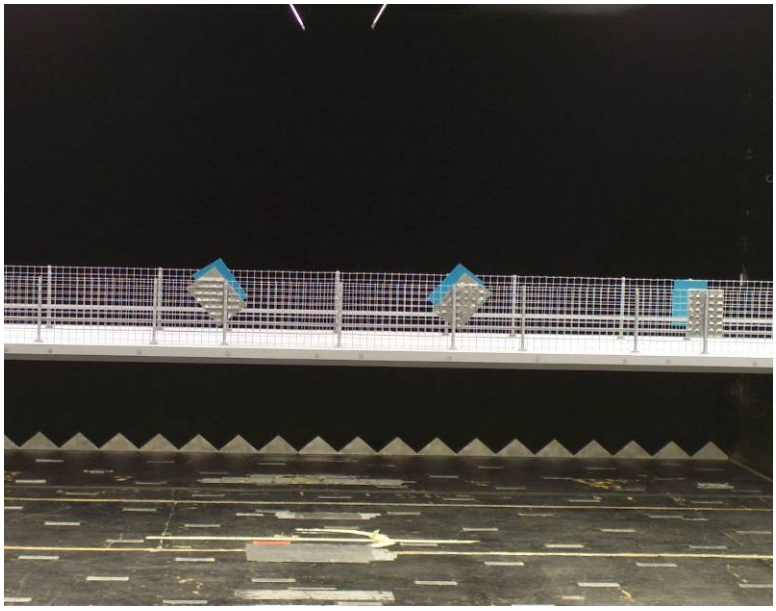
Mary Avenue Overcrossing, Cupertino, CA

Wind Engineering Study



Client Biggs Cardosa Associates Inc. California	*Span* Approximately 475 ft	*Height above Ground* 30 ft
Deck Width 18.04 ft	*Year Tested* 2005	*Model Scale* Section Model: 1:20

The Project

The Mary Avenue Bridge consists of a 325ft long main span and two 75ft long side spans and supported by 40 stay cables on two triangular shaped pylons. The bridge deck section has 9ft high railing/fences at each side of the deck for protection of the users of the bridge. The main part of the fence is composed of woven wire mesh having a solidity of 30%. A proposal to include panels of art on the fencing forms an important component of the wind load investigation due to the increase in solid area of the fence material.

The proposed bridge is located in the City of Cupertino, California, in purpose of conducting pedestrian traffic across Hwy 280.

The Wind Tunnel Studies

The aim of the wind engineering study for the bridge was:

a) to provide basic aerodynamic information to confirm the deck section design, including the effects of the proposed art panels;

b) to investigate the overall stability of the deck section in high wind conditions;

c) to define the behaviour of the deck due to buffeting in turbulent wind;

d) to provide estimates of the aerodynamic derivatives of the deck section and to develop the equivalent static loads to assist in the design of the bridge deck;

e) to estimate the pedestrian-load induced vibration of the bridge as well as the cable vibration from galloping, rain-wind induced vibration and parametric resonance.

The Boundary Layer Wind Tunnel Laboratory

Western

The Boundary Layer Wind Tunnel Laboratory
The University of Western Ontario
Faculty of Engineering, London, Ontario
Canada, N6A 5B9 Tel: (519) 661-3338 Fax: (519) 661-3339
Internet: www.blwtl.uwo.ca E-mail: info@blwtl.uwo.ca

FSBR/ 39 / October 2010 / LK
Last Printed: October 2010