Summary of Decisions of the Structural Engineering Committee
SEC Meeting 1/2016 held on 19.1.2016

Case 2/2016

Issue: Methodology Report for Wind Tunnel Test

Recommendation: To accept the following proposed testing arrangement and parameters for wind tunnel test of the proposed footbridge of unconventional form at the proposed development:

(1) Topographic Model

Topographic model is not provided in this project. Maximum wind properties recommended in the Code of Practice on Wind Effects in Hong Kong 2004 (the Hong Kong Wind Code) will be adopted for all wind directions.

(2) Proximity Model (Full Aero-elastic Model)

(i) Model scale: 1: 100

(ii) All buildings surrounding the footbridge covering a radius of 150m will be removed in the full aero-elastic model testing.

(iii) For the cladding pressure study, up to 25 pairs of pressure sensors will be retrofitted evenly onto the parapets of the deck of the same aero-elastic model of footbridge.

(3) Wind Climate Study

For the full aero-elastic model wind tunnel tests, the variation of mean wind speed, gust speed, and turbulence intensity at the site will be determined via the wind profile recommended in the Hong Kong Wind Code for each wind direction, with a matching height of 90m.

The design wind speeds and corresponding wind profiles are calculated based on Hong Kong Wind Code which represents wind flow open-sea terrain of design hourly mean wind speed of 59.5 m/s at gradient height of 500m (i.e. Table F3 of the Hong Kong Wind Code), where high wind speeds are able to be generated due to the lack of topographical shielding.

(4) Possible removal of adjacent / surrounding buildings that is considered significant influence

Wind tunnel tests will be carried out for the bridge in isolation where all adjoining / surrounding buildings will be removed.

(5) Wind Loads Adopted in Superstructure Design

The following in the superstructure design were proposed:

(i) The finally adopted peak design combined wind moments at base supports will not be less than 100% of

the peak design wind moments based on code calculation as derived from the design values given in the Hong Kong Wind Code.

(ii) If the peak design combined wind moments at base supports determined in the wind tunnel test are found greater than the peak design wind moments based on the codes calculation as derived from the design values given in the Hong Kong Wind Code, the peak design wind moments determined in the wind tunnel test will be adopted for design.

(iii) The wind pressures as derived from the measured wind tunnel data adopted for design of deck parapet panels shall not be less than that derived from the Hong Kong Wind Code.

Decision: Having noted the background information and arguments together with RSE's supervision arrangement, members endorsed the recommendation.