

Appendix VI

Period of Vibration and Equivalent Earthquake Loads with the Uniform Load Method of the Prestressed Girder Bridge

$$K = \frac{p_0 L}{v_{s,MAX}} = \frac{(100 N/mm)(75800 mm)}{2.471 mm} = 3.07 \times 10^6 N/mm$$

$$W = (234.87 N/mm)(75800 mm) + 3.86 \times 10^6 N = 2.17 \times 10^7 N$$

$$T = 2\pi \sqrt{\frac{W}{gK}} = 2\pi \sqrt{\frac{2.17 \times 10^7 N}{(9810 mm/s^2)(3.07 \times 10^6 N/mm)}} = 0.169 \text{ sec.}$$

$$p_e = \frac{S_a W}{L} = \frac{(0.287)(2.17 \times 10^7 N)}{75,800 mm} = 82.0 N/mm$$