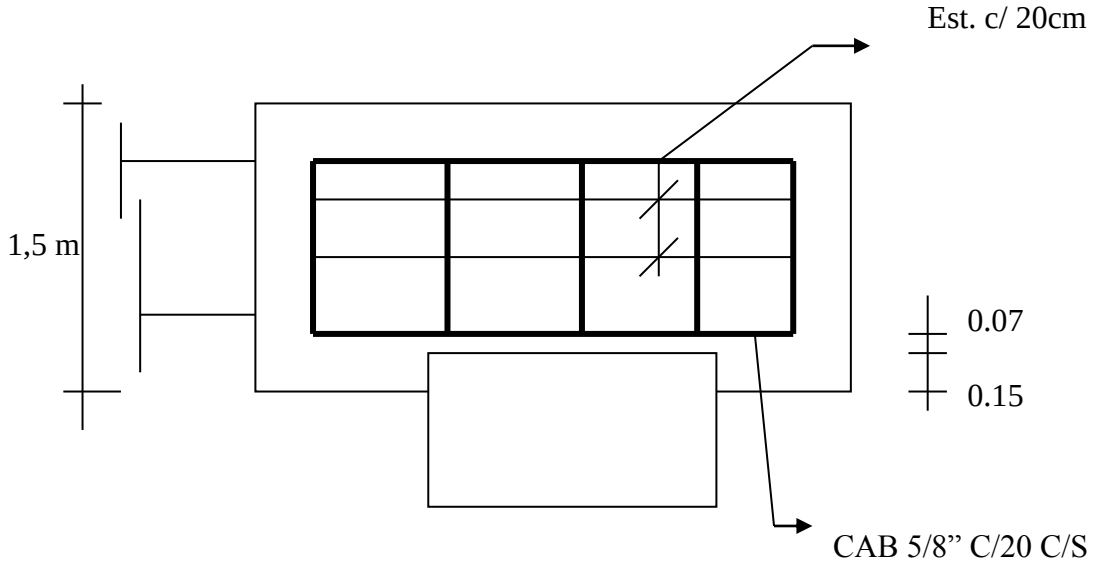
Q cabezal= (L x a x h x 2,1) = 1.15 x 1.15 x 1.5 x 2.1= 4,16 Ton

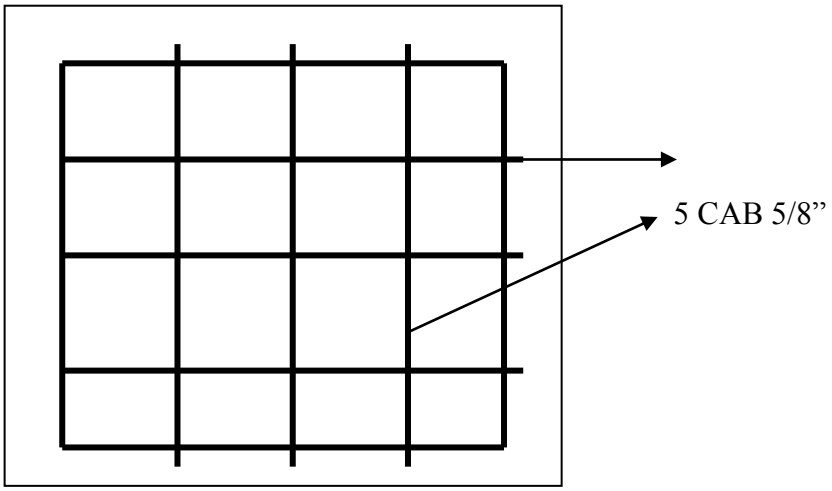
Q= 20,84 Ton

DISEÑO DE LA ARMADURA DEL CABEZAL

Para un pilote de d= 0.85 m

Armadura del cabezal= 5 cab. 5/8" cada sentido; estribos ½" cada 20 cm





CAPACIDAD DE SOPORTE DE CADA PILOTE A TRACCIÓN

Put= Puf + Q

Put= 70,3 Ton + 20,84 Ton = 91.15 ton $\geq$ 31 ton tracción Verifica