MEMORIAS DE CALCULO
ZAPATAS AISLADAS

Datos ZAPATA Z-3 central

Pu=	12.75	Ton
Ps=	8.50	Ton
e=	0.06	m
Capacidad portante del suelo =	15.00	Ton/m^2

1. DIMENSIONAMIENTO DE LA ZAPATA

$$\gamma \min = \frac{Ps}{B*L}\left(1-\frac{6*e}{L}\right) \geq 0$$ 6.10 Ton/m^2

$$\gamma \max = \frac{Ps}{B*L}\left(1+\frac{6*e}{L}\right) \leq \gamma adm$$ 14.88 Ton/m^2

L=	0.9	m
B=	0.9	m

2. DISEÑO A CORTANTE

$$\gamma_U \min = 1.5*\gamma \min$$ 9.16 Ton/m^2

$$\gamma_U \max = 1.5*\gamma \max$$ 22.33 Ton/m^2

$$\gamma v = \gamma_U \min + \frac{\gamma_U \max - \gamma_U \min}{L}*\left(\frac{L}{2}+\frac{h}{2}+d\right)$$ 21.228 Ton/m^2

$$\frac{\gamma_U \max + \gamma v}{2}*\left(\frac{L}{2}-\frac{h}{2}-d\right)*B \leq \phi*0.53*\sqrt{fc}*B*d$$

1.470 **<** **4.181**

Datos

h= **0.30 m**

d= **0.23 m**

2. DISEÑO A PUNZONAMIENTO

$$\gamma P1 = \gamma_u \min + \frac{\gamma_U \max - \gamma_U \min}{L} * (\frac{L}{2} - \frac{h}{2} - \frac{d}{2})$$ 11.900

$$b_o = 2*(h+d)+2*(b+d)$$ 19.582

$$Pu - \frac{\gamma p1 + \gamma P2}{2} * (h+d) * (b+d) \le \phi * 1.1 * \sqrt{fc} * b * d$$ 3.3

$$\gamma P2 = \gamma_u \min + \frac{\gamma_U \max - \gamma_U \min}{L} * (\frac{L}{2} + \frac{h}{2} + \frac{d}{2})$$

3.45 **<** **15.230**

3. DISEÑO A FLEXION

$$\gamma m = \gamma_U \min + \left(\frac{\gamma_U \max - \gamma_U \min}{L}\right) * \left(\frac{L}{2} - \frac{h}{2}\right)$$ 13.55

$$Mu = \frac{\gamma_U \max + \gamma m}{4} * \left(\frac{L}{2} - \frac{h}{2}\right)^2 * B$$ **0.58 Ton*m**

ANÁLISIS DE FLEXIÓN

M = w x Lvol ² / 2 w = σu x L L vol = 90

M= 57.57

b = 90 cm K = M / (b x d²) = 0.00126

d = 23 cm *p* = 0.0005 < 0.0018, As mínimo

⇒ **As = 3.645** cm² (total)

Opciones del refuerzo:	Cant.	Barra No. (esp)	Cant.	Barra No. (esp)
fy = Kg/cm²	1	# 3 (@ 19.48)	1	# 6 (@ 77.91)
	1	# 4 (@ 27.43)	1	# 7 (@ 106.17)
	1	# 5 (@ 54.87)	1	# 8 (@ 139.92)