APPENDIX D

NOTATION

Chapter 9

Symbol	Term
a	Depth of equivalent rectangular stress block
A_g	Gross area of section, sq. in.
A_s	Area of tension reinforcement, sq. in.
A'_s	Area of compression reinforcement, sq. in.
b	Width of compression face of member, in.
c	Distance from extreme compression fiber to neutral axis, in.
d	Distance from extreme compression fiber to centroid of tension reinforcement, in.
d'	Distance from extreme compression fiber to centroid of compression reinforcement, in.
D	Dead load of the concrete members only or related internal forces and moments
e'	Eccentricity of axial load measured from the centroid of the tension reinforcement = d - h/2
E_s	Modulus of elasticity of reinforcement, psi
f'_c	Specified compressive strength of concrete, psi
f_s	Calculated stress at centroid of tension reinforcement when compression controls
f'_s	Calculated stress at centroid of compression reinforcement
f_y	Specified yield strength of reinforcement, psi
h	Total depth of section, in.
k_m	Ratio of stress block depth (a) to the effective depth (d), at balanced strain conditions for hydraulic structures
k_u	Ratio of stress block depth (a) to the effective depth (d)

Symbol	Term
L	Live loads or related internal moments and forces
M_u	Internal moment due to factored axial load, P_u
P_b	Axial load at given eccentricity at the balanced strain condition
P_n	Nominal axial load strength at given eccentricity
P_u	Factored axial load at given eccentricity
U	Required strength to resist factored loads or related internal moments and forces
V_c	Shear strength
W	Wind load or related internal moments and forces
β_m	A coefficient which accounts for the difference between the dis tribution of actual compression stresses and the assumed rectangu- lar distribution of stresses
β_1	Defined the same as β_m but the value is in accordance with ACI 318
ε_c	Maximum usable strain at extreme concrete compression fiber = 0.003
ε_m	Design strain at the extreme concrete compression fiber = 0.5 ε_c
ε_y	Strain at the centroid of the tension reinforcements $\leq f_y/E_s$
ϕ	Strength reduction factor
ρ	Ratio of tension reinforcement, A_s/bd
ρ_b	Reinforcement ratio producing balanced strain conditions
ρ_m	Reinforcement ratio corresponding to balanced strain conditions for hydraulic structures
λ	Maximum percentage of ρ_b allowed for hydraulic structures