

Slab-On-Grade Design

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

Input data:

$t := 5 \text{ in}$ $L := 15 \text{ ft}$ Slab thickness and max joint spacing.
 $f'_c := 3000 \text{ psi}$ $\omega_c := 150 \text{ pcft}$ Concrete strength and density
 $f_y := 60000 \text{ psi}$ $f_s := \frac{2}{3} f_y = 40000 \text{ psi}$ Steel strength and working stress
 $DL := 20 \text{ psf}$ $LL := 100 \text{ psf}$ Dead and live load for slab use
 $b := 12 \text{ in}$ Design width

Acting load

$w := \omega_c \cdot t + DL + LL = 182.5 \text{ psf}$ Design lineal load

Required steel reinforcement

$F := 1.5$ $A_{s_req} := \frac{F \cdot L \cdot w}{2 \cdot f_s} = 0.0513 \frac{\text{in}^2}{\text{ft}}$ Subgrade friction factor and required steel reinf area using subgrade drag equation

Providing WWF 6"x6" 2.9x2.9

$A_s := 0.058 \frac{\text{in}^2}{\text{ft}}$ Provided steel reinf. area

if ($A_s > A_{s_req}$, "OK", "NOT OK") = "OK"

STYLE DESIGNATION		STEEL AREA Sq. In. per ft.		WEIGHT Approx Lbs. Per 100 sq.ft.
Current Designation (By W - Number)	Previous Designation (By Steel Wire Gage)	Longit.	Trans.	
PANELS/SHEETS				
6 x 6 - W1.4 / W1.4	6 x 6 - 10 / 10	.028	.028	21
6 x 6 - W2.1 / W2.1	6 x 6 - 8 / 8	.040	.040	29
6 x 6 - W2.9 / W2.9	6 x 6 - 6 / 6	.058	.058	42
6 x 6 - W4.0 / W4.0	6 x 6 - 4 / 4	.080	.080	58
4 x 4 - W2.9 / W2.9	4 x 4 - 6 / 6	.087	.087	62
4 x 4 - W4.0 / W4.0	4 x 4 - 4 / 4	.120	.120	86
ROLLS				
6 x 6 - W1.4 / W1.4	6 x 6 - 10 / 10	.028	.028	21
6 x 6 - W2.9 / W2.9	6 x 6 - 6 / 6	.058	.058	42
6 x 6 - W2.1 / W2.1	6 x 6 - 8 / 8	.040	.040	29