

**A GEOMETRIC DIMENSION AND ASSUMPTION**

a1 Sag differential	h =	0.37 m
a2 Length of bridge	L =	7.3 m
a3 Width of suspension ropes	b =	0.825 m

**B DESIGN ASSUMPTIONS**

- b1 The design loads are based on the actual weight of the superimposed dead load plus the live load based on code provision ASSHTO 1997 & ASCE-95
- b2 The wind load is conforming to ASSHTO Article 3.15 [1997]
- b3 The design calculation considers a suspended rope for structural analysis by a static equilibrium and catenary equation for parabolic rope tension and length

**C DESIGN LOAD CRITERIA****C1 Loading Design Criteria:**

c1.1 Dead Load [weight of material elements in kgs]	
c1.1a Horizontal Ropes	3.4 kg
c1.1b Vertical Ropes	1.4 kg
c1.1c Timber 'slats'	210 kg
c1.1d Safety Netting	5.6 kg
c1.1e Turnbuckle	78.4 kg
Dead Load [total]	298.8 kg
Dead Load/m2	0.33 kN/m2
c1.2 Live Load	3.11 kN/m2
c1.3 Wind Load	1.676 kN/m2

**C2 Design Load Combinations:**

c2.1 Dead Load + Live Load	3.44 kN/m2
c2.2 Dead Load + Wind Load / 1.25	1.61 kN/m2
c2.3 Dead Load + Live Load + 0.3 Wind Load /1.25	3.84 kN/m2
c2.4 Adopted Design Load Combination	3.84 kN/m2

**C3 Design Load Calculation:**

Calculation for Single Structural Rope System, Uniformly Distributed Design Load [Material Analysis]

c3.1 Uniformly Distributed Design Load	6.01 kN/m	0.6 tonnes
c3.2 Single structural rope system Uniformly Distributed Design Load	1.50 kN/m	
c3.3 Use Single Structural Rope System	1502 N/m	

**D DESIGN LOAD FREE BODY DIAGRAM, CALCULATION AND ANALYSIS****D1 Design Load - Single Structural Rope System Uniformly Distributed Design Load**

1502 N/m

**D2 Design Load Maximum Forces Calculation**

7 Rope Supports

d2.1 Vertical Forces	5481.405 N	0.56 tonnes
d2.2 Horizontal Forces	13857.75 N	1.41 tonnes
d2.3 Tension Cable Forces	14902.45 N	1.52 tonnes
d2.4 Use for comparison of material loading capacity	14902.45 N	
	1519.108 kg	[expressed as kg]
	1.52 T	[expressed as tonnes]
5:1 safety ratio	7.60 tonnes	