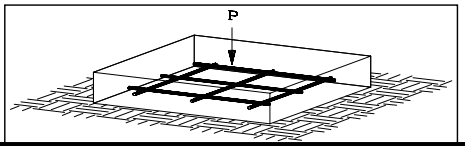
# *Square Footing Calculator*

www.constructioncalc.com

**Assumptions:** *1. Load is applied to the center of footing. 2. No uplift or moment (bending) loads are applied. 3. Soil over the footing is the only surcharge load applied. 4. Design based on 1999 ACI Code. 5. All rebar is properly spaced and not epoxy-coated*

**Disclaimer:** *All users of this software shall comply with State Engineering Law; which specifies who may perform engineering, and defines the practice of engineering.*

| | |
|---|---|
| **Job Name** | Example Hot Tub Deck |
| **Footing I.D.** | Typical square footing |
| **Other Info** | By TKG, 5/17/2005 |



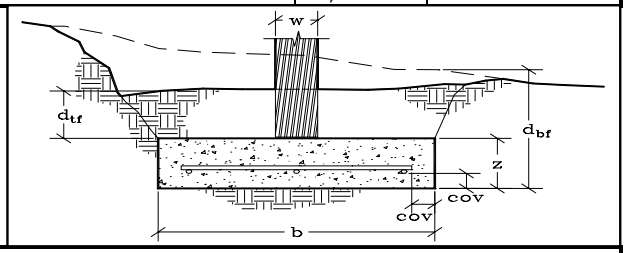

## Applied Footing Loads

| | Live, psf | Dead, psf | Tributary Length, ft | Tributary Width, ft. | Live Load, lbs | Reduced Live Load, lbs. | Dead Load, lbs |
|---|---|---|---|---|---|---|---|
| Roof Loads (without snow) | | | | | 0 lb | 0 lb | 0 lb |
| Roof Snow (only) | | | - | - | 0 lb | 0 lb | |
| Floor 3 Loads | | | | | 0 lb | 0 lb | 0 lb |
| Floor 2 Loads | | | | | 0 lb | 0 lb | 0 lb |
| Floor Loads | | | | | 0 lb | 0 lb | 0 lb |
| Wall Dead Load | | | | | | | 0 lb |
| Other 'psf' load and trib. area. | | | | | 0 lb | 0 lb | 0 lb |
| Other point load: all Live, all Dead, or some of each, lbs. | Descrip'n, opt'l: | | From beam Reactions + 20lb | | 2,000 lb | | 260 lb |
| | | | | Total service load: | Pserv= | 2,260 lb | |

## Soil and Footing Input

| | | |
|---|---|---|
| Soil Bearing Capacity | $q_s$= | 1,500 psf |
| Permit Soil Bearing Capacity Increase For Size and Depth? | ○ Yes ◉ No | |
| Depth to bottom of footing, ft. | $D_{bf}$= | 2.00 ft |
| of soil over top of footing, ft. | $D_{tf}$= | 0.00 ft |
| Square Footing Width, ft. | b = | 1.50 ft |
| Footing Depth, inches | z = | 8.00 in |
| Post or Bearing Plate Narrowest Dimension, inches | w = | 3.50 in |

Design Now




## Concrete and Rebar Input

| | | |
|---|---|---|
| Concrete Strength, psi | $f'_c$ = | 2,500 psi |
| Steel Yield Strength, psi | $F_y$ = | 40,000 psi |
| Rebar Cover, inches | cov = | 3.00 in |
| Rebar Size | | #4 |
| No. of Bars (Each Direction) | n = | 3 |

## RESULTS

| | |
|---|---|
| Footing size based on allowable soil pressure: | **Footing Size Okay, 36% oversized for soil bearing** |
| Temp. & Shrinkage Rebar: | **Ok** |
| Rebar check for bending: | **Ok 1662% extra flexural rebar provided** |
| One-Way Shear Check: | **Footing Thickness Ok** |
| Punching Shear: | **Footing Thickness Ok** |
| Rebar Development Length: | **Ok** |

**Satisfactory Design**

## FINAL DESIGN

**Use 1.5 ft. x 1.5 ft. x 8 in. footing, with 2500 psi min. concrete strength, 3 in. min. concrete cover, and (3) #4 GR 40 rebar each way.**

### Miscellaneous Report Detail

Maximum applied soil pressure: 1,104 psf
Allowable soil pressure used for design: 1,500 psf
Weight of footing only: 225 lb
Weight of footing plus surcharge: 225 lb
Ultimate applied moment in footing: 458 ft-lb
Allowable moment in footing (phi*Mn): 7,535 ft-lb
Ultimate applied one-way shear in footing: 575 lb
Allowable one-way shear (phi*Vn): 6,885 lb