LRFD Moment and Deflection Check
(Cracked Section Properties)

LRFD 3RD EDITION, 2004

FOR MAIN BARS TRANSVERSE TO TRAFFIC

For L <= 120 IN

$$M_{transverse} = C\ 1.28\ D^{0.197}\ L^{0.459} \qquad \text{LRFD 4.6.2.1.8-1}$$

For L > 120 IN

$$M_{transverse} = C\frac{D^{0.188}(3.7\ L^{1.35} - 956.3)}{L} \qquad \text{LRFD 4.6.2.1.8-2}$$

FOR MAIN BARS PARALLEL TO TRAFFIC

For L <= 120 IN

$$M_{Parallel} = C\ 0.73\ D^{0.123}\ L^{0.64} \qquad \text{LRFD 4.6.2.1.8-3}$$

For L > 120 IN

$$M_{Parallel} = C\frac{D^{0.138}(3.1\ L^{1.429} - 1088.5)}{L} \qquad \text{LRFD 4.6.2.1.8-4}$$

where :

L = span length (IN) from center-to-center of supports

C = continuity factor; 1.0 for simply supported and 0.8 for continuous spans

D = DxDy

DX = flexural rigidity of deck in main bar direction (KIP-IN2/IN)

Dy = flexural rigidity of deck perpendicular to main bar direction (KIP-IN2/IN)

For grid decks, D_x and D_y should be calculated as EI_x and EI_y where E is the modulus of elasticity and I_x and I_y are the moment of inertia per unit width of deck, considering the section as cracked and using the transformed area method for the main bar direction and transverse to main bar direction respectively.

Moments for fatigue assessment may be estimated for all span lengths by reducing Eq. 4.6.2.1.8-1 for main bars transverse to traffic or Eq. 4.6.2.1.8-3 for main bars parallel to traffic by a factor of 3.