

Slab-On-Grade Design

Considering 4" thick, 3000 psi slab on grade with 6x6 w.2.1. For interior use.

Input Data

$$t = 5 \text{ in}$$

Slab thickness

$$L = 15 \text{ ft}$$

Max joint spacing

$$f'_c = 3000 \text{ psi}$$

Concrete strength

$$\omega_c = 150 \text{ pcf}$$

Concrete density

$$f_y = 60000 \text{ psi}$$

Steel strength

$$f_s = (2/3)f_y = 40000 \text{ psi}$$

Working stress

$$D_L = 20 \text{ psf}$$

Dead load

$$L_L = 100 \text{ psf}$$

Live load

$$b = 12 \text{ in}$$

Design width

Acting Load

$$w = \omega_c \cdot t + D_L + L_L = 182.5 \text{ psf}$$

Design lineal load

Required Steel Reinforcement

$$F = 1.5$$

Subgrade friction factor

$$A_{s, \text{req}} = \frac{FLw}{2f_s} = 0.0513 \text{ in}^2/\text{ft}$$

Required steel reinf area using subgrade drag equation

Provided Steel Reinforcement

$$A_s = 0.058 \text{ in}^2/\text{ft}$$

Provided steel reinf. area
WWF 6"x6" 2.9x2.9

Provided steel reinforcement

OK

$$A_{s, \text{req}}: 0.05 \text{ in}^2/\text{ft} \quad A_s: 0.06 \text{ in}^2/\text{ft}$$

D/C: 0.88