

Case 38/2018

Issue: Methodology Report for Wind Tunnel Test

Recommendation: To accept the following methodology and parameters for wind tunnel test at 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 500m from the subject site will be modeled.

(3) Wind Climate Study Results

Directional characteristics of typhoons affecting HK based on a Monte Carlo simulation of storms passing within 250km of HK, conducted by Applied Research Associates, Inc. (ARA).

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

6 adjacent building groups were proposed to be removed in the Proximity Model. Furthermore, additional removal for building groups within the site with 6 buildings groups of adjacent tall building groups aforementioned was proposed.

(5) Design Wind Loads Adopted in Superstructure Design

The following in the superstructure design were proposed:

(i) The finally adopted peak design combined wind moment will not be less than 70% of the maximum design wind moment based on code calculation in the most critical direction as derived from the design values given in 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 greater than the maximum 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 combined wind moment 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 moment established in accordance with sub-paragraphs (i) and (ii) above;
- (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 2013 clause 7.3.2. Limiting maximum peak acceleration at the top occupied floor of a residential tower to  $0.15\text{m/s}^2$  should be adopted; and
- (v) If the actual number of high-rise towers or structural layout to be constructed, or construction stages is different from that specified in the methodology report, the RSE will conduct another wind tunnel test to verify whether the original wind tunnel test results used in the structural design of the high-rise towers are still applicable prior to the Temporary Occupation Permit or the Occupation Permit (TOP or OP) application.

Decision:

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