



SEISMIC DESIGN CATEGORY D

$$\rho_{min} = 0.005 \quad (\text{SECTION 1810.1.2.2})$$

$$A_c = \frac{60^2 \pi}{4} = 2827 \text{ IN}^2$$

$$\rho_{min} = 14.13 \text{ IN}^2$$

$$\text{TRY } 16 \#11s \quad (A_s = 20.32 \text{ IN}^2)$$

TIES :

SECTION 1810.1.2.2 REFERS TO ACI 21.4.4

USE 4" SPACING PER 21.4.4.2

$$\rho_s = 0.12 f'_c / f_y = 0.12 (4000 / 60000) = 0.008$$

$$\rho_s = A_{sL_s} / A_c L_c$$

$$L_s = \pi D = (60 \text{ IN} - 6 \text{ IN}) \pi = 169.65 \text{ IN}$$

$$A_c = \pi \frac{D^2}{4} = \pi (60 \text{ IN} - 6 \text{ IN})^2 / 4 = 2290 \text{ IN}^2$$

$$L_c = \text{TIE SPACING} = 4 \text{ IN}$$

$$0.008 = \frac{169.65 A_s}{(2290)(4)}$$

$A_s = 0.43 \text{ IN}^2$ \therefore USE #6 TIES @ 4" O.C.
FOR 3x PILE DIAMETER (15'-0")

THEN 6" SPACING TO 20'-0"

THEN 12" SPACING FOR REMAINDER