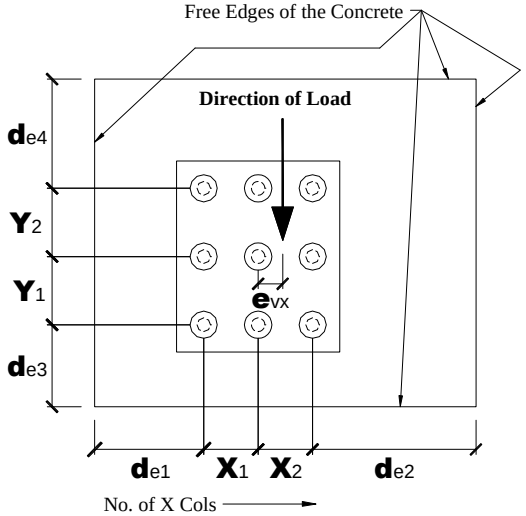
---------- DESIGN DATA ----------

Design : ACI 318-11 Appendix D
Criteria
H.A.S. : Type = Custom
Properties d_s = 0.750 in d_h = 1.250 in
l_e = 12.125 in A_s = 0.442 in^2
f_y = 51.0 ksi f_u = 65.0 ksi
Anchor material is ductile (§ D.4.3(a))
Plate Thk = 2.000 in
No. of Studs : X-cols = 2 Y-rows = 3
Total = 6
Edge dist. : d_{e1} =100.000 in d_{e3} =100.000 in
Stud Spac'g X_1 = 8.000 in Y_1 = 8.000 in
Y_2 = 8.000 in
d_{e2} =100.000 in d_{e4} =100.000 in
Y-rows included in tension group = 2
Load e_{nx} = 0.00 in e_{ny} = 0.00 in
Eccentr'y e_{vx} = 0.00 in
Concrete Member Thickness = 24.00 in
Material : f'$_c$ = 6.00 ksi λ = 1.00
Properties Concrete = Normal Wt.
ϕ factors : Tension: ϕ_s = 0.75 ϕ_c = 0.70
Shear : ϕ_s = 0.65 ϕ_c = 0.70
Pullout / Pryout : ϕ_p = 0.70
Seismic application (§ D.3.3); factor applied only in Section C.
Tension/Shear Modifiers : Cracking at service load level (§ D.5.3.6)
with #4 edge reinforcement provided
NO Supplementary Reinf. for Tension or Shear Loads (§ D.4.3(c))



---------- OUTPUT ----------

A) Tension capacity for group of 4 studs; ϕ_s = 0.75; ϕ_c = 0.70

Steel Stud Strength : ϕN_{sa} = 0.75 * 114.86 = 86.1 k (Eq D-2)
Concrete Breakout Strength (1) : ϕN_{cbg} = 0.70 * 142.84 = 100.0 k (Eq D-4)
Concrete Pullout Strength (2) : ϕN_{png} = 0.70 * 150.80 = 105.6 k (Eq D-13*)
Concrete Side Face Blowout (3) : ϕN_{sb} (Not Calculated)
NOTE: Seismic factor is applied only in Section C.

Group tensile strength based on:
(1) Basic breakout strength N_b = 100.8 k (Eq D-7)
Srf. Area: A_{Nc} = 2500.00 in^2 (§ D.5.2.1) A_{Nco} = 1764.00 in^2 (Eq D-5)
Modifiers : $\psi_{ec,N}$ = 1.000 (Eq D-8) $\psi_{ed,N}$ = 1.000 (D-9)
$\psi_{c,N}$ = 1.000 (§ D.5.2.6)
(2) Pullout for single stud N_{pn} = 37.7 k (Eq D-13)
Basic: N_p = 37.7 k (Eq D-14) $\psi_{c,P}$ = 1.000 (§ D.5.3.6)
(*) No equation is given for pullout of a group. We report n_g*N_{pn} where n_g is the number of studs in the group. This is the maximum pullout for the group. Actual value will be lower if loading is uneven.
(3) All edge distances > 0.4 * h_{ef} (§ D.5.4.1)

B) Shear capacity for group of 6 studs; ϕ_s = 0.65; ϕ_c = 0.70

Steel Stud Strength : ϕV_{sa} = 0.65 * 172.30 = 112.0 k (Eq D-28)
Concrete Front Edge Breakout(1) : ϕV_{cbg} (Not Calculated)
Concrete Side Edge Breakout (2) : ϕV_{cbg} (Not Calculated)
Concrete Pryout Strength (3) : ϕV_{cpg} = 0.70 * 331.39 = 232.0 k (Eq D-41)
NOTE: Seismic factor is applied only in Section C.

Group shear strength based on:
(1) Based on geometric or other installation information the user has opted to disregard front edge breakout calculations.

(2) Both side edges > 1.5*C_{a1} (§ RD.6.2.1)
(3) Srf. Area: A_{Nc} = 2900.00 in^2 (§ D.5.2.1) k_{cp} = 2.000 (§ D.6.3.1)

C) Tension and shear for stud groups

Tension : $0.75\phi N_n$ = 64.6 k, group of 4
Shear : $0.75\phi V_n$ = 84.0 k, group of 6