

Case 33/2021

Issue: Methodology Report for Wind Tunnel Test

Recommendation: To accept the following methodology and parameters for wind tunnel test of the proposed development:

(1) Topographic Model

Model scale: 1: 4,000

(2) Proximity Model

(i) Model scale: 1: 400

(ii) Extent of model: all known existing and proposed surrounding buildings and structures within a radius of 570m from the subject site will be modeled.

(3) Wind Climate Study Results

The Sector Design Wind Speed Method will be adopted. The directionality used for this study will be based on Monte Carlo typhoon simulation of storms passing within 250km of Hong Kong performed by Applied Research Associates, Inc. (ARA) in 2014. The largest directional wind speed will match 59.5 m/s hourly mean wind speed at 500m over open sea exposure.

(4) Removal of adjacent buildings that could provide significant shelter

Sixteen building groups were proposed to be removed in the Proximity Model.

(5) Design Wind Loads Adopted in Structure Design

The followings in structure design were proposed:

(i) The finally adopted peak design combined wind moment will not be less than 70% of the peak design wind moment as determined using the Code of Practice on Wind Effects in Hong Kong 2004 (the Wind Code);;

(ii) If the peak design combined wind moment determined in the wind tunnel test is found to be greater than the peak design wind moment based on code calculation in the most critical direction as derived from the design values given in the Wind Code, the peak design wind moments determined in the wind tunnel test will be adopted for design;

(iii) The storey wind shears adopted for design shall be

determined from the peak design combined wind moments established in accordance with sub-paragraphs (i) and (ii) above; and

- (iv) The peak building acceleration assessment on human comfort under wind loads determined in the wind tunnel test shall be in accordance with the Code of Practice for Structural Use of Concrete 2004 clause 7.3.2. Limiting maximum peak acceleration at the top occupied floor of a residential building to 0.15 m/s^2 should be adopted.

Decision:

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