CODE

where d_p need not be taken less than $0.80h$, and V_p is the vertical component of the effective prestress.

22.5.6.3.3 As an alternative to 22.5.6.3.2, it shall be permitted to calculate V_{cw} as the shear force corresponding to dead load plus live load that results in a principal tensile stress of $0.33\lambda\sqrt{f'_c}$ at location (a) or (b):

(a) Where the centroidal axis of the prestressed cross section is in the web, the principal tensile stress shall be calculated at the centroidal axis.
(b) Where the centroidal axis of the prestressed cross section is in the flange, the principal tensile stress shall be calculated at the intersection of the flange and the web.

22.5.6.3.4 In composite members, the principal tensile stress shall be calculated at the location specified in 22.5.6.3.3 for the composite section, considering superposition of stresses calculated cross sections that resist the corresponding loads.

COMMENTARY

R22.5.6.3.4 Generally, in unshored construction the principal tensile stresses due to dead load are caused before composite action and principal tensile stresses due to live load are caused after composite action is developed in a member. In shored construction the principal tensile stresses due to both the dead load and live load are caused after composite action is developed.

22.5.7 V_c *for pretensioned members in regions of reduced prestress force*

22.5.7.1 When calculating V_c, the transfer length of prestressed reinforcement, ℓ_{tr}, shall be assumed to be $50d_b$ for strand and $100d_b$ for wire.

22.5.7.2 If bonding of strands extends to the end of the member, the effective prestress force shall be assumed to vary linearly from zero at the end of the prestressed reinforcement to a maximum at a distance ℓ_{tr} from the end of the prestressed reinforcement.

22.5.7.3 At locations corresponding to a reduced effective prestress force in 22.5.7.2, V_c shall be calculated in accordance with (a) through (c):

(a) The reduced effective prestress force shall be used to determine the applicability of 22.5.6.2.
(b) The reduced effective prestress force shall be used to calculate V_{cw} in 22.5.6.3.
(c) The value of V_c calculated using 22.5.6.2 shall not exceed the value of V_{cw} calculated using the reduced effective prestress force.

22.5.7.4 If bonding of strands does not extend to the end of the member, the effective prestress force shall be assumed to vary linearly from zero at the point where bonding commences to a maximum at a distance ℓ_{tr} from that point.

R22.5.7 V_c *for pretensioned members in regions of reduced prestress force*

The effect of the reduced prestress near the ends of pretensioned beams on the shear strength should be taken into account. Provisions 22.5.7.2 and 22.5.7.3 relate to the reduced shear strength at sections within the transfer length of prestressed reinforcement when bonding of prestressed reinforcement extends to the end of the member. Provisions 22.5.7.4 and 22.5.7.5 relate to the reduced shear strength at sections within the length over which some of the prestressed reinforcement is not bonded to the concrete, or within the transfer length of the prestressed reinforcement for which bonding does not extend to the end of the beam.