

Appendix I

Material Properties of the Prestressed Concrete Girder Bridge

Steel

$$E = 200,000 \text{ MPa}$$

$$G = 75,000 \text{ MPa}$$

$$\nu = 0.32$$

$$\rho = 7850 \text{ kg/m}^3$$

Prestressed Concrete (in prestressed girders)

$$f_c' = 55 \text{ MPa}$$

$$E = 34,900 \text{ MPa}$$

$$\nu = 0.15$$

$$G = \frac{E}{2(1+\nu)} = 15,200 \text{ MPa}$$

$$\rho = 150 \text{ lb/ft}^3 = 2402 \text{ kg/m}^3$$

Normal Concrete

$$f_c' = 25 \text{ MPa}$$

$$E = 23,500 \text{ MPa}$$

$$\nu = 0.15$$

$$G = \frac{E}{2(1+\nu)} = 10,200 \text{ MPa}$$

$$\rho = 150 \text{ lb/ft}^3 = 2402 \text{ kg/m}^3$$

Rigid Link

$$E = 200,000 \text{ MPa}$$

$$G = 75,000 \text{ MPa}$$

$$\nu = 0.32$$

$$\rho = 0$$