

Case 45/2021

Issue: Methodology Report for Wind Tunnel Test

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

(1) Topographic Model

Model scale: 1: 4,000 with coverage around 5km radius of the site

(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

No building to 12 surrounding building groups and 2 towers of the development were proposed to be removed in the 3 Proximity Models to simulate the 2 phasing stages.

(5) Design Wind Loads Adopted in Superstructure Design

The followings in superstructure design of each of the proposed four towers of the proposed development 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 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 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 0.15m/s^2 should be adopted; and
- (v) If the actual number of towers to be constructed or the construction phasing is different from that the specified scenarios of possible removal of surrounding buildings in the methodology report, additional wind tunnel test will be conducted accordingly to verify the whether the original wind tunnel test results used in the structural design of the proposed four towers are still structurally adequate prior to the Temporary/Phase Occupation Permit or the Occupation Permit application.

Decision:

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