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 Section 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. The aim of the study was:

a) to provide: basic aerodynamic information to confirm the deck section design;
b) investigate the overall stability of the deck section in high wind conditions;
c) investigate the behaviour with respect to vortex shedding induced oscillations of the deck section in smooth wind;
d) define the behaviour of the deck due to buffeting in turbulent wind;
e) investigate the behaviour of the section with different traffic convoys present on the deck in both smooth and turbulent flows;
f) investigate the response while under construction and after completion; and
g) determine the static force coefficients in both smooth and turbulent flows.

The Boundary Layer Wind Tunnel Laboratory

Western

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FSBR/ 19 / March 2007 / PK
Last Printed: April 30, 2009