

Pool Deck

$$\gamma_c = \text{Concrete } 150 \#/\text{ft}^3$$

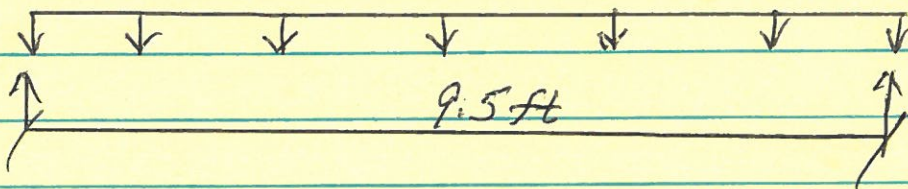
$$f'_c = 3,000 \text{ psi}$$

$$f_y = 60,000 \text{ psi}$$

Estimate Dead Load on Concrete to
Grade Beam

$$\text{Deck thickness} = 5" \text{ (Dead Load)}$$
$$150 \#/\text{ft}^3 \times 5"/12 \times 12"/12 = 62.5 \text{ plf}$$

$$\text{Live Load} = 60 \#/\text{ft}^2 \times 12"/12 = 60 \text{ plf}$$
$$\text{LRFD} = 1.2D + 1.6L = (1.2 \times 62.5) + (1.6 \times 60) = 170 \text{ plf}$$



$$M_u = \frac{W_u L^2}{8} = \frac{170 \times 9.5^2}{8} = 6929 \text{ ft-}\# \text{ or } 23,149 \text{ in-}\#$$

$$A_s \text{ Required} = \frac{M_u}{\phi_j f_y d} = \frac{23,149}{(0.9)(0.9)(60,000)(5'-2)}$$
$$= 0.1588 \text{ in}^2$$

$$A_s \text{ min} = \frac{3\sqrt{f'_c} b_w d}{f_y} = \frac{3\sqrt{3000} \times 12 \times 5}{60,000} = 0.164 \text{ in}^2 \checkmark$$

2 ea #3 = 0.22 in²