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Stability of the cable system; 3.2 Suspension System; 3.2.1 Dead load geometry; 3.2.2 Preliminary cable dimensions; 3.2.3 Quantity of cable steel; 3.2.4 Quantity in the pylon; 3.2.5 Total cost of cable system and pylon; 3.2.6 Optimum pylon height; 3.2.7 Size effect; 3.2.8 Structural systems; 3.3 Fan System; 3.3.1 Anchor cable; 3.3.2 Preliminary cable dimensions; 3.3.3 Quantity of cable steel; 3.3.4 Quantity in the pylon; 3.3.5 Simplified expressions; 3.3.6 Total cost of cable systems and pylons
3.3.7 Comparison between suspension and fan system; 3.3.8 Inclined pylons; 3.3.9 Deformational characteristics; 3.3.10 Structural systems; 3.3.11 Reduction of sag variations; 3.4 Harp System; 3.4.1 Dead load geometry; 3.4.2 Intermediate supports; 3.4.3 Preliminary cable dimensions; 3.4.4 Quantity of cable steel; 3.4.5 Quantity of the pylon; 3.4.6 Simplified expressions; 3.4.7 Total cost; 3.4.8 Structural systems; 3.5 Hybrid Suspension and Cable Stayed System; 3.6 Multi-Span Cable System; 3.6.1 True multi-span cable supported bridges; 3.6.2 Non-traditional multi-span suspension bridges
3.6.3 Fixing of column-type pylons to piers; 3.6.4 Triangular pylon structures; 3.6.5 Horizontal tie cable between pylon tops; 3.6.6 Comparison between deflections of different multi-span cable stayed systems; 3.7 Cable Systems under Lateral Loading; 3.8 Spatial Cable Systems; 3.9 Oscillation of Cable Systems; 3.9.1 Global oscillations; 4 Deck (Stiffening Girder); 4.1 Action of the Deck; 4.1.1 Axial stiffness; 4.1.2 Flexural stiffness in the vertical direction; 4.1.3 Flexural stiffness in the transverse direction; 4.1.4 Torsional stiffness; 4.2 Supporting Conditions; 4.3 Distribution of Dead Load Moments

Sommario/riassunto

Fourteen years on from its last edition, Cable Supported Bridges: Concept and Design, Third Edition, has been significantly updated with new material and brand new imagery throughout. Since the appearance of the second edition, the focus on the dynamic response of cable supported bridges has increased, and this development is recognised with two new chapters, covering bridge aerodynamics and other dynamic topics such as pedestrian-induced vibrations and bridge monitoring. This book concentrates on the synthesis of cable supported bridges, suspension as well as cable stayed, covering both design and construction aspects. The emphasis is on the conceptual design phase where the main features of the bridge will be determined. Based on comparative analyses with relatively simple mathematical expressions, the different structural forms are quantified and preliminary optimization demonstrated. This provides a first estimate on dimensions of the main load carrying elements to give in an initial input for mathematical computer models used in the detailed design phase.