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Structural Analysis & Design

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List of Abbreviations:

A_c = area of concrete section resisting shear transfer.

- A_s = area of non-prestressed tension reinforcement.
- A_s = area of non-prestressed compression reinforcement.
- A_g = gross area of section.
- A_v = area of shear reinforcement within a distance (S).
- A_t = area of one leg of a closed stirrup resisting tension within a (S).
- b = width of compression face of member.
- b_w = web width, or diameter of circular section.
- C_c = compression resultant of concrete section.
- C_s = compression resultant of compression steel.
- DL = dead loads.
- d = distance from extreme compression fiber to centroid of tension reinforcement.
- E_c = modulus of elasticity of concrete.
- f_c' = compression strength of concrete.
- f_y = specified yield strength of non-prestressed reinforcement.
- h = overall thickness of member.
- L_n = length of clear span in long direction of two- way construction, measured face-to-face of supports in slabs without beams and face to face of beam or other supports in other cases.
- L = length of clear span in long direction of two- way construction, measured center-to-center of supports in slabs without beams and center

to center of beam or other supports in other cases.

- LL = live loads.
- Lw = length of wall.
- M = bending moment.
- M_u = factored moment at section.
- M_n = nominal moment.
- Pn = nominal axial load.
- Pu = factored axial load
- S = Spacing of shear or in direction parallel to longitudinal reinforcement.
- Vc = nominal shear strength provided by concrete.
- Vn = nominal shear stress.
- Vs = nominal shear strength provided by shear reinforcement.
- V_u = factored shear force at section.
- Wc = weight of concrete. (Kg/m³).
- W = width of beam or rib.
- Wu = factored load per unit area.
- ϕ = strength reduction factor.
- ϵ_c = compression strain of concrete = 0.003mm/mm.
- ϵ_s = strain of tension steel.
- ϵ'_s = strain of compression steel.
- ρ = ratio of steel area .