

Strength Analysis of Reinforced Concrete

Concrete Compressive Strength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	10
# Longitudinal Rebar (1 Side):	3
Rebar Size:	5
Strength Reduction Factor for Shear (ϕ_v):	0.75
Strength Reduction Factor for Flexure (ϕ_b):	0.9
Compression Zone Factor (β_1):	0.85
Area of Single Rebar:	0.31 in ²
One Way Shear due to Shear Load (V_u):	0.9 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	414.1 k
$V_u/\phi_v V_n$:	0.00 Result: OK
One Way Shear due to Uplift (V_u):	37.9 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	378.6 k
$V_u/\phi_v V_n$:	0.10 Result: OK
Pad Flexure due to Shear Load (M_u):	96.4 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	585.9 k-ft
Pad Flexure due to Uplift (M_u):	146.2 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	446.3 k-ft
$M_u/\phi_b M_n$ (Max.):	0.33 Result: OK