The Stonecutter's Bridge, Hong Kong SAR, PRC

Wind Engineering Study

Client	Engineer	Year Tested
The Highways Department of Hong Kong, SAR, PRC	Mott Connell Ltd.	2004
Length of Superstructure	**Main Span Length**	**Deck Width**
1596 metres	1018 metres	53.0 metres

The Project

The Stonecutters Bridge is an approximately 1600m long bridge carrying the Route 9 dual 3-lane highway over Rambler Channel at the entrance to the Kwai Chung container port in Hong Kong. The bridge is comprised of a twin deck cable stayed bridge with a main span of 1018m. These twin steel decks pass either side of the pylons and continue to the transition with the concrete side span 49.75m into the first of the side spans. The twin decks are connected at intervals by transverse steel box girders. The two single leg pylons are 290m tall with a lower section in concrete and the upper section formed in composite steel/concrete. The bridge also includes 4-span twin deck concrete side spans of 79.75m, 70m, 70m and 69.25m on each side of Rambler Channel.

The Wind Tunnel Studies

Independent Taut Strip Model Wind Tunnel Tests were conducted for the Stonecutters Bridge in Hong Kong. A companion study was also performed to provide estimates of Aerodynamic Derivatives. One of the primary objectives of the study was to provide information to confirm the general findings of the section model testing. Taut strip modelling was designed to complement section model testing and overcome a number of limitations in that method. The primary advantage of the taut strip model is the simulation of the dynamic properties of the prototype through the sinusoidal mode shapes (close to those of the actual bridge). The taut strip modelling technique also properly accounts for the span-wise correlation effects of three dimensional turbulent wind.

The Boundary Layer Wind Tunnel Laboratory

Western

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